National Kidney Foundation
2012 Spring Clinical Meetings Abstracts

Acute Kidney Injury/ICU Medicine

1 **Model to Predict Risk of Acute Kidney Injury in Patients After TAAA Repair**
Airy M, Dyquangico R, Minard C, LeMaire A.S, Mandayam S. Baylor College of Medicine, Houston, Texas, USA

2 **AKI with Use of Sitagliptin – Do We Need to be Concerned?**
Anushayanthan Alfred*, Dana V. Rizk. University of Alabama at Birmingham, Birmingham AL USA

3 **Does Obtaining Urinary Diagnostic Studies Prior to Renal Consultation Affect Outcomes in Acute Kidney Injury Patients**
Naing Htike, Adeel Siddiqui, Geoffrey Teehan, Robert L Benz. Lankenau Medical Center and LIMR, Wynnewood, PA, USA

4 **Cytomegalovirus Colitis in a Critically Ill, Dialysis-Dependent Acute Kidney Injury Patient without Immunosupressive Therapy**
Manmeet Brar[1], Kenneth Kokko[1], Éva Csongrádi[2], Bela Kanyicska[1], Tibor Fülöp[1]. [1]University of Mississippi Medical Center, Jackson, MS, USA; 21st Department of Medicine, University of Debrecen, Debrecen, Hungary

5 **Outcomes of Patients with End Stage Liver Disease and Acute Kidney Injury Requiring Dialysis at Discharge**
Stephen D. Clark, David G. Koch, Roberto Pisoni, Ruth C. Campbell. Medical University of South Carolina, Charleston, SC, USA

6 **Bath Salts and Acute Kidney Injury**
Jacques Daoud, Teena Tandon, Richard Hellman. Indiana University School of Medicine, Indianapolis, Indiana, USA

7 **Gross Hematuria Heralding Disseminated Mucormycosis**
Angelina Edwards, Aneel Kumar, Abdulla Salahudeen, Patricia Troncoso. University of Texas MD Anderson Cancer Center, Houston, TX, USA

8 **Trough Vancomycin Levels and Changes in Kidney Function**
Carlos Franco-Palacios, Myriam Vela, Qi Qian. Division of Nephrology and Hypertension. Mayo Clinic. Rochester, Minnesota, USA

9 **Abdominal Compartment Syndrome Presenting as Diuretic-Refractory Cardiorenal Syndrome**
Brigid Hallinan. Lehigh Valley Health Network, Allentown, PA, USA

10 **IL-6 AND Lipocalin2/Neutrophil Gelatinase-Associated Lipocalin May Mediate Podocyte Dysfunction in Inflammatory Kidney Disease**
Sarah J. Lee, Emily Borsting, Nazila Sabri, Anne-Emilie Decleves and Robyn Cunard. Veterans Affairs San Diego Healthcare System and UCSD, San Diego, CA, USA

11 **Clinical Characteristics of Patients with Acute Kidney Injury in a Inner City Teaching Hospital**

Rakesh Malhotra[1], Jose Cardenas[3], Jolina Santos[3], Judy Tan[3], Venu Gopal Kankani[3], Ravi Mehta[2], Anjali Acharya[3]. [1]VA Medical Center, [2]University of California, San Diego, [3]Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

12 **Exploring a Rare Cause of Acute Kidney Injury**

Nasim Mastouri, Chandandeep Takkar, Hasan J Salameh, Ricardo Baltodano, Pradeep Kadambi. University of Texas, Medical Branch at Galveston, Texas, USA

13 **Acute Kidney Injury After Total Hip Arthroplasty (THA) and Antibiotic Spacer Placement. Please Take Out the Cement!**

Austine Mengnjo, Guillermo Carnero, Rajesh Govindasamy. Geisinger Medical Center, Danville, PA, USA

14 **Sulfadiazine Crystalluria: Proposing Non-Invasive Diagnostic Criteria for a Re-Emerging Disease**

Madhav C Menon, Tonia Kim, Steven Dikman, Jaime Uribarri. Nephrology, Mount Sinai School of Medicine, New York, USA

15 **Fulminant Wilson's Crisis: Plasmapharesis vs Mars**

Prince Mohan, Abdallah Geara, Richard Kronfol, Jason Long, Jai Radhakrishnan, Amay Parikh. Columbia University Medical Center, New York, NY USA

16 **Fluid Overload and Survival in Adult Burn Patients: A Retrospective Analysis**

Benjamin Morrow[1], Ian J Stewart[1], Ellen Im[1], Molly Tilley[1], James Aden[2], Evan M Renz[2], Kevin K Chung[2]. [1]San Antonio Military Medical Center; [2]United States Army Institute of Surgical Research, Fort Sam Houston, TX, USA

17 **De Novo Dipstick Proteinuria (DP) as Predictor of Acute Kidney Injury (AKI) in Critically Ill Septic Patients**

Javier Neyra, George Maidaa, John Manllo, Gordon Jacobsen, Jerry Yee. Henry Ford Hospital, Detroit, MI, USA

18 **Trabectedin Induced Acute Kidney Injury**

Dhruval Patel, Apurv Khanna. SUNY Upstate, Syracuse, NY, USA

19 **Continuous Renal Replacement Therapy in ICU: Are We Achieving Prescribed Fluid Balance?**

Sagar S Patel, William Weber, Nand K Wadhwa. Stony Brook University, Stony Brook, NY, USA

20 **Dabigatran Associated Acute Renal Failure (DAARF)**

Patricio A. Pazmiño, Nephrology, Internal Medicine and Hypertension (NIH) Center; PFSM Texas Tech Univ. Health Science Center, El Paso, TX, USA

21 **Results of a One-Year Assessment of Quality Indicators in an Acute Dialysis Program Operated By a Large Dialysis Provider (LDO)**

Joanne Brady, Benjamin Chen, Tom Seguine, David Stone, Robert Provenzano. DaVita Inc., Denver, CO, USA

22 **Acute Kidney Injury in Hospitalized ADPKD Patients: A Retrospective Study**
Vela Myriam, Qi Qian. Mayo Clinic, Rochester, MN, USA

23 **Extracavitary Primary Effusion Lymphoma Presenting As Spontaneous Tumor Lysis Syndrome: A Case Report**
Swarna P Rai, Peter Hart, Erin O'Sullivan. John H Stroger Jr. Hospital of Cook County, Chicago, Illinois, USA

24 **Pitfalls in Dosing Vancomycin: Quest for the Holy Grail-Achieving the Appropriate Trough Level**
Shivani Ruben, Farhan Bangash, Harold M. Szerlip. University of Arizona Health Network, Tucson AZ, USA

25 **Use of Ultrasound Resistive Index in Predicting Renal Failure in Septic ICU Patients**
Sandilya, Sandipani. Parikh, Coral. Eisen, Lewis Golestaneh, Ladan. Montefiore Medical Center, Bronx, New York, USA

26 **Recurrent Rhabdomyolysis-Induced Acute Kidney Injury (AKI) in a Patient with HIV on Antiretroviral Therapy**
Peter Bryan Schrier, Hitesh H. Shah. Division of Kidney Diseases and Hypertension, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

27 **Collapsing Glomerulopathy Due to Parvovirus: A Mysterious Case of Acute Kidney Injury**
Yuvraj Sharma, Glenn Ladinsky, Alan Barman. Crozer Chester Medical Center, Upland, PA, USA

28 **Comparison of Methods for Estimating Baseline Creatinine for Rifle Classification in Burned Combat Casualties**
Ian Stewart[1], Jesse Wickham[1], Molly Tilley[1], James Aden[2], Evan M Renz[2], Kevin K Chung[2]. [1]San Antonio Military Medical Center; [2]United States Army Institute of Surgical Research, Fort Sam Houston, Texas, USA

29 **Double Trouble: A Patient with SLE and TTP**
Chandandeep Takkar, Nasim Mastouri, Hasan J Salameh, Ricardo Baltodano, Robert E. Beach. University of Texas, Medical Branch at Galveston, TX, USA

30 **Salt Wasting Nephropathy and Hypokalemia: Clinical Utility for Diagnosing Leptospirosis-Induced Non-Oliguric Acute Renal Failure**
Ekamol Tantisattamo, Jason Dinh. Department of Medicine, University of Hawaii, Honolulu, Hawaii, USA

31 **Ipilimumab Induced Granulomatous Interstitial Nephritis**
Bijin Thajudeen,Sireesha Koppula,Machiah Madhrira. University of Arizona, Tucson, Arizona, USA

32 **Phentermine Induced Acute Interstitial Nephritis**
Jiwan Thapa, Ankit Sakhuja, Brian Stephany. Cleveland Clinic Foundation, Cleveland, Ohio, USA

33 **Intravenous Bleach Injection-Related AKI**
Ashish Verma, Sunitha Golla, Fernando Ottino, Matthew Trainor, Konstantin Abramov. University of Massachusetts Medical School, Worcester, MA, USA

34 **Pancreatitis-Induced HUS-TTP**
Ashish Verma, Vishesh Chhibber, Eric Iida. University of Massachusetts Medical School, Worcester, MA, USA

CKD/ESRD - Anemia

35 **Trends in Hemoglobin Pre- and Post-Bundle in Hospital-Based Dialysis Clinics**
Anjali Acharya[1], Nathan Thompson[1], Gregory A. Maglinte[2], Chun-Lan Chang[3], Jerrold Hill[3], David J. Harrison[2], Akhtar Ashfaq[2], Jeffrey Petersen[2], George N. Coritsidis[1]. [1]NYC Health and Hospitals Corporation, New York, NY; [2]Amgen, Thousand Oaks, CA; [3]IMS Health, Plymouth Meeting, PA, USA

36 **Hemoglobin Response to Thrice Weekly Intravenous Versus Once Weekly Subcutaneous Epoetin Dose in Hemodialysis Patients**
Irfan Ahmed, Sandeep Aggarwal, M. W. Khattak, Karthik Ranganna, Ziauddin Ahmed, Ami Patel. Drexel University College of Medicine, Philadelphia, PA, USA

37 **Cardiovascular Events and Rate Of Hemoglobin Change in Hemodialysis Patients on Peginesatide**
Anatole Besarab[1], Wadi Suki[1], Bruce Spinowitz[1], Anne-Marie Duliege[2], Hina Patel[2], Dan Cooper[2], Helen Tang[2], Hong-Ye Gao[2], Martha Mayo[2], Steven Fishbane[1]. [1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA, USA

38 **Hemoglobin (Hb) Recovery Following Hospitalization in ESRD Patients**
T. Christopher Bond[1], Jaime Rubin[1], Steven Wang[1], Alex Yang[2]; Mahesh Krishnan[1]. [1]DaVita Clinical Research, Minneapolis, MN, USA; [2]Affymax, Palo Alto, CA, USA

39 **More Frequent Hemoglobin (HB) Measurements and Erythropoiesis-Stimulating Agent (ESA) Titrations are Not Associated with Increased Time in Target Hb Range**
T. Christopher Bond[1], Jaime Rubin[1], Steven Wang[1] and Alex Yang[2]. [1]DaVita Clinical Research, Minneapolis, MN, USA; [2]Affymax, Inc., Palo Alto, CA, USA

40 **Tsat and Ferritin Levels Following IV Iron Maintenance and Repletion Regimens: Data from Over 50,000 Patients**
Linda H Ficociello, Norma J Ofsthun, Mayuri Thakuria, Claudy Mullon, Jose Diaz-Buxo. Fresenius Medical Care North America, Waltham, MA, USA

41 **Transfusion Trends Among Hemodialysis Patients with HB Levels Below 10 g/dL**
David T. Gilbertson[1], Thomas Arneson[1], Melissa Skeans[1], Keri Monda[2], Brian Bradbury[2], Allan Collins[1]. [1]Chronic Disease Research Group, Minneapolis, MN; [2]Amgen, Inc., Thousand Oaks, CA, USA

42 **Descriptive Analysis of Red Blood Cell Transfusion Locations Among Dialysis Patients**
Andrew Lee[1], David M Spiegel[2], Zhun Cao[3], Jeffrey L Carson[4], Brian Custer5, Helen Varker[3], Katherine Capell[3], Akhtar Ashfaq[1], Matthew Gitlin[1], [1]Amgen Inc., Thousand Oaks, CA; [2]University of Colorado, Denver, CO; [3]Thomson Reuters, Cambridge, MA; [4]UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ; [5]Blood Systems Research Institute, San Francisco, CA, USA

43 **Standardization of Erythropoiesis Stimulating Agent (ESA) Immunogenicity Testing: Development of a Human Anti-Esa Antibody Reference Panel**
Daniel T. Mytych[1], Troy Barger[1], Chadwick King[2], Stephanie Simmons[2], Sergio Sanchez[1], Andrew Kuck[1], Jilin Sun[1], Francesca Civoli[1], and Steven J. Swanson[1]. [1]Amgen, Thousand Oaks, California, USA; [2]Amgen British Columbia, Burnaby, BC, Canada

44 **Relationship Between Cardiovascular Events and Hemoglobin Level in Hemodialysis Patients on Peginesatide Treatment for Anemia**
Pablo E. Pergola[1], Steven Fishbane[1], Amit Sharma[1], Steven Zeig[1], Rebecca Schmidt[1], Anne-Marie Duliege[2], Minjia Chen[2], Sandra Tong[2], Carol Francisco[2], Hong-Ye Gao[2], Krishna Polu[2], Robert Provenzano[1]. [1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA, USA

45 **Safety and Efficacy of Interchange from Ferrlecit to Feraheme in Outpatient Dialysis Population**
Erdal Sarac, Nivin Haroon , Jisha John, David Gemmel. St Elizabeth Health Center, Youngstown, OH, USA

46 **Peginesatide Versus Epoetin Doses For Treatment Of Anemia In Black Hemodialysis (HD) Patients**
Amit Sharma[1], Pablo Pergola[1], Mark Kaplan[1], Diogo Belo[1], Alex Yang[2], Martha Mayo[2], Carol Francisco[2], Sandra Tong[2], Nathan Levin[1]. [1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA, USA

47 **Does Non-Invasive Testing of Hemoglobin Have Any Role in CKD Anemia Clinics?**
Rupesh Raina, Grace Snyder, Charbel Salem, and James F Simon. Cleveland Clinic, Cleveland, OH, USA

48 **Impact of Diabetes on Safety and Efficacy of Peginesatide in Hemodialysis Patients**
Bruce Spinowitz[1], Raja Zabaneh[1], Edouard Martin[1], Bhasker Rai Mehta[1], Jieshi Yan[1], Alex Yang[2], Minjia Chen[2], Helen Tang[2], Dan Cooper[2], Krishna Polu[2], Brigitte Schiller[1. 1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA

49 **Differential Hemoglobin Response Following Treatment with Two IV Irons in Patients on Hemodialysis or with More Severe Anemia: Results from the Ferumoxytol Compared to Iron Sucrose Trial (First)**
William Strauss, Joe Li, Justin McLaughlin, Susan Farkas, Joachim Hertel, Diogo Belo. AMAG Pharmaceuticals Inc., Lexington, MA, USA

50 **Impact of Frequent Hemoglobin (Hb) Measurement and ESA Dose Titration on Hb Stability in Dialysis**
Lynda Szczech[1], David Gilbertson[2], Ali Hariri[3], Pratyush Kumar[4], Alex Yang[5]. [1]Duke Nephrology, Durham, NC; [2]Chronic Disease Research Group, MMRF, Minneapolis, MN; [3]Takeda, Deerfield, IL; [4]ZS Associates, San Francisco, CA; [5]Affymax, Inc., Palo Alto, CA, USA

51 **Anemia Management Retrospective Analysis at Renal Research Institute Clinics from 2009-2011**

Mayuri Thakuria[1], Linda H Ficociello[1], Len A Usvyat[2], Claudy Mullon[1], Paul Balter[2], Paul M. Zabetakis[2], and Jose A. Diaz-Buxo[1]. [1]Fresenius Medical Care-NA, Waltham, MA, United States and [2]Renal Research Institute (RRI), New York, NY, United States

52 **Do Safety Warnings Change Prescribing Among the US Dialysis Population?**

Mae Thamer, Yi Zhang, Onkar Kshirsagar, Dennis Cotter. Medical Technology and Practice Patterns Institute, Bethesda, MD, USA

53 **Characterizing Missed Dialysis Sessions in the ESRD Patient Population**

Steven Wang[1], T. Christopher Bond[1], Jaime Rubin[1], Alex Yang[2] [1]DaVita Clinical Research, Minneapolis, MN, USA; [2]Affymax, Palo Alto, CA, USA

54 **Post-Hospital Rapid Anemia Management Reduces Rate of Readmission: The Rightreturn Program**

Rebecca Wingard, Kevin Chan, Raymond Hakim, Fresenius Medical Care North America, Brentwood, TN, USA

55 **Trends in Anemia Management for End Stage Renal Disease (ESRD) Patients on Dialysis**

Jay Wish[1], Ali Hariri[2], Will Harrison[3], Alex Yang[4]. [1]Cleveland Case Medical Center, Cleveland, OH; [2]Takeda, Deerfield, IL; [3]ZS Associates, San Mateo, CA; [4]Affymax, Inc., Palo Alto, CA, USA

56 **Quantifying the Effect of Infection on Hemoglobin in Dialysis Patients Receiving Erythropoietin**

Suman Yadam, Michael Brier. Kidney Disease Program, University of Louisville, Louisville, KY, USA

CKD/ESRD - Cardiovascular Disease

57 **Does Moderate Kidney Dysfunction Estimated by CKD-EPI Formula Impact Long-Term Survival Following Heart Transplantation?**

Ammar Almehmi, Halit Yerebakan, Mengxi Ji, Alexandra Ross, J Jiang, LK Soni, S Jones, M Argenziano, CR Smith Jr, Y Naka, H Takayama, PC Schulze, Faisal H. Cheema. U of Tennessee, Memphis, TN; Columbia University, New York, NY, USA

58 **Dynamics of Kidney Function Following Orthotopic Heart Transplantation Using CKD-EPI Based GFR Estimation**

Halit Yerebakan[1], [2]Ammar Almehmi, Mengxi Ji[1], Alexandra Ross[1], J Jiang[1], L Soni[1], S Jones[1], M Argenziano[1], CR Smith[1], Y Naka[1], H Takayama[1], PC Schulze[1], Faisal H. Cheema[1]. [1]Columbia University, New York, NY; [2]Univ of Tennessee, Memphis, TN, USA

59 **Management of Chronic Kidney Disease in Patients with and without Congestive Heart Failure**

Manthodi Faisal[1], Peter Burke[2], Wei Zhang3, James Bowen3, Claudine Jurkovitz3, Rubeen Israni[1].[1]Nephrology Associates PA; [2]Christiana Care Health Systems; [3]Christiana Care Center for Outcomes Research; Newark, DE, USA

60 **Association of Erythropoesis Stimulating Agent Index (ESAI) Hyporesponsiveness with Mortality in Non-Dialysis Dependant Chronic Kidney Disease (NDD-CKD) Patients and Effect Modification by Platelet**

Suchet Kaur, Carilion Clinic, Roanoke, Virginia; Jun L Lu, Salem Research Institute, Salem, Virginia; Kamyar Kalantar-Zadeh, Harbor-UCLA, Torrance, California; Csaba P Kovesdy, Salem VA Medical Center, Salem, Virginia, USA

61 **Vitamin D Receptor Agonists Upregulate Klotho and Decrease Vascular Calcification in Mice with Mild Chronic Kidney Disease**

Wei Ling Lau[1], Elizabeth M. Leaf[1], Ming Chang Hu[2], Makoto Kuro-o[2], Orson W. Moe[2], Cecilia M. Giachelli[1]. [1]University of Washington, Seattle, Washington, USA; [2]University of Texas Southwestern Medical Center, Dallas, Texas, USA

62 **Influence of Kidney Function on Risk of Hemorrhage Among Patients Taking Warfarin**

Mohit Limdi, Michael Crowley, Nita Limdi, Michael Allon. University of Alabama at Birmingham, Birmingham AL, USA

63 **Mannitol – Potential Prophylactic Role in Hemodialysis Initiation**

Finnian R. Mc Causland, Sushrut S. Waikar. Renal Division, Brigham and Women's Hospital, Boston, MA, USA

64 **Deterioration of Ankle and Toe Brachial Pressure Indices (ABI-TBI) Values During A Hemodialysis (HD) Treatment Predicts Impaired Peripheral Circulation in HD Patients**

Takayo Ogaki, Kayoko Horimoto, Kazuko Arita, Katsutoshi Maeda, Hiroaki Oda, Shigehiro Doi, Takao Masaki.Oda Medical Clinic, Hiroshima University Hospital, Hiroshima, Japan

65 **Evaluation of Vascular Function in End-Stage Renal Disease: Small Artery Elasticity Index Correlates with Pulse Wave Velocity**

William Paulson, Allison Dubner, John White, David Pollock, Jennifer Pollock, Gaston Kapuku. Charlie Norwood VA Medical Center and Georgia Health Sciences University, Augusta, GA, USA

66 **Idiopathic Nodular Glomerulosclerosis in Chinese: A Retrospective Study From A Metropolitan Histopathological Center**

[1]Jun Wu, [1]Ye Lin, [1]Shengqiang Yu, [1]Xuezhi Zhao, [1]Chaoyang Ye, [1]Lin li, [1]Hongchen GU, [1]Zhenhao Hua, [1]Yanwen Wang, [1]Changlin Mei, [2]Qi Qian. [1]Kidney Institute of PLA, Second Military Medical University, Shanghai, China; [2]Mayo Clinic, Rochester, MN, USA

67 **Prevalence of Aspirin Resistance in Chronic Kidney Disease Patients**

Chadi Saifan, Rabih Nasr, Suzanne E. El Sayegh. Nephrology, Staten Island University Hospital, Staten Island, NY, USA

68 **Aquapheresis is Associated with Declined in Renal Function in CHF Patients**

Walter Shakespeare, Hasan Arif, Irfan Ahmed, Nauman Shahid, Ziauddin Ahmed. Drexel University College of Medicine, Philadelphia, PA, USA

69 **Subdural Hematoma Mimicking Transient Ischemic Attack in an End-Stage Renal Disease Patient**

Ekamol Tantisattamo, Melvin H.C. Yee. Department of Medicine, University of Hawaii, Honolulu, Hawaii, USA

70 **Ventricular Assist Devices- A Treatment Option for Cardiorenal Syndrome**
Abraham Thomas, Geetha Bhat, Antoine Tatooles. Advocate Christ Medical Center, Oak Lawn, Illinois, USA

CKD/ESRD - Mineral Metabolism and Kidney Stones

71 **Clinical Outcomes & Cost Differences Between IV Vitamin D Analogues Versus Oral Calcitriol in Hemodialysis Patients**
Sandeep Aggarwal, Ellie Kelepouris, Ami Patel. Drexel University College of Medicine, Philadelphia, PA, USA

72 **2,8 Dihydroxyadenine Crystalline Nephropathy as a Rare Metabolic Cause of Chronic Kidney Disease**
Samer Diab Agha, Pamela C. Gibson, Samih H. Nasr, Varun Agrawal. Burlington VT and Rochester MN, USA

73 **Influence of BSMI Vitamin D Receptor Gene Polymorphism on Response to Oral Vitamin D Therapy in Predialysis Patients**
Chanel Agness, Thomas Dowling, Hongbing Wang, Michael Hise, Linhao Li. University of Maryland School of Pharmacy; University of Maryland School of Medicine; Baltimore VA Medical Center, Baltimore, Maryland, USA

74 **The Effect Of Vitamin D {25(OH)D3} Deficiency on the Occurrence of Secondardy Hyperparathyroidism (SHPT) AMONG CHRONIC KIDNEY DISEASE (CKD) Patients**
Alsadek Sultan, Anju Oommen, Chukwuma Ndibe, Arshad Ali, Claire Douglas, Wambui Machua, Balsam Elhammali, Amy M. Kwon, Khalid Bashir, Morehouse School of Medicine, Atlanta, GA, USA

75 **Egg Club Initiative Did Not Improve Serum Albumin Levels in ESRD Patients**
Shamik Bhadra, Hiral Desai, Linda Feder, Ziauddin Ahmed. Drexel University, Philadelphia, PA, USA

76 **Effect of a Dietitian Managed Bone Algorithm on Serum Phosphorus Level in Maintenance Hemodialysis Patients**
Debra Blair,[1,2] Laura Byham-Gray,[1] Stephen Sweet,[3] Robert Denmark,[1] Scott Parrott,[1] Emily Lewis,[2] Susan McCaffrey,[2] Susan Thomson[2]. [1]University of Medicine and Dentistry of New Jersey, Newark, NJ, [2]Fresenius Medical Care (FMC-NA), [3]Western New England Renal & Transplant Assoc., Springfield, MA, USA

77 **Multidisciplinary Approach to Calcific Uremic Arteriolopathy in Peritoneal Dialysis**
Beverly Deliz-Tirado, Jorge Lamarche, Alfredo Peguero, Craig Courville. University of South Florida College of Medicine; James A. Haley Veterans Hospital, Tampa, Florida, USA

78 **Underreporting of Non-Compliance with Phosphorus Binders May Contribute to Poor Phosphorus Control in Dialysis Population**
Nischala Dhanekula, Roopa Yarlagadda, Wei Wang, Virginia Lyons, Vijay Jain, Wajid Choudhry. Unity Health System, Rochester, New York, USA

79 **Effect of Interlaboratory Differences in Treating Secondary Hyperparathyroidism**
Hassan Fehmi, Lynne Gafford. Henry Ford Health System, Detroit, Michigan, USA

80 **Cryptoccal Immune Reconstituition Inflammatory Syndrome Complicated by Hypercalcemia in An HIV-Infected Patient**
Shabnum Haleem, Sandeep Aggarwal, Irfan Ahmed, Nauman Shahid. Drexel University College of Medicine, Philadelphia, PA, USA

81 **Iatrogenic Tertiary Hyperparathyroidism in a Case Of Fabry Disease Treated with Agalsidase Beta**
Hilana Hatoum[1], Adepeju Jinadu[1], Anita Patel[1], Dhanwada SudhakerRao[2]. [1]Nephrology Department; [2]Endocrinology Department; Henry Ford Hospital, Detroit, Michigan, USA

82 **Accuracy of 24 Hour Urine Collections for Evaluation For Nephrolithiasis**
R.Allan Jhagroo, K Penniston, S Nakada. UW Madison, Madison, WI, USA

83 **BMI as a Predictor of 24 Hour Urine Collection Accuracy**
R. Allan Jhagroo, KL Penniston, S Nakada.UW Madison, Madison, WI, USA

84 **Spot Specific Gravity Measurement in Predicting 24-H Urine Volume in Kidney Stone Formers**
R. Allan Jhagroo, Kristina L. Penniston, and Stephen Y. Nakada. UW Madison, Madison, WI, USA

85 **FGF-23 Associated with Calcification Progression in Dialyis Patients**
Abigail M. Khan, Julio Chirinos, Harold Litt, Peter Yang, Sylvia E. Rosas, University of Pennsylvania, Philadelphia, PA, USA

86 **Identifying the Comparison Group in Studies of Vitamin D Effects Using a Propensity Score**
Ryan D. Kilpatrick[1], Francesca Tentori[2], Hal Morgenstern[3] Karminder Gill[1], and Brian D. Bradbury[1]; [1]Amgen, Inc, [2]Arbor Research Collaborative For Health; [3]Univ of Michigan, Ann Arbor, MI, USA

87 **Ethanol Injection for Management of Refractory Hyperparathyroidism in CKD: Case Reports**
Ivana Lazich, Marc Alonzo, Carolyn Donaldson, Stuart M. Sprague. NorthShore University Health System, University of Chicago, Evanston, Illinois, USA

88 **The Likelihood of Hypercalcemia Across Serum Pth Levels in Hemodialysis Patients**
Jinnan Li, J. Zaritsky, M. Z. Molnar, J. J. Sim, E. Streja, C. P. Kovesdy, I. Salusky, and K. Kalantar-Zadeh. Harold Simmons Center, Harbor-UCLA; Torrance, CA, Salem VAMC, Salem, VA; David Geffen School of Medicine at UCLA, Los Angeles, CA; Kaiser Permanente, CA, USA

89 **Paricalcitol Dose and Survival in Hemodialysis Patients: A Marginal Structural Model Analysis**
Jessica E Miller, Miklos Z Molnar, Csaba P Kovesdy, Joshua J Zaritsky, Isidro Salusky, Onyebuchi A Arah, and Kamyar Kalantar- Zadeh. Harold Simmons Center, Harbor-UCLA, Torrance, CA; Salem VAMC, Salem, VA; UCLA, Los Angeles, CA, USA

90 **Cinacalcet and Tertiary Hyperparathyroidism**
Rabih Nasr, Chadi Saifan, Suzanne El-Sayegh. Staten Island University Hospital, Staten Island, NY, USA

91 **Gradual vs. Rapid Repletion of D Deficient Rats**
C Helvig[1], N Ramjit[1], D Cuerrier[1], C Hosfield[1] and M Petkovich[1], [2]. [1]Cytochroma Inc., Markham, and [2]Queen's University, Kingston, Ontario, Canada

92 **Acute Onset of Metastatic Calcification in a Dialysis Patient – A Case Report**
Ajith Puram, Naheed Ansari. Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

93 **Hypocitraturia in Magnesium Ammonium Phosphate (Struvite) Stone Formers**
Cindy Pynadath, Grace Snyder-Garza, Xiaobo Liu, Phillip Hall, Surafel Gebreselassie. Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA

94 **Addition of Cholecalciferol to Calcitriol to Treat Frailty in Hemodialysis and Peritoneal Dialysis Patients**
Wilner Samson, Sharad Sathyan, Richard Feinn, Anne Kenny, Farmington, CT, USA

95 **25(OH) Vitamin D Deficiency and Chronic Kidney Disease in Our Large Urban Underserved Population in Southern California**
Andrea C Sanchez, Maggie Chen, David Endres, Sandra Ri, Linda S Chan, Elaine M Kaptein University of Southern California, Los Angeles, California, USA

96 **CKD Patients May Require Higher Serum Total 25D Levels to Normalize Elevated iPTH**
A Sharma, F Al-Saghir, G Block, P Crawford, D Ries, J Sedor, G Fadda, H Paez, M Noursalehi, J Melnick, K Martin and the CTAP101 Study Group, Cytochroma Inc., Markham, Ontario, Canada

97 **CTAP101 Capsules Significantly Increases Serum 25D and Lowers Plasma iPTH Levels in Stage 3 and 4 CKD Patients**
S Sprague, F Al-Saghir, A Sharma, P Crawford, S Zeig, S Lee, R Hootkins, D Bushinsky, R Green, S Tabash, J Melnick, and the CTAP101 Study Group, Cytochroma Inc., Markham, Ontario, Canada

98 **Calciphylaxis in a Patient with Acute Renal Failure(ARF) on Continuous Renal Replacement Therapy (CRRT)**
Teena Tandon, Muhammad Mujtaba. Division of Nephrology, IUSM, Indiana, USA

99 **A Rare Case of Concurrent Hereditary Hypophosphatemia and Glomerulonephritis**
Margaret Yu, Bessie Young, Rudy Rodriguez, Jonathan Himmelfarb, Bryan Kestenbaum; University of Washington, Veterans Affairs Puget Sound Health Care System, Kidney Research Institute; Seattle, WA, USA

CKD/ESRD - Prevalence, Progression, Preparation for Dialysis

100 **Increasing Mean Body Mass Index Among Incident Cases of End-Stage Renal Disease, by Diabetes Status, United States, 1996–2009**
Nilka Ríos Burrows, Israel Hora, Desmond Williams. Centers for Disease Control and Prevention, Atlanta, Georgia, USA

101 **Food Insecurity and CKD in The United States**
Deidra Crews[1], Laney Light[1], Vahakn Shahinian[2], Elizabeth Hedgeman[2], Nilka Rios-Burrows[3], Desmond Williams[3], Neil Powe[4] for the CDC CKD Surveillance Team. [1]Johns Hopkins University, Baltimore, MD; [2]University of Michigan, Ann Arbor, MI; [3]Centers for Disease Control and Prevention, Atlanta, GA; [4]University of California at San Francisco, San Francisco, CA, USA

102 **Association of Preoperative Chronic Kidney Disease and Acute Kidney Injury**
A Osama Gaber, Linda W Moore, Stephen L Jones, Lillian W Gaber, Wadi N Suki, Richard Knight, Barbara L Bass. The Methodist Hospital, Houston, TX, USA

103 **Trends in Obesity and Kidney Disease Risk Factors in Children and Young Adults: Results from the National Health and Nutrition Examination Survey (NHANES III and 1999-2008)**
G. M. Henriquez, H. Sarathy, J. Kumar, A. Skversky, M. Abramowitz, M. L. Melamed. Albert Einstein College of Medicine Bronx, NY; Weill Cornell Medical College New York, NY USA

104 **Impact of EGFR Formulae on Prevalence of CKD in Random Population Screening - The Texas CKD Study**
Mohammed S Hussain, Ronnie Orozco, John Moeller and Sharma Prabhakar. Department of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, USA

105 **CKD Practice and Referral Patterns in Academic Primary Care Clinics in West Texas**
Abeer Kaldas, Ronnie Orozco, John Moeller, and Sharma Prabhakar. Department of Medicine, Texas Tech University Health Sciences Center (TTUHSC), Lubbock, TX, USA

106 **Metabolic Syndrome and Progression of Chronic Kidney Disease: A Systematic Review**
Sadaf S Khan, George Thomas, Sankar D Navaneethan. Internal Medicine and Nephrology, Cleveland Clinic, Cleveland, OH, USA

107 **Descriptive Analysis of Attendance to Dialysis Sessions Among In-Center Hemodialysis Patients**
Steven Blume[1], Andrew Lee[2], Feng Pan[1], Chien-Chia Chuang[1], Gregory Hess[3], Chun-Lan Chang[3], Matthew Gitlin[2]. [1]United BioSource Corp., Bethesda, MD; [2]Amgen Inc., Thousand Oaks, CA; [3]IMS Health, Plymouth Meeting, PA, USA

108 **Improving Chronic Kidney Disease Care with Group Visits: A Feasibility Study**
Vicki Montoya, University of Central Florida, Orlando, FL, USA

109 **In-Center Hemodialysis Patients Who Miss Multiple Dialysis Sessions Experience Higher Mortality Rates**
Benjamin Morgan, Areef Ishani, Yelena Slinin, Haifeng Guo, Suying Li, Jiannong Liu, Dave Gilbertson, Allan Collins . University of Minnesota, Minneapolis VA Health Care System, Chronic Disease Research Group, Minneapolis, MN, USA

110 **Self-Reported Chronic Kidney Disease and Sleep Duration: Analysis of the National Health Interview Survey**
Abhishek Pandey, Fasika Tedla, Clinton Brown, Ajibola Adedayo, Girardin Jean-Louis, Moro Salifu. SUNY Downstate Medical Center, Brooklyn, NY, USA

111 **Rvcare: Assertive Management and Positive Outcomes in First 120 Days of Dialysis**
Naveena Reddy, Laura Schmidt, Tom Parker. Renal Ventures Management LLC, Dallas, TX, USA

112 **Decreased Lower Extremity Physical Performance is Associated with Mortality in Middle-Aged Chronic Kidney Disease**
Baback Roshanravan, Cassianne Robinson-Cohen, Kushang V. Patel, Jonathan Himmelfarb, Bryan Kestenbaum. University of Washington, Seattle, USA

113 **Association of Lean Body Mass with GFR Using Creatinine Versus Cystatin C Based GFR Estimation in Nhanes 1999-2004**
Deep Sharma, Matthew Abramowitz. Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY, USA

114 **CKD Management in Primary Care Setting**
Yuvraj Sharma, Sean Flynn, Linet Lonappan, Saurabh Bansal, Sarun Thomas, Karthik Bekal, Nathan Okechukwu. Crozer Chester Medical Center, Upland, PA, USA

115 **Impact of Predialysis Education on Home Dialysis Utilization**
Richa Pandey, Dumitru Rotaru, and Ashutosh Shukla. Division of Nephrology, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR, USA

116 **Importance of Rate of EGFR Decline in Predicting the Need For Dialysis in CKD Patients**
Neeraja Talakanti, David Leehey, Kavitha Vellanki. Hines VA Medical Center, Hines, IL, USA

CKD/ESRD - Vascular Access

117 **Fistula First: Journey from Last to First a Quality Improvement (QI) Project**
Kashif Chaudhry, D Abu-Hamdan, C Ohs, K Crossley, J Chacko. John D Dingell VAMC, Detroit, MI, USA

118 **Long-Term Survival of AV Grafts Comparable to that of Non-Transposed and Transposed AV Fistulae in the Arm**
Peter Van, Renu Gupta and Neville R. Dossabhoy. Nephrology Section, LSUHSC and VA Medical Center, Shreveport, LA, USA

119 **A Cause Analysis of Absence of Functional Arterio-Venous (AV) Access in a Prevalent Hemodialysis Patients Cohort**
Mireille El Ters, Andrew Rule, Bonnie Jensen, Scott Nyberg ,Sandra Taler , Amy Williams, Robert Albright, Marie C. Hogan. Mayo Clinic, Rochester, MN, USA

120 **Increasing Vascular Access Knowledge: Results of an Educational Workshop for Nephrology Trainees**
Jamie Green, Danyal Hassan, and Hoda Kaldas. University of Pittsburgh and Partners in Nephrology and Endocrinology, Pittsburgh, Pennsylvania, USA

121 **Efficacy and Safety of a 4% Sodium Citrate Locking Solution in Cuffed Tunneled Hemodialysis Catheters Compared with Heparin**
Sucharitha Kankanala, Kathy Smith, David E. Henner, Berkshire Medical Center, Pittsfield MA, USA

122 **Hemodialysis Infection Prevention with Polysporin Ointment (PTO) Versus Taking a Wet Shower (HIPPO-TWO) Pilot Study Design**
Sarah Kosa, Charmaine Lok. Toronto General Hospital, Toronto, Ontario

123 **Roo Defender™ Catheter Cover Reduces Catheter Care Expense and Nursing Time**
M. LaFleur, P. LaFleur, R. Provenzano. St. John Hospital & Medical Center, Detroit, MI, USA

124 **A Tale of Two Catheters: An Unusual Case of Intradialytic Hypotension**
Bharvi P Oza-Gajera, Jorge Lamarche, Craig Courville, Alfredo Peguero. James Haley VA; University of South Florida, Tampa, FL, USA

125 **Challenges in Obtaining Peripheral Blood Cultures on Hemodialysis Patients During Hemodialysis**
F. Quittnat-Pelletier[1,2], M. Joarder[1,], C. E. Lok[1,2]. [1,]Toronto General Hospital; [2]University of Toronto, Toronto, Ontario, Canada

126 **Impact of A CKD Clinic on Access Placement in Incident Hemodialysis Patients**
Lumi Stutz, Julie Kirshenbaum, Paulynn Katsulis, Morgan Marcuccilli, L. Tammy Ho. North Shore University Health System, Evanston, IL, USA

127 **Role of Nurse Practitioner Monitoring on Vascular Access Outcomes**
Lumi Stutz, Julie Kirshenbaum, Nisha Patel, Jamie Sua, L. Tammy Ho. North Shore University Health System, Evanston, IL, USA

128 **Reduction in Bloodstream Infection Rates in Outpatient Hemodialysis Centers Participating in a CDC Prevention Collaborative**
Sarah H. Yi, Alexander J. Kallen, John A. Jernigan, Priti R. Patel. CDC Dialysis BSI Prevention Collaborative Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention (CDC), Atlanta, GA USA

CKD/ESRD - Other

129 **Racial Differences in Chronic Kidney Disease (CKD) in Medicare Beneficiaries**
Robert Bailey[1], Amanda Forys[2], Lianna Weissblum[2], Huai-Chi Shih[2], Rachel Feldman[2]. [1]Janssen Services, LLC, Horsham, PA; [2]The Moran Company, Arlington, VA, USA

130 **Racial Differences in Chronic Kidney Disease (CKD) in Medicare Beneficiaries: Diagnosis and Healthcare Costs**
Robert Bailey[1], Amanda Forys[2], Lianna Weissblum[2], Huai-Chi Shih[2], Rachel Feldman[2]. [1]Janssen Services, LLC, Horsham, PA; [2]The Moran Company, Arlington, VA, USA

131 **Use of Fondparinux in Severe Renal Impairment and Hemodialysis**
Marisa Battistella, Grace Ho, Kori Leblanc, Jin Huh, Jenny Ng, Rita Selby, Robert Richardson, Bill Brien, Michelle Hladunewich. University Health Network, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, CA

132 Use of Talking Control Support Therapy in Chronic Hemodialysis Patients Results in Higher Patient Satisfaction Survey Response

Judith Beto, Katherine Schury, Mary Nicholas, Nora Moravcik, Bessie Baldovino, Vinod Bansal, Loyola University Health Systems Dialysis, Maywood, IL, USA

133 Recurrent Portal-Systemic Encephalopathy Related to Hemodialysis

Keerti Bhanushali, Ambarish Athavale, George Dunea, Peter Hart. John H Stroger Jr. Hospital of Cook County, Chicago, Illinois, USA

134 Video Education Increases Patient Knowledge About Phosphorus Control and is a Preferred Form of Education

Shaun Boyd[1], T. Christopher Bond[1], Tonya Zimmerman[1], Kathy Parker[1], Darlene Griffin[1], Duane Dunn[1], [1]DaVita Inc., Denver, CO, USA

135 Psychological Status and End-Of-Life Decision Making Confidence in Surrogates of Dialysis Patients

Bridgman, J.C., Ward, S.E., Lin, F-C., Hanson, L.C., Hamilton, J., Hladik, G., Fine, J.P., Sun, S., Miles, M., & Song, M.K., UNC-Chapel Hill, NC, UW-Madison, WI, USA

136 How Undergraduate and Graduate Social Work Students Can Help Local Kidney Disease Communities: Recommendations for Nephrology Professionals

Teri Browne, Olivia Jones, Felix Weston, Valerie Stiling, Lesley Jacobs, Sonya Davis-Kennedy, Cassandra Avant Williams, Cassidy Shaver, Jennifer Worthington. University of South Carolina, Columbia, SC, USA

137 Hepatitis C Prevalence and Risk Factors in Incident Dialysis Patients in 2 Decades

Kimberly R. Bryan, Bryan T. Green, Richard S.Teplick, R.Michael Culpepper. Division of Nephrology, University of South Alabama, Mobile, AL, USA

138 Trends in Renal Ultrasound Imaging in CKD Patients Pre and Post KDOQI Guidelines in the National Veterans Health Affairs (VA) System

Nadia Chaudhri and Stephen Seliger. Baltimore VAMC, Baltimore, Maryland, USA

139 Pilot Study for the Validation of the Modification of Diet in Renal Disease Formula in a Canadian Asian Population

Maryum Chaudhry, Charmaine E. Lok. Toronto General Hospital and the University of Toronto, Toronto, Ontario, Canada

140 Iron-Based Phosphate Binder PA21: Effective and Well Tolerated in CKD Hemodialysis Patients

Michel Chonchol[1], Rudolf P. Wüthrich, Viatcheslav Rakov, Sylvain Gaillard, James A. Tumlin. [1]University of Colorado, CO, USA

141 Expoloring Reasons for Poor Achievement of the Urea Reduction Ratio (URR) Metric for the Quality Incentive Program (QIP)

George N. Coritsidis[1], Anjali Acharya[1], Gregory A. Maglinte[2], Chun- Lan Chang[3], Jerrold Hill[3], Nathan Thompson[1], David J. Harrison2. [1]NYC Health and Hospitals Corporation, New York, NY; [2]Amgen, Thousand Oaks, CA; [3]IMS Health, Plymouth Meeting, PA

142 Response Rates to the KDQOL in Chronic Dialysis Patients
Karen Crampton, Hannah Cayton, Andrea DeKam, Erica Perry, Jami Roberts, Ann Snyder-Manson, Jonathan Segal. University of Michigan Health System, Ann Arbor, MI, USA

143 Body Composition and Diabetic Metabolic Derangements in Chronic Hemodialysis Patients
Serpil M. Deger[2], Lora A. Ryzhkova[3], Edward D Siew[1, 2], Cindy A Booker[2], Mary B Sundell[2], T. Alp Ikizler[1, 2], Adriana M Hung[1,2]. [1]Veterans Administration, Nashville TN; [2]Vanderbilt University Nashville, TN, [2]University of Oklahoma, Oklahoma City, OK, USA

144 Insulin Resistance and Protein Metabolism in Chronic Hemodialysis Patients
Serpil M Deger[2], Mary B Sundell[2], Edward D Siew[1, 2],, Phyllis Egbert[2], Charles D Ellis[2], Feng, Sha[2], T. Alp Ikizler[1,2], Adriana M Hung[1,2]. [1]Nashville VA (TVHS) TN; [2]Vanderbilt University Nashville, TN, USA

145 Patient Centered Advance Care Planning in Dialysis: Phase One
Shiloh D. Erdley, Ion D. Bucaloiu, Evan R. Norfolk, Martha Kitchen, Vonda Hetherington. Danville, PA, USA

146 Association of Serum Sodium Levels with Mortality in Non-Dialysis Dependent Chronic Kidney Disease
Vince Faridani[1,4], Jun L Lu[2], Kamyar Kalantar-Zadeh[3], Csaba P Kovesdy[1,4], [1]Virginia Tech Carilion School of Medicine, Roanoke, VA; [2]Salem Research Institute, Salem VA; [3]Harbor-UCLA, Torrance, CA. [4]Salem VA Medical Center, Salem VA

147 Alignment of Dialysate Sodium to Serum Sodium in Dialysis Patients with Serum Sodium <137 MMOL/L
Linda H Ficociello[1], Len Usvyat[2], Nancy Ginsberg[2], Sandi Moore[1], Lisa Pacelli[2], Patrice Taylor[2], Olga Sergeyeva[1], Terry Sullivan[2], Claudy Mullon[1], Jose Diaz-Buxo[1], Paul Balter2, Peter Kotanko2, Paul Zabetakis2. [1]Fresenius Medical Care NA, Waltham, MA. [2]Renal Research Institute, NY, NY, USA

148 Reduction of Blood Pressure, Post-Dialysis Weight, and Estimated Dry Weight in Hypertensive and Normotensive Patients During a Blood Volume Monitoring Quality Improvement Project
Linda H Ficociello[1], Len A Usvyat[2], Michael Black[1], Patrice B Taylor[2], Heather J Ansede[2], Antoinette M Ordish[2], Paul Balter[2], Paul M. Zabetakis[2], Claudy Mullon[1] and Jose A. Diaz-Buxo[1]. [1]Fresenius Medical Care-NA, Waltham, MA; [2]Renal Research Institute (RRI), New York, NY, USA

149 Disease Management Program Reduces Overall Medical Costs in End-Stage Renal Disease Patients
Eric Franco[1]; Edward Jhu[2]; Jess Parks[1]; Allen R. Nissenson[1]; Stephen McMurray[1] .[1]DaVita Inc, Denver, CO, USA; [2]Milliman, Seattle, WA, USA

150 Simplified Questionnaire Versus SF-36 FORM for Improving Quality of Life (QOL) in Octogenarians and Nonagenarians on Hemodialysis
Manish Gera, Kumar Gaurav, Raj Jeevan. Internal Medicine Nephrology Inc. Terre Haute, IN, USA

151 Improving Chronic Kidney Disease Care in Community Health Centers: Results of a Pilot Project

Karen Goldstein, Eileen Newman, Michael Briggs, Andrew Narva. National Kidney Disease Education Program, Bethesda, MD, USA

152 Effect of Aggresively Driven Intravenous Iron Therapy on Infectious Complications in End Stage Renal Disease Patients on Maintenance Hemodialysis

Isha Gupta[1], Anip Bansal[1], Gagangeet Sandhu[1], Rushi Nayak[1], Shriharsha Kalahalli[1], Eduardo Zouain[1], Rohit Chitale[2], Ira Meisels[1], Germaine Chan[1]. [1]Department of Medicine, St. Luke's - Roosevelt Hospital Center, Columbia University College of Physicians & Surgeons, New York, NY; [2]Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

153 Association Between Cystatin C and Frailty Status in Older Men

Allyson Hart[1], Misti Paudel[1], Brent Taylor[1], Areef Ishani[1], Eric Orwoll[2], Kristine Ensrud[1]. [1]Minneapolis VAMC; University of MN1, Minneapolis, MN; [2]OHSU, Portland, OR, USA

154 Adapting DBT for Medically Non-Adherent Youth with Chronic Kidney Disease

Becky Hashim, Erin Lauinger. Children's Hospital at Montefiore Medical Center, Bronx, NY, USA

155 Evaluation of a Renal Team Learning Module on Working With Young Adults (YA) With Chronic Kidney Failure (CKF)

Julia Herzog[1], Erica Perry[1, 2], Hannah Cayton[2], Brett Plattner[2], Lisa Twining[3], Susan Rees[4] and Kai Zheng[2]. [1]NKFM, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI; [3]University of Toledo Medical Center, Toledo, OH; [4]Alliance for Paired Donation, Inc., Maumee, OH, USA

156 Outcomes of Implementation of A Fluid Management Program in 2 Dialysis Clinics

Carolyn Hupp, R. Michael Culpepper. University of South Alabama, Mobile, AL, USA

157 Health Literacy and Medication Reconciliation in Veterans on Chronic Hemodialysis

Divya Jain, Elisa Gordon, Subhash Popli, Brian Bartle, Michael Fischer. Hines VA Hospital, Chicago, IL, USA

158 Probiotics for Uremia: Extensive Review of the Literature

Koyal Jain, Andre A. Kaplan. University of Connecticut Health Care Center, Farmington, CT, USA

159 Chest X-Rays are Not Reliable for Diagnosing Pneumonia in Hemodialysis Patients

Eric Judd, Mustafa Ahmed, James Harms, Nina Terry, Sushilkumar Sonavane, Michael Allon. University of Alabama at Birmingham, Birmingham, AL, USA

160 Should Grandma Start Dialysis? Hemodialysis Outcomes in Community Dwelling Older Adults

Atipon Kangwanpornsiri, Michelle Malabanan, Scott E. Liebman, Rebeca D. Monk. University of Rochester, Rochester, NY, USA

161 The Impact of Chronic Kidney Disease on *Clostridium Difficile* Infection-Associated Outcomes

Mira Keddis, Sahil Khanna, Larry Baddour, Darrell Pardi, Qi Qian. Division of Nephrology, Gastroenterology and Infectious Diseases, Mayo Clinic, Rochester, Minnesota, USA

162 **Genetic Variaion in *APOL1* Gene is Associated with Chronic Kidney Disease (CKD) in Nigerians**

[1]Holly Kramer, [1]Bamidele O. Tayo, [2]Babatunde Salako, [3]Omri Gottesman, [2]Adesola Ogunniyi, [3]Erwin P. Bottinger, [1]Richard S. Cooper. [1]Loyola Medical Center, Maywood, IL; [2]University of Ibadan, Ibadan, Nigeria; [3]Mount Sinai School of Medicine, New York, NY, USA

163 **Change in SF-36 Summary Scores & Dialysis Survival**

Eduardo Lacson, Jr., Nien-Chen Li, Shu-Fang Lin, Sandie Guerra-Dean, Michael Lazarus, Raymond Hakim, Franklin Maddux. Fresenius Medical Care, North America, Waltham, MA, USA

164 **Chronic Pain Management Program in a Dialysis Unit – Nephrologist & Pharmacist Collaboration**

Emmelia Lau, Bharat Nathoo, Grace Leung, Henry Chen. York Central Hospital, Richmond Hill, Ontario, Canada

165 **Longitudinal Evaluation of Pain Management in Hemodialysis Patients**

Marianna Leung, Beverly Jung, Fong Huynh, Tinnie Chung, Stan Marchuk, Mercedeh Kiaii, Clifford Chan Yan, Ronald Werb, Alexandra Romann, Monica Beaulieu. St. Paul's Hospital, Providence Health Care, Vancouver, BC, Canada

166 **Patterns and Predictors of Mortality in the Months After Initiation of Dialysis in Incident Hemodialysis Patients**

Lilia R Lukowsky, Leeka Kheifets, Onyebuchi A Arah, Allen R Nissenson, Kamyar Kalantar-Zadeh. Harold Simmons Center, Harbor-UCLA, Torrance, CA, Dept Epidemiology, UCLA, DaVita, CA; Salem VA MC, Salem, VA, USA

167 **Translation and Cultural Adaptation of the Screening for Occult Renal Disease (SCORED) Questionnaire to Brazilian Portuguese**

Edson Magacho, Elaine Paula, Shalliny Silveira, Shirlei Araújo, Tassia Costa, Márcio Pinto, Natália Fernandes, Luiz Carlos Ferreira Andrade, Marcus Gomes Bastos. Universidade Federal de Juiz de Fora, Juiz de Fora, Minas Gerais, Brazil

168 **The Effects of Probiotics and Dose Escalation in Patients with ESRD**

Varun Malhotra, Bonita Falkner, Stephanie Deloach. Thomas Jefferson University, Philadelphia, PA, USA

169 **Frailty in Chronic Kidney Disease: Prevalence and Associated Risk Factors**

Henrique Novais Mansur, Marcus Gomes Bastos. Federal University of Juiz de Fora, MG, Brazil

170 **Associations Between Access to Care and Awareness of Chronic Kidney Disease**

A Shah,[1] LF Fried,[2] S Chen,[3] Y Qiu,[3] S Li,[3] KL Cavanaugh,[4] KC Norris,[5] AT Whaley-Connell,[6] PA McCullough,[7] and R Mehrotra.[1, 1]Los Angeles Biomedical Rsrch Instit at Harbor-UCLA, Torrance, CA; [2] VA Pittsburgh Healthcare System, Pittsburgh, PA, [3]Chronic Disease Rsrch Grp, Minneapolis Medical Rsrch Fdtn, Minneapolis, MN, [4] Dept of Med, Vanderbilt U, Nashville, TN; [5] CR Drew U of Med and Science, Los Angeles, CA;[6] U of MO-Columbia Sch of Med and Harry S. Truman VA Hospital, Columbia, MO; and [7]St. John Providence Health System, Providence Park Heart Instit, Novi, MI.

171 **Lack of Knowledge Regarding Women's Health Issues in Kidney Patients – Results of a National Survey of Kidney Disease Professionals**
Mitton E[1], Yoshiuchi E[2], Markell MS[1]; SUNY Downstate Medical Center[1], Brooklyn, NY; NKF Serving Greater NY[2]

172 **Serum Alkaline Phosphatase (ALKP) Predicts Long-Term Survival In Hemodialysis (HD) Patients (PTS)**
Neal Mittman, Brinda Desiraju, Oluwatoyin Akinrinade, Jyotiprakas Chattopadhyay, Morrell M. Avram. Avram Division of Nephrology, S.U.N.Y. Downstate Medical Center UHB at Long Island College Hospital, Brooklyn, New York, USA

173 **Effect of Biosynthetic Dialyzer Membrane on Platelet Count**
Rabih Nasr, Chadi Saifan, Suzanne El-Sayegh. Nephrology Division, Staten Island University Hospital, Staten Island, NY, USA

174 **The Effects of a Skilled Physical Therapy (PT) Intervention on Functional Outcome Measures in Patients with ESRD on Hemodialysis: Results of the Prohealth & Fitness Renal Rehabilitation Program**
James Nussbaum, Ralph Garcia. Prohealth & Fitness Pt Ot New York, NY, USA

175 **Coordinated Interdisciplinary Patient Education Calendar**
Jessica Phipps and Nanette Francis, Fresenius Medical Care, So. Plainfield, NJ, USA

176 **CKD Among Patients Enrolled in the Houston West Nile Virus Cohort**
Amber Podoll, Melissa Nolan, Anne Hause, Katherine McCrary, Kevin Finkel, Kristy Murray. University of Texas Health Science Center, Houston, TX USA

177 **Incorporating Supportive Care within Chronic Disease Management: The Renal End-Of-Life Initiative at Providence Health Care**
Wallace Robinson, Marianna Leung. St. Paul's Hospital, Providence Healthcare, Vancouver, BC, Canada

178 **Characteristics of Patients Most Likely to Have a Missed Dialysis Session**
Jaime Rubin[1], T. Christopher Bond[1], Steven Wang[1], Alex Yang[2]. [1]DaVita Clinical Research, Minneapolis, MN, USA; [2]Affymax, Palo Alto, CA, USA

179 **Quadriceps and Patellar Tendon Rupture in ESRD Patients with Severe Hyperparathyroidism**
Peter Bryan Schrier, Prasanth Krish, Hitesh H. Shah. Division of Kidney Diseases and Hypertension, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

180 **Baseline Characteristics of Patients Enrolled in the Phase III EPPIC (Evaluating Prevention Of Progression In Chronic Kidney Disease) Studies**
Gerald Schulman[1], Guiseppe Remuzzi[2], Tomas Berl[3], Gerald Beck[4], Eberhard Ritz[5]. [1]Vanderbilt Univ School of Medicine, Nashville, TN, US; [2]Mario Negri Institute for Pharmacological Research, Bergamo, Italy; [3]Univ of Colorado Health Sciences Center, Denver, CO, US; [4]Cleveland Clinic, Cleveland, OH, US; [5]Univ of Heidelberg, Heidelberg, Germany

181 Improvement of the Removal of Medium-Sized Molecules in Pre-Dilutinal Hemodiafiltration by Use of a Very High Permeabilitydialyser, Xevonta: Study on 16 Patients

P Seniuta, T Baranger, F Bergé, V Drouillat, C Frangié, E Rosier. Hémodialyse, PBNA, Bordeaux, France

182 Serum Bicarbonate and Survival in Peritoneal Dialysis (PD): Comparison with Hemodialysis (HD)

Tania Sharma[1], Kamyar Kalantar-Zadeh[1], Miklos Z Molnar[1], Allen Nissenson[2], Mahesh Krishnan[2], Rajnish Mehrotra[1]. [1]Harbor-UCLA Med. Cntr, Torrance, CA; [2]DaVita, El Segundo, CA, USA

183 Use of Heparin-Free Maintenance Hemodialysis and its Clinical Correlates in The United States

Jenny I. Shen, Aya A. Mitani, Wolfgang C. Winkelmayer. Stanford University School of Medicine, Palo Alto, CA, USA

184 Crit-Line Monitor Use in Incident Hemodialysis Patients Improves Dry Weight and Adequacy, While Reducing Epoetin Alfa Dose: A Propensity Score Matched Study

Scott Sibbel[1], Linda H. Ficociello[2], Michael Black[2], Mayuri Thakuria[2], Claudy Mullon[2], Jose Diaz-Buxo[2], Thomas Alfieri[1]. [1]DaVita Clinical Research, Minneapolis, MN; [2]Fresenius Medical Care, Waltham, MA, USA

185 Hospitalization of Chronic Dialysis Patients at Children's Hospitals, 2006-2010

Tamar Springel, Benjamin Laskin, Susan Furth. The Children's Hospital of Philadelphia, Philadelphia, PA, USA

186 Relationship of Urine Albumin to Urine Total Protein in Patients with Glomerular and Non-Glomerular Diseases

Jennifer Tan, Nasir Malik, Mamoon Rasheed, Leroy Herbert, Herman Anderson, Jen-Tse Cheng. Harlem Hospital Center, New York, NY, USA

187 Survival of HCV and HIV Infected Hemodialysis Patients in an Inner City Dialysis Center

Jennifer Tan, Mamoon Rasheed, Leroy Herbert, Herman Anderson, Jen- Tse Cheng. Harlem Hospital Center, New York, NY, USA

188 Serum Anion Gap as Another Marker of Malnutrition in Maintenance Hemodialysis Patients

Kawin Tangdhanakanond, Sayed Kazi, Daranee Chewaproug, Eric J. Bloom, and Rasib Raja. Department of Nephrology, Albert Einstein Medical Center, Philadelphia, PA, USA

189 Chronic Kidney Disease Surveillance for the United States: A U.S. Centers for Disease Control and Prevention Initative

Anca Tilea, Elizabeth Hedgeman, Seena Nair, Meda Pavkov, Sharon Saydah, Neil Powe and Rajiv Saran for the CDC CKD Surveillance System. University of Michigan, Ann Arbor, MI; University of California, San Francisco, CA; Centers for Disease Control and Prevention, Baltimore, MD, USA

190 **Preemptive Transplant Knowledge and Decision-Making: Impact of a Community CKD Education Class**
Amy Waterman, Julie Brown, Beth Witten, Valerie Goodnight, Carmen Mallery, Emily Schenk, Christina Goalby, Lisa Frazier, Leanne Peace, Shelley Hyland; Washington University School of Medicine, St. Louis, Missouri; Missouri Kidney Program, Columbia, Missouri, USA

191 **Daily Activity Energy Expenditure is Not Associated with Estimated Energy Requirements in Men and Women with Stage 3-5 Chronic Kidney Disease**
Sarah L. West[1,2], Sarah D. Kosa[2], Jane Paterson[2], Charmaine E. Lok[1,2]. University of Toronto[1], Toronto General Hospital[2]; Toronto, Ontario, Canada

192 **Must Non-Ionic Contrast Media Be Removed Immediately After a Radiographic Procedure in In-Patients with End-Stage Renal Disease?**
Neshathari Wijeyakuhan, Wah Wah Htun, Aswini Mandhadi, Rajnish Khillan, Dena Zedan, George Fernaine, and John B. Pannone, Lutheran Medical Center, Brooklyn, NY, USA

193 **Implications of Being a Methicillin Resistant Staphylococcus Aureus (MRSA) Carrier for Hospitalized Chronic Hemodialysis Patients**
Lee Ying Yeoh, Grace Tan, Terina Seow. Khoo Teck Puat Hospital, Alexandrahealth, Singapore

194 **Nutrition and Hydration Status in Predialysis and Dialysis Patients by Multifrequency Bioimpedance Spectroscopy**
Somchai Yongsiri, Pakapan Dinchuthai, Suriya Prongnamjai, Rachneeporn Cheunsuwan, Jiranuch Thammakumpee, Siriporn Tangjaturonrasami, Pongphan Jantatero, Surang Nantapiras, Patcharin Nannar, Nattaphon Annanon. Burapha University Hospital, Chonburi, Thailand

195 **Acute Kidney Injury from Abscence of Renal Flow Secondary to Ascites Recognized By Doppler Ultrasonography**
Ladan Zand, Qi Qian. Mayo Clinic, Rochester, Minnesota, USA

196 **The Effects of Ultrafiltraion Volume on "Recovery Time" in Chronic Hemodialysis Patients**
Joseph G. Zhao, Nishell Jungra, Louis A. Carrera, Maria V. DeVita, Michael F. Michelis, Division of Nephrology, Lenox Hill Hospital. Upper-East Side Dialysis Center, NY, NY, USA

197 **Death Within 90 Days: Comparison of Mortality Rate Between Hemodialysis and Peritoneal Dialysis Patients**
Sijie Zheng, Lue-Yen Tucker, David Law, Juan Ordonez. Kaiser Oakland Medical Center, Division of Research, Oakland, California, USA

Diabetic Nephropathy

198 **Effects of Dual Blockade of the Renin Angiotensin System (RAS) in Diabetic Kidney Disease (DKD): A Systematic Review and Meta-Analysis**
Jacqueline T. Pham[1], Brian P. Schmitt[1,2], David J. Leehey[1,2]. [1]Edward Hines Jr.VA Hospital, Hines, IL, [2]Loyola University , Maywood, IL USA

199 **Design and Rationale for Randomized, Double-Blind, Placebo-Controlled Phase 2 Study to Evaluate the Safety and Efficacy of CTP-499 in Patients with Diabetic Nephropathy (DN)**
LuAnn Sabounjian, James Shipley, Virginia Braman, Mark Harnett, Lijun Wu, David Turnquist, Philip Graham. Concert Pharmaceuticals, Lexington, MA, USA

200 **Effect of Losartan and Spironolactone on Lipoprotein Metabolism in Diabetic Nephropathy**
Anand Srivastava, Beverley Adams-Huet, Gloria L. Vega, Robert D. Toto. UT Southwestern Medical Center Dallas, Texas, USA

201 **The Urine Microalbumin Testing Rate in Patients with Type II Diabetes Mellitus (Type II DM) at an Academic Community Health Center: A Retrospective Analysis**
Dhavalkumar Sureja, Ghada Mitri. Easton Hospital, Drexel University Affiliate, Easton, PA, USA

Electrolyte and Acid Base Abnormalities

202 **Fatal Hypermagnesemia Resulting from Therapeutic Doses of Over the Counter Magnesium Containing Laxatives and Antacids**
Muhammad Rizwan Afzal, Nicholas Pleat, Tahir Sajjad. Good Samaritan Hospital, Cincinnati, USA

203 **Pseudohyperkalemia in Extreme Leukocytosis**
Mohini Alexander, Hitesh Patni, Michael Gitman. Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

204 **Pseudoinfarction Dialyzable Currents of Injury**
Ricardo Baltodano, Chandandeep Takkar, Nasim Mastouri, Hasan Salameh, Shilpa Rastogi. University of Texas Medical Branch, Galveston, Texas, USA

205 **Psuedohyperkalemia with Fist Clenching: A Graded Phenomenon**
David Bennett[1], Maitreyee Gupta[2], Lawrence S. Weisberg[2]. [1]Department of Medicine, New York Hospital Cornell Weill Medical Center, New York, NY; [2]Division of Nephrology, Department of Medicine, Cooper Medical School of Rowan University, Cooper University Hospital, Camden, NJ, USA

206 **A Case of Gitelman Syndrome with a Novel Mutation**
Sanjay Chaudhary, Qi Qian. Mayo Clinic, Rochester, MN, USA

207 **Hyponatremic Hypertensive Syndrome**
Victor Fayad, Timothy Muchayi, Feras Helou, Omid Bakhtar, Irfan Omar, Gregory Berger. Sinai-Grace Hospital/DMC, Detroit, Michigan, USA

208 **Virtual Patients to Teach Electrolyte Disorders**
Laura Ferreira-Provenzano, Kristine Schonder, Hoda Kaldas. University of Pittsburgh, School of Medicine and School of Pharmacy, Pittsburgh, PA, USA

209 **Hyponatremia - A Rare Complication of Gitelman's Sydrome**
Anirban Ganguli, Judith H Veis. Washington Hospital Center, Washington, DC, USA

210 **Hypercalcemia: An Unusual Presentation of Uterine Leiomyoma**
Amarinder Garcha, Purva Gumaste, Sujith Cherian, Apurv Khanna. SUNY Upstate Medical University, Syracuse, NY, USA

211 **Tizanidine: A Cause of Hypokalemia**
Georges Nakhoul, Amr El Toukhy, James Simon. Cleveland Clinic, Cleveland, OH, USA

212 **Extreme Hypocalcemia Associated with Denosumab**
Arkadiy Pinkhasov, Kiran Goli, Nandheesha Hanumanthappa, Rouzbeh Afsari, Michael Germain, Gregory Braden. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA, USA

213 **Carbon Monoxide Poisoning, Prolonged QTC Syndrome with Hypokalemia: Mystery Revealed**
Rupesh Raina, Katherine M Dell, Mark Dugan, Lisa Metz, Beth A Vogt. Cleveland, Ohio, USA

214 **Hyponatremia with Hyperkalemia in Infancy Presenting as a Life-Threatening Occurrence: An Electrolyte Potpourri**
Rupesh Raina, Jonathan H Ross, David N Kenagy. Cleveland, Ohio, USA

215 **Intravenous Immunoglobulins for Osmotic Demyelination Syndrome (ODS)**
Tulsi Sharma, Pearl Dy, Arnold M. Moses. Upstate Medical University, Syracuse, NY, USA

216 **Double Trouble: Safely Correcting Hyponatremia with Potassium and Desmopressin**
Lonika Sood, Jonathan Bress. Rochester General Hospital, Rochester, New York, USA

217 **Pre-Treatment of Formula or Expressed Breast Milk with Sodium Polystyrene Sulfonate (Kayexalate) as a Treatment for Hyperkalemia in Infants with Acute Or Chronic Renal Insufficiency**
Kirsten Thompson, Joseph Flynn; Seattle Children's Hospital, Seattle, WA, USA

Glomerular Diseases

218 **Relapsing Acute Kidney Injury Associated with Pegfilgrastim**
Swati Arora, Arpit Bhargava, Barbara Clark. Allegheny General Hospital, Pittsburgh, PA, USA

219 **Soliris – Is this a New Sunrise for Patients with Atypical Hemolytic Uremic Syndrome?**
Saritha Boyapati[1], Ramya vejella, Peter Van[2], Mary Buffington[2] [1]Internal Medicine LSU Health Sciences Center, Shreveport, LA; [2]Nephrology, LSU Health Sciences Center, Shreveport, LA

220 **Urinary Loss of Viable Podocytes is Associated with Bevacizumab-Induced Thrombotic Microangioapthy**
Juan C. Calle, Iasmina M. Craici, Steve Wagner, Aminah Jatoi, Joseph Grande, Vesna Garovic. Mayo Clinic, Rochester, MN, USA

221 **Acute Kidney Injury Secondary to Type I Cryoglobulinemia Associated with Diffuse Large B-Cell Lymphoma: Rare Presentation with Unique Renal Pathology**
Kiran Goli, Arkadiy Pinkhasov, Ranjit Dhelaria, Jonathan Freeman, Barbara Greco. Baystate Medical Center, Springfield, MA, USA

222 **Puzzling Case of Renal Failure Regression After Tumor Resection in a Hepatitis C Associated Cryoglobulinemic MPGN**
Vineet Gupta, MD, Amit Ladani, MD Marappa Gowdner, MD, Maureen Lawlor, MD, FASN, UPMC Mercy, Pittsburgh, PA, USA

223 **Review of Glomerular Pathology in NYC Hispanics Comparing Native American and African Ancestry**

Sudhanshu Jain[1], Salwa Rhazouani[1], George Coritsidis[1], Ayesha Shaikh[2], Isaiarasi Gnanasekaran[2], Neha Garg[2], Sandra Vargas[2]. Elmhurst Hospital Center[1], Lincoln Medical Center New York, NY, USA[2]

224 **A Case of Hepatitis B Causing Type III MPGN Pattern Injury During Pregnancy**

A Kataria[1], J Chevalier[2], S Seshan[2], Salvatore S[2], KD Jhaveri[1] [1]Nephrology and Pathology, Hofstra North Shore LIJ School Of Medicine; [2]Weill Cornell Medical Center, NY, USA

225 **Kimmelstiel Wilson Glomerulosclerosis and Proliferative Retinopathy without Diabetes Mellitus**

Suzi Kochar, Wah Wah Htun , Rajnish Khillan, Orlando Suarez, Adib Alhaddad. Lutheran Medical Center, Brooklyn, NY, USA

226 **Collapsing Glomerulopathy Following Treatment of Rheumatoid Arthritis with Adalimumab, an Anti-TNF Alpha Monoclonal Antibody**

Sarath Kolluru, Waseem Ahmed, Negin Misaghian. Brody School of Medicine, East Carolina University, Greenville, North Carolina, USA

227 **Adrenocorticotropin Hormone (ACTH) for the Treatment of Primary Focal Glomerulosclerosis (FSGS)**

Richard A Lafayette, Christa Root, Kshama Mehta. Division of Nephrology, Stanford University, Palo Alto, CA, USA

228 **Occult Renal Involvement in Polyarteritis Nodosa: The Role of Renal Angiography**

Rakesh Malhotra[1], Zaher Hamadeh[2], Anjali Acharya[2], Naheed Ansari[2], [1]James J Peters VA Medical Center, Mount Sinai School of Medicine; [2]Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

229 **Recurrence of Immunotactoid Glomerulonephritis in the Native Kidney that Improved with Fludarabine Therapy**

Suchita Mehta[1], Mark Samarneh[2], Militza Kiroycheva[2], John Pepe2. [1]Department of Medicine, Staten Island University Hospital, Staten Island, NY; [2]Department of Nephrology, Staten Island University Hospital, Staten Island, NY, USA

230 **Collapsing Glomerulopathy During Pregnancy**

Fernando Ottino, Ashish Verma, Konstantin Abramov. University of Massachusetts Medical School, Worcester, MA, USA

231 **Sargramostim Excacerbates A Clinicaly Silent Cryoglobulinemic Glomerulonephritis**

Alfredo Peguero, Reji Nair, Craig Courville, Jorge Lamarche James A. Haley. Tampa VA Hospital, University of South Florida, Tampa USA

232 **Treatment of Fibrillary Glomerulonephritis with Rituximab**

Michaela Restivo, Pietro A. Canetta, Jai Radhakrishnan, Gerald B. Appel, Andrew S. Bomback. Department of Medicine, Division of Nephrology, Columbia University College of Physicians and Surgeons, New York, NY, USA

233 **Negative Double Stranded DNA and Anti-Smith Antibodies in Severe Lupus Nephritis**
Gagangeet S. Sandhu, Anip Bansal, Aditi Ranade, Isha Gupta, James P. Jones, Steven D. Smith. St. Luke's - Roosevelt Hospital Center, Columbia University College of Physicians & Surgeons, NY, NY, USA

234 **Obesity and Proteinuria!!**
Anila P Sankar, Zohreh Soltani. Department of Internal Medicine, Section of Nephrology, LSUHSC, New Orleans, USA

235 **Unusual Presentation of Collapsing Focal Segmental Glomerulosclerosis Induced by Griseofulvin**
Neetu Sharma. University of Cincinnati, Ohio, USA

236 **Non-Renal Hypoalbuminemia Masking Nephrotic Syndrome in a Patient with SLE-Like Mixed Connective Tissue Disease**
Donjeta Sulaj, Lin Lwin, Hugo Villanueva, Jinil Yoo. Nephrology, Montefiore Medical Center North, Bronx, NY, USA

237 **Microscopic Polyangiitis After Bilateral Mastectomy and Saline Breast Implantation**
Judy Tan, Anjali Acharya, Fuad Spath, Rakesh Malhotra, Zaher Hamadeh. Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA; North Central Bronx Hospital Bronx, NY, USA

238 **IgA Dominant Acute Post Infectious Glomerulonephritis Successfully Treated with Corticosteroids**
Maria R.Valcarcel , Kumar Dinesh , Burl R Don. University of California Davis, Sacramento, CA, USA

239 **Increasing Incidence in PAUCI-Immune Glomerulonephritis in a Community Hospital**
Anita Zaidi, Jordan Rosenstock. Renal Division, Lenox Hill Hospital NY, NY USA

Hereditary Kidney Disease/PKD

240 **ESRD in Pregnancy Secondary to Atypical Hemolytic Uremic Syndrome Due to Thrombomodulin Mutation**
Rosemary Nwoko, Amy Williams and Vesna Garovic. Mayo Clinic Rochester, MN USA

241 **Hearing Loss, Persistent Microscopic Hematuria and Protienuria: Think Beyond the Box**
Rupesh Raina, Gretta H Jacobs, Lisa Metz, Katherine M Dell, Cleveland, Ohio, USA

242 **Coexistence of Alport Syndrome and Preeclampsia**
Chadi Saifan, Rabih Nasr, Marie Abdallah, Mayurathan Kesavan, Suzanne El-Sayegh, Edward Epstein. Staten Island University Hospital, Staten Island, NY, USA

243 **Steroid Resistant Nephrotic Syndrome in a Patient with Corneal Opacities and Low HDL: A Case Of Lecithin:Cholesterol Acyltransferase Deficiency**
Grace Snyder, Rupesh Raina, Rachel Fissell, Surafel Gebreselassie. Cleveland Clinic, Cleveland, Ohio, USA

Home Dialysis - Home Hemodialysis/Peritoneal Dialysis

244 **Risk Factors Associated with Return to Center Among Home Hemodialysis Patients**
Luis Bent-Shaw, Margaret Yu, Courtney Lyles, Bessie Young. University of Washington Medical Center, Seattle, Washington, USA

245 **Neisseria Sicca Peritonitis in a Patient on Chronic Peritoneal Dialysis; A Rare Cause**
Subhraleena Das, Sujith V Cherian, Wasim A Hamarneh, Waleed Javaid, Stephen Knohl. Department of Internal Medicine,SUNY Upstate Medical University, Syracuse, NY, USA

246 **Comparative Mortality-Predictability for PTH and Alkaline Phosphatase in Peritoneal Dialysis Patients**
Kamyar Kalantar-Zadeh, Miklos Z Molnar, Uyen Duong, Joshua J. Zaritsky, Isidro B. Salusky, Csaba P Kovesdy, Rajnish Mehrotra. Harold Simmons Center, Harbor-UCLA, Torrance, CA; Salem VAMC, Salem, VA; UCLA, Los Angeles, CA, USA

247 **Therapy Retention Experience of a Large Home Short Daily Hemodialysis (SDHD) Center**
Michael Kraus, Catherine Cox, Yoojin Lee. IU Health, Indianapolis, IN; Tufts University, Boston, MA, USA

248 **Improvement in Peritonitis Rates with the Use of Sodium Hypochlorite**
Tracey Milligan, Patrick Cha, John Moran. DaVita Inc., Denver, CO, USA

249 **Characteristics of Patients Who Survived on Peritoneal Dialysis >1Year**
Manpreet Samra, Jason Jones and Victoria Kumar. Kaiser Permanente, Los Angeles, CA, USA

250 **Relative Risks of Death and Hospitalization in Hemodialysis Patients Enrolled in Davita Rx**
Eric Weinhand, Thomas Arneson, Wendy St. Peter. Chronic Disease Research Group, Minneapolis, MN, USA

251 **Needs, Concerns, Strategies, and Advice of Daily Home Hemodialysis Caregivers**
Janet L. Welch[1], Tamilyn Bakas[1], Charlotte Thomas-Hawkins[2], Susan McLennon[1], Brian Decker[1], Doris M. Byers[1], Catherine Monetti[2]. [1]Indianapolis, IN; [2]Newark, New Jersey, USA

Hypertension

252 **New Onset Hypertension Following Abrupt Discontinuation of Citalopram**
Walter Astorne, Sandra Herrmann, Qi Qian. Mayo Clinic, Rochester, MN, USA

253 **Arterial Waveforms in Prehypertension: Effect of the Beta-Adrenergic Antagonist Nebivolol**
Jason T. Davis, Srikrishna Khandrika Maple Fung, Milos M. Milic, Daniel T. O'Connor. University of California, San Diego. San Diego, CA, USA

254 **Autonomic and Hemodynamic Origins of Prehypertension: Central Role of Heredity**
Jason T. Davis, Fangwen Rao, Dalal Naqshbandi, Maple M. Fung, Kuixing Zhang, Andrew J. Schork, Caroline M. Nievergelt, Michael G. Ziegler, Daniel T. O'Connor. University of California, San Diego. San Diego, CA. USA

255 **Blood Pressure Management in Patients with Chronic Kidney Disease at a Teaching Hospital Ambulatory Clinic**
Nischala Dhanekula, Leela Mary Mathew. Unity Health System, Rochester, New York, USA

256 **Renal Vein Renin Levels in Atherosclerotic Renal Artery Stenosis (ARAS) During Ace Inhibitor/ARB Rx**
Sandra M.S. Herrmann, Monika Gloviczki, Lilach Lerman, Stephen Textor. Mayo Clinic, Rochester, MN, USA

257 **Association of Urinary Sodium-To-Potassium Ratio with Obesity and Total Percent Body Fat**
Nishank Jain; Essam F. Elsayed; Abu Minhajuddin; S. Susan Hedayati. University of Texas Southwestern Medical Center at Dallas; Veterans Affairs North Texas Health Care System, Dallas, Texas, USA

258 **Bilateral Nephrectomies and Hypertension Control in Adult Polycystic Kidney Disease Patients Before and After Renal Transplantation**
Sarath Kolluru, Vivek Miyani, MJ Barchman. East Carolina University Brody School of Medicine Greenville, NC, USA

259 **Aldosterone Blockade Improves Endothelial Function in Obese Patients with the Metabolic Syndrome**
Julio Cesar Moraes Lovisi, Danielle Guedes Andrade Ezequiel, Rogério Baumgratz de Paula,Thaís Chehuem Bicalho, Fernanda Castro Barros, Mônica Barros Costa. NIEPEN-Federal University of Juiz de Fora, Minas Gerais, Brazil

260 **Refractory Hypertension Successfully Managed by Targeted Therapy**
Rosemary Nwoko and Qi Qian. Mayo Clinic, Rochester, MN, USA

261 **A Rare Case of Incidentally Discovered Urinary Bladder Paraganglioma**
Anca Rafiroiu, Emmanuel Bravo. Department of Nephrology and Hypertension, Cleveland Clinic Foundation, Cleveland, OH, USA

Nutrition

262 **Dietary Potential Renal Acid Load (PRAL) Varies By Sociodemographics and CKD Status Among U.S. Adults**
Tanushree Banerjee[1], Deidra Crews[2], Donald Wesson[3], Rajiv Saran[4], Anca Tilea[4], Desmond Williams[5], Nilka Burrows[5], Neil Powe[1]. [1]UCSF, San Francisco, CA; [2]Johns Hopkins University, Baltimore, MD; [3]Texas College of Medicine, Texas; [4]University of Michigan, Ann Arbor, MI; [5] CDC, Atlanta, GA, USA

263 **Short Term Effect of Nutrition Intervention on Risk Factors for the Metabolic Syndrome**
Gina Bayless, Genevieve Popp, Christina Speiser, Alison Steiber. University Hospitals Case Medical Center, Cleveland, Ohio, USA

264 **Implementation of a "Getting Better" Health Awareness Patient Education Initiative Using Talking Control Support Therapy in Chronic Hemodialysis Results in Improved or Stabilized Laboratory Values**
Judith Beto, Katherine Schury, Mary Nicholas, Nora Moravcik, Bessie Baldovino, Vinod Bansal. Loyola University Health Systems Dialysis, Maywood, Il, USA

265 **Food Preparation and Consumption Habits in Urban Hemodialysis Patients**
Premila Bhat[2], Ashley C. Vourakis[1], Conrad R. Mitchell[2]. [1]Bronx High School of Science, Bronx NY [2]Atlantic Dialysis Management Services, LLC. Ridgewood NY, USA

266 **Health Literacy is Associated with Higher Serum Phosphorus Levels in Urban Hemodialysis Patients**
Ashley C. Vourakis[1], Conrad R. Mitchell[2], Premila Bhat[2]. [1]Bronx High School of Science, Bronx NY; [2]Atlantic Dialysis Management Services, LLC. Ridgewood NY, USA

267 **Renal Buddy: A Fast Food Nutrition Web Application for Patients with Chronic Kidney Disease**
Daniel Colella[1], Janeen León[1, 2], Christopher Ouimet. [1]Case Western Reserve University, [2]MetroHealth Medical Center, Cleveland, Ohio, USA

268 **Patient-Organized Egg Club Improves Patient Education and Social Network**
Linda Feder, Jo Mancinelli, Helen Elivera, Ziauddin Ahmed. Dialysis Clinic Inc, Philadelphia and Drexel University College of Medicine, Philadelphia, PA, USA

269 **Predictors of Measured Energy Expenditure in Maintenance Hemodialysis Patients: A Pilot Study**
Wai Yin Ho,[1] Laura Byham-Gray,[1] Scott Parrott,[1] Mary B. Sundell,[2] Alp Ikizler[2]. [1]University of Medicine & Dentistry of New Jersey, Newark & Stratford, NJ, [2]Vanderbilt University Medical Center, Nashville, TN, USA

270 **Development of a Nutritional Status Assessment Tool in a Hemodialysis Population**
Annie Lin, Kathryn S. Keim, Diane Sowa, Kelly Roehl, Stephen Korbet, Sheri Floramo-Korbet. Rush University Medical Center, Circle Medical Management, Chicago, Illinois

271 **A Self-Management Approach to Developing a Potassium Education Tool**
Rachel Linzon, Josie Caruso-Ditta, Marla McKerracher. Richmond Hill, Ontario, Canada

272 **Development of the Kidney Community Kitchen Website – Moving From Nutrients to Food**
June Martin, Melissa Atcheson, Nadine Valk. Kidney Foundation of Canada, Montreal, Canada

273 **The Relationship Between Body Composition and Inflammation in Hemodialysis (HD) Patients (PTS)**
Neal Mittman, Brinda Desiraju, Parampreet Ghuman, Prinyanka Singh, Jyotiprakas Chattopadhyay, Morrell M. Avram. Avram Division of Nephrology, S.U.N.Y. Downstate Medical Center UHB at Long Island College Hospital, Brooklyn, New York, USA

274 **Dietary Protein and Energy Intake of Adults With Chronic Kidney Disease From Population Estimates Within Nhanes**
Linda W Moore[1], Laura Byham Gray[2], J Scott Parrott[2], Diane Rigassio Radler[2], A Osama Gaber[1]. [1]The Methodist Hospital, Houston TX , [2]Univ of Medicine and Dentistry of New Jersey, Newark, NJ, USA

275 **Does DM or Transporter Type Influence Response to IPN?**
Eileen Moore, Gerald VanBolt. Pentec Health Inc. Boothwyn, PA, USA

276 **Nutrition Focused Physical Examination Practices of RD Members of the Renal Practice Group and/or the Council on Renal Nutrition**
Lynn K. Munson,[1,2] Laura D. Byham-Gray,[2] Diane Radler[2] and J. Scott Parrott[2]. [1]Kidney Specialists of Minnesota, Brooklyn Center, MN, [2] University of Medicine & Dentistry of New Jersey, Newark and Stratford, NJ, USA

277 **Treatment of Uremic Pruritis with Oral Ergocalciferol: A Randomized Controlled Trial**
Shayan Shirazian, Mary Schanler, Nasreen Bagwan, Maanvi Kumar, Nikhil Sood, Nobuyuki Miyawaki, Steven Fishbane. Winthrop University Hospital, Mineola, New York, USA

278 **Predictors of Adherence to Technology-Based Dietary Self-Monitoring**
Susan Stark[1], Beth Hall[1], Ann Steenkiste[2], Maya Clark[1], Beth Piraino[1], Linda Snetselaar[3], Mary Ann Sevick[1,2]. [1]University of Pittsburgh, [2]VA Pittsburgh Healthcare System, Pittsburgh PA, [3]University of Iowa, Iowa City, IA, USA

279 **Nutrition Diagnoses Related to Vitamin D Status in Hemodialysis Patients**
Alison Steiber, Andrea Coffman, Janeen Leon, Lilian Cuppari. Case Western Reserve University, Cleveland OH, Federal University of Sao Paulo, Sao Paulo, Brazil

Transplantation

280 **Adenoirus Infection in Post Kidney Transplant Patients: Report of 2 Cases**
Abhishek Agarwal, Richa Pandey, Sundararaman Swaminathan. University of Arkansas for Medical Sciences Bilateral Diaphragmatic Paralysis, Little Rock, AR, USA

281 **Do We Need to Wait 2 Years Before Allowing Kidney Transplant in Patients with Prostate Cancer?**
Vivek Agarwal, Thet Zaw, Irtza Sharif, Sadanand Palekar, Shaista Hussain. Department of Renal Transplant, Newark Beth Israel Medical Center, Newark, NJ, USA

282 **A Comparison Between Kidney Allograft Biopsies Performed By Nephrologists and Interventional Radiologists**
Irfan Ahmed, Dimal Shah, Hiral Desai, Sandeep Aggarwal, M. W. Khattak, Karthik Ranganna, Alden Doyle, Ziauddin Ahmed. Drexel University College of Medicine, Philadelphia, USA

283 **A Cost Comparison Between Kidney Allograft Biopsies Performed by Nephrologists and Interventional Radiologists**
Irfan Ahmed, Hiral Desai, Sandeep Aggarwal, Dimal Shah, Alden Doyle, Karthik Ranganna, Ziauddin Ahmed. Drexel University College of Medicine, Philadelphia, USA

284 **Peer Mentoring to Increase Deceased Organ Donation Among ESRD Patients**
Ann Andrews[1], Holly Jenkins-Riley[3], Allyce Haney[1], Remonia Chapman[4], Jerry Yee[2,3], Ken Resnicow[5]. NKF of Michigan[1], Ann Arbor , MI, USA, Henry Ford Health System[2], Detroit, MI, USA, Greenfield Health Systems[3], Bingham Farms, MI USA, Gift of Life Michigan[4], Ann Arbor, MI, USA, School of Public Health, University of Michigan[5], Ann Arbor, MI, USA

285 Importance of Ambulatory Blood Pressure Monitoring in Pediatric Renal Transplant Recipients

Elizabeth Anyaegbu, Paul Hmiel, Michael Seifert. Washington University in St Louis, Missouri, USA

286 Does Atherosclerosis Found in the CT Angiogram of Abdomen and Pelvis Have Any Diagnostic Value for Coronary Atherosclerotic Disease?

Samer Bani-Hani[1], Maung Mya[1], [2], . [1]Nephrology, &[2]Transplant Institute, UTHSC, Memphis, TN, USA

287 ABO Incompatible Live Donor Kidney Transplantation: Success with a Minimized Pretreatment Protocol

Madhu Bhaskaran, Fouad Boctor, Mohini Alexander, Qasi Nuaman Masood, Daniel Ross, Kellie Calderon, Mala Sachdeva, Susana Hong, Kenar Jhaveri, Joseph Mattana, Michael Schwartz, Michael Kleeman, Ernesto Molmenti. North Shore-Long Island Jewish Health System, Manhasset, New York, USA

288 Renal Allograft Transfer Index (ATI) and Translational Index (TLI): Potential Predictive Tools for Measuring Quality of Perioperative and Long Term Medical Management of Kidney Recipients

Madhu Bhaskaran, Sreevidya Kusuma, Kelly Benedict, Sonal Bajaj, Mala Sachdeva, Kenar Jhaveri, Kellie Calderon, Mercy Babu, Donna Dalton, Edwin Goncharuk, Lara Fishbane, Robert Metzler, Branson Sparks, Michael Schwartz, Joseph Mattana, Gene Coppa, Ernesto Molmenti. North Shore-Long Island Jewish Health System, Manhasset, New York, USA

289 Single Dose Thymoglobulin for Early Acute Rejection in Kidney Transplantation

Madhu Bhaskaran, Mala Sachdeva, Kenar Jhaveri, Fouad Boctor, Kellie Calderon, Asaph Levy, Crystal Kyaw, Fiore Mastroianni, Alexander Blood, Edwin Goncharuk, Lara Fishbane, Donna Dalton, Kavin Shah, Juan Pablo Idrovo, Joseph Mattana, Alessandro Bellucci, Jeffrey Nicastro, Gene Coppa, Ernesto Molmenti. North Shore-Long Island Jewish Health System, Manhasset, New York, USA

290 Transferred or Lost in Translation: Donor Characteristics and Achieved Recipient Glomerular Filtration Rate (GFR)

Madhu Bhaskaran, Kelly Benedict, Sreevidya Kusuma, Mercy Babu, Kellie Calderon, Sonal Bajaj, Fouad Boctor, Donna Dalton, Mala Sachdeva, Lara Fishbane, Ujwal Gautam, Christina Scelfo, Dana Bregman, Alan Gandler, Alessandro Bellucci, Joseph Mattana, Jeffrey Nicastro, Gene Coppa, Ernesto Molmenti. North Shore-Long Island Jewish Health System, Manhasset, New York, USA

291 Recommendations for Dialysis Team Members to Help Reduce Kidney Transplant Disparities

Teri Browne[1], Avrum Gillespie[2], Megan Urbanski[2] & Heather Hammer[2]. [1]University of South Carolina, Columbia, SC, USA; [2]Temple University, Philadelphia, PA, USA

292 Renal Biomarkers for Assessment of Kidney Function in Renal Transplant Recipients: How Do They Compare?

Ahmed Chaaban[1], Samra Abouchacra[1], Yousef Boobes[1], Raafat Hakim[1], Nicole Gebran[1], Hanan El-Jack[1], Faiz Rashid[1], Amna Muhairi[1], Nico Negelkerke[2]. [1]Tawam Hospital, [2]Faculty of Medicine &Health Sciences; UAE

293 **Adherence in Pediatric Renal Transplant Recipients: A Systematic Review of the Literature**
Bethany Coyne. University of Virginia Health System, Charlottesville, VA, USA

294 **Skin Rash Nine Years After Renal Transplantation**
Jacques Daoud, Vera Marie Rosado-Odom, Asif Sharfuddin, Raymond Johnson. Indiana University School of Medicine, Indianapolis, Indiana, USA

295 **Cardiovascular Risk in the Kidney Transplant Population**
Rowena Delos Santos*, Jagdeep Obhrai*, Douglas Norman*, Suzanne Watnick#
Oregon Health and Science University*, Portland VA Medical Center#, Portland, Oregon, USA

296 **Acute Antibody Mediated Rejection in DSA Negative Anti MICA AB Positive Patient**
Hiral Desai, Matthew Dwight, Alden Doyle, Karthik Rangana, Drexel University, Philadelphia,Pennsylvania, USA

297 **Risk Factors for Hyperuricemia and Gout in African American Renal Transplant Recipients**
Candace Grant, Mary Mallappallil, Amarpali Brar, Moro Salifu, Fasika Tedla, and Melissa Rampal. SUNY Downstate Medical Center, Brooklyn, NY, USA

298 **Examining Survival Gain of the Elderly Kidney Transplant Recipients Compared to General Population in the US**
Parta Hatamizadeh, Miklos Z Molnar, Elani Streja, Mahesh Krishnan, Csaba P Kovesdy, and Kamyar Kalantar-Zadeh. Harold Simmons Center, Harbor-UCLA, Torrance, CA; Salem VAMC, Salem, VA; DaVita, Denver, CO, USA

299 **Falsely Elevated Whole-Blood Tacrolimus Levels in a Kidney Transplant Patient**
Nabeel Imam, Nour Khouzam, Usman Rahmat, Amir Rashidi, Michelle Zuccato, Chanigan Nilubol, Serban Dragoi. Georgetown University Hospital, Washington, DC, USA

300 **Risk of Renal Allograft Failure Due to Recurrent Glomerular Diseases**
Usman Rahmat[1], Laura Flisnik[2], Jennifer Verbesey[3] and Basit Javaid[3]. [1]Division of Nephrology, Department of Medicine; [2]Georgetown University School of Medicine; [3]Department of Surgery, Georgetown Transplant Institute, Georgetown University Hospital, Washington, DC, USA

301 **Adenosine Tri Phosphate (ATP) Levels at the Time of Kidney Transplan Evaluation**
Muhammad W Khattak , Jacques Abi Rached , Sandeep Aggarwal , Irfan Ahmed, Gregory Malat, Karthik Ranganna , Stephen Guy , Alden Doyle. Transplant Nephrology, Hahnemann University Hospital, Drexel College of Medicine, Philadelphia, USA

302 **Pre Transplant Adenosine Tri Phosphate (ATP) Level in Patients Evaluated for Kidney Transplant**
Muhammad W Khattak, Jacques Abi Rached, Ziauddin Ahmed, Greg Malat, Irfan Ahmed, Sandeep Aggarwal, Karthik Ranganna, Alden Doyle. Transplant Nephrology, Hahnemann University Hospital, Drexel College of Medicine, Philadelphia, USA

303 **Estimated Glomerular Filtration Rate at Re-Initiation of Dialysis and Mortality in Failed Kidney Transplant Recipients**
Miklos Z Molnar, Elani Streja, Csaba P Kovesdy, Junichi Hoshino, Richard Glassock, Akinlolu Ojo and Kamyar Kalantar-Zadeh. Harold Simmons Center, Harbor-UCLA, Torrance, CA; Salem VAMC, Salem, VA; David Geffen School of Medicine at UCLA, Los Angeles, CA; Department of Medicine, University of Michigan, Ann Arbor, MI, USA

304 **Early Post Transplant Nephroptosis- A Diagnostic Challenge**
Divya Monga, Deepa Malieckal, Ernesto Molmenti, Madhu Bhaskaran, Kenar D Jhaveri, and Mala Sachdeva. Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

305 **Kidney Related Outcomes In Obese Kidney Donors: A Meta-Analysis**
Kalyani Murthy[1], Kavya Mekala[1], Monica Grafals[1], Ethan Balk[2]. [1]Lahey Clinic, Burlington MA; [2]Tufts Medical Center, Boston MA, USA

306 **Progressive Renal Failure in Heart Transplant Recipients: Thinking Beyond Calciuneurin Inhibitor Toxicity**
Richa Pandey, Adam Woodruff, Sameh Abul-Ezz. University of Arkansas for Medical Sciences, Little Rock, Arkansas, USA

307 **Kidney Donation & Anxiety: Comparison Between Counseled & Non-Counseled Kidney Donors**
Sujata Rajapurkar, Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India

308 **Post-Kidney Transplantation Self-Reported Health is Indepependent of Allograft Function**
Sridhar K Reddy, Swati Rao, Tapan Patel, Heather Hammer, Megan Urbanski, Nicole Sifontis, Serban Constantinescu, Patricio Silva, Iris Lee, Andreas Karachristos, Manoj Maloo, Ashokkumar Jain, Avrum Gillespie. Temple University Hospital, Philadelphia, PA, USA

309 **Obesity As a Barrier to Living Kidney Donation- A Center Based Analysis**
Mala Sachdeva, Ezra Israel, Donna Tropepe, Ernesto Molmenti, Madhu Bhaskaran, and Joseph Mattana. Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

310 **Crystals From Fat: Uncommon Cause of Early Renal Allograft Loss**
Maria Nieva Salazar, Elizabeth Chua, Beje Thomas. Medical University of South Carolina, Charleston, SC, USA

311 **Angiosarcoma in a Renal Transplant Recipient**
Syed J Sher and Asif Sharfuddin. Indiana University, Indianapolis, IN, USA

312 **Outcome of Second Kideny Allograft Transplants vs. Primary Transplant from Paired Donors**
Syed Jawad Sher, Asif Sharfuddin, Muhammad Mujtaba. Indiana University School of Medicine , Indianapolis, IN, USA

313 **Nuclear Stress Myocardial Imaging in Cardiac Evaluation Before Renal Transplantation Among Minority Inner City Population**
Segun Simon, Sadanand Palekar, Sana Akbar, Purna B. Nandigam. Newark Beth Israel Medical Center, Newark, New Jersey, USA

314 **A Multi-Disciplinary Approach to Weight Loss in Obese Renal Transplant Candidates: Identifying and Overcoming Barriers to Success**
Nicole Siparsky[a], Susan Indilicato[a], Jean Colaneri[a], Angeliki Kolios[a], Regina Ryan-Gaule[a], Jessica DeCrosta[a], Michael Gallichio[a], David Conti[a]. [a]Department of Surgery, Section of Transplantation, Albany Medical College, Albany, New York, USA

315 **Donor Derived Adenovirus Related Hemorrhagic Cystitis Following Renal Transplantation**
Thejas Swamy, Fernando Ottino, Jeffrey Stoff, Ashfaq Balla. University of Massachusetts Medical School, MA, USA

316 **Effect of Maintenance Steroidson Graft Outcomes in Deceased Donor Kidney Transplant Recipients Who Experienced Delayed Graft Function**
Bhargavi Tangirala, Richard J. Marcus, Sabiha M. Hussain, Kalathil K. Sureshkumar. Renal Division, Allegheny General Hospital, Pittsburgh, PA, USA

317 **Pancreatic Anastomosis Leak 15 Years After Simultaneous Pancreas-Kidney Transplantation from Late-Onset Allograft Cytomegalovirus Duodenal Ulcers Presenting with Gross Hematuria**
Ekamol Tantisattamo, Roland C. K. Ng, Heath Chung, MD, Manami Okado. University of Hawaii, Honolulu, Hawaii, USA

318 **Rituximab in Treating Hepatitis C Associated Cryoglobulinemic Membranoproliferative Glomerulonephritis in a Patient with Combined Liver and Kidney Transplant**
Vijay Thumma, Abdul Moiz, Jorge Garces. Ochsner Clinic Foundation, New Orleans, LA, USA

319 **Social Media and Living Kidney Donor Solicitation**
Hang Turner, Emily Anderson, David Shoham, Susan Hou, Alex Chang. Loyola Univ Medical Center, Maywood, Illinois, USA

320 **Transplant Rates in Frequent Hemodialysis and Matched Thrice-Weekly Hemodialysis Patients**
Eric Weinhandl, Jiannong Liu, David Gilbertson, Thomas Arneson, Allan Collins; Chronic Disease Research Group, Minneapolis, MN, USA

Other

321 **Bilateral Kidney Lesions in Association with Urticarial Vasculitis**
Deep Adhikari, Ashish Verma, Jeffrey Stoff, Ashfaq Balla. University of Massachusetts Medical School, MA, USA

322 **Assessment of Cost Effectiveness of Aquapheresis in CHF Patients**
Hasan Arif, Walter Shakespeare, Irfan Ahmed, Nauman Shahid, Ziauddin Ahmed. Drexel University College of Medicine, Philadelphia, PA, USA

323 **Research Interests and Experience of Social Workers Within a Large Dialysis Organization**
Mary Burgess[1], Shaun Boyd[2], Duane Dunn[2]. [1]DaVita Clinical Research, Minneapolis, MN, USA; [2]DaVita Inc., Denver, CO, USA

324 **Protocol to Diagnose Chronic Kidney Disease in a Rural Free Clinic**
Sandra Cotton , Susan McCrone, Rebecca J. Schmidt. West Virginia University, Morgantown, West Virginia, USA

325 **Hyperacute Renal Failure with Collapsing Glomerulopathy and Unusual Electron Microscopic Findings in Class II Lupus Nephritis**
Pratik Dalal, Divyashree Varma, Dhruval Patel, Stephen Knohl. SUNY-Upstate Medical University Hospital, Syracuse, NY USA

326 **Simulation of Real-Time Ultrasound-Guided Biopsy May Improve Confidence of Trainee Operators and Reduce Renal Biopsy Complications**
Dalia Dawoud[1], Will Lyndon[1], Sylvie Mrug[1], John J. Bissler[2] and Michal Mrug[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

327 **The Prevalence of Depression Among Hispanics with ESRD Secondary to Type 2 Diabetes Receiving Maintenace Hemodialysis**
Subrata Debnath, Adan Gonzalez, Bermily Maldonado-Colon, Suvro Ghosh, Hanna Abboud, Tahira Alves, Pedro Delgado. University of Texas Health Science Center at San Antonio, San Antonio, TX, USA

328 **URR and KTV are Complementary Measures of Dialysis Adequacy**
Peter B. DeOreo**,** JoAnn Hozalski, Centers for Dialysis Care, Cleveland, Ohio, USA

329 **Cognitive Impairment Among Mexican Americans with ESRD Secondary to Type 2 Diabetes Who Receive In-Center Thrice Weekly Hemodialysis**
Adan Gonzalez, Subrata Debnath, Bermily Maldonado-Colon, Suvro Ghosh, Tahira Alves. University of Texas Health Science Center at San Antonio, San Antonio, TX, USA

330 **Safety, Tolerability and Pharmacokinetics of CTP-499 in a Multi-Center, Double-Blind, Two-Arm, Placebo-Controlled, Randomized Study in Non-Dialysis Patients with Stage 3 Chronic Kidney Disease**
Philip Graham, LuAnn Sabounjian, James Shipley, Virginia Braman, Mark Harnett, David Turnquist, Changfu Cheng, Lijun Wu. Concert Pharmaceuticals, Lexington, MA, USA

331 **"Movin' On Up": Transitioning Adolescent Kidney Transplant Patients to Adult Care**
Pamela Grant, Jill Macfarlane. Primary Children's Hospital, Salt Lake City, Utah, USA

332 **Creatinine Excretion RTAE Estimation in African American Formar Kidney Donors**
Sunil Kumar Jain, John M Arthur, and Milos N Budisavljevic. Charleston, SC, USA

333 **Proteinuria and Hypertension in a Pregnant Patient with Diabetes: When to Biopsy?**
Kelly Liang, Devon Ramaeker, Nirav Shah, Sheldon Bastacky, Arun Jeyabalan. University of Pittsburgh, Pittsburgh, PA, USA

334 **Health-Related Quality of Life Among Hispanics with ESRD Secondary to Type 2 Diabetes**
Bermily Maldonado-Colon, Subrata Debnath, Adan Gonzalez, Suvro Ghosh, Claudia Hura, Hanna Abboud, Tahira Alves. University of Texas Health Science Center at San Antonio, San Antonio, TX, USA

335 **Profile and Impact of Physician Assistants in Nephrology**
Sheila Mauldin, Scott Arbet, Janet Lathrop, National Commission on Certification of Physician Assistants (NCCPA), Johns Creek, GA, USA

336 **Urinary Albumin vs. Urinary Nephrin in Predicting the Development of Preeclampsia**
Swati Mehta, Andi Qipo, Shuchita Sharma, Anjali Acharya, Belinda Jim. Jacobi Medical Center, Bronx, New York, USA

337 **Reduced Use of Erythropoiesis-Stimulating Agents and Intravenous Iron with Ferric Citrate: A Managed Care Cost-Offset Model**
Richard Mutell, Jaime Rubin, T. Christopher Bond, Tracy Mayne DaVita Clinical Research, Minneapolis, MN, USA

338 **Reduced Use of Erythropoiesis-Stimulating Agents and Intravenous Iron with Ferric Citrate: A Medicare Bundle Cost-Offset Model**
Richard Mutell, Jaime Rubin, T. Christopher Bond, Tracy Mayne. Davita Clinical Research, Minneapolis, MN, USA

339 **A Little Ethanol Goes a Long Way in the Treatment of Catheter-Related Bacteremia**
John Nguyen, Joshua Zaritsky. UCLA, Los Angeles, California, USA

340 **To Anthropometrically Compare a Sample of Patients from a Single Haemodialysis Unit in Ireland to Those Patients Studied in the Hemo Study**
Jennifer O'Neill, Halóg Mellett, Catherine Wall and George Mellotte, The Adelaide & Meath Hospital incorporating the National Children's Hospital, Dublin, Ireland

341 **Motivational Interviewing Staff Training Protocol Refinement Project**
Cynthia Russell, Leanne Peace, Nikole Cronk, Michelle Matteson, Leonor Ponferrada, Norma Knowles, Kay Dye; University of Missouri-Columbia and Dialysis Clinics Inc, Columbia Missouri, USA

342 **Outcome at 90 Days of Dialysis**
Prakash R, Sheth H, Bender FH, Burr R, Piraino B. University of Pittsburgh Medical Center, Pittsburgh, PA, USA

343 **Survival on HD After Non Renal Solid Organ Transplant (SOT) is Poor**
Prakash R, Sheth H, Bender FH, Burr R, Piraino B. University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

344 **Renal Infarction Secondary to Renal Artery Anomaly – A Case Report**
Ajith Puram, Neshatian Leila, Naheed Ansari. Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA

345 **Accuracy of Blood Culture Results from the Hemodialysis Circulation as Compared to the Gold Standard for Diagnosing Catheter-Related Blood Stream Infections**
F. Quittnat-Pelletier[1,2], M. Joarder[1], C. E. Lok[1,2]. [1]Toronto General Hospital; [2]University of Toronto, Toronto, Ontario, Canada

346 **Floating Kidney and Nocturnal Polyuria**
Ankit Sakhuja, Jiwan Thapa, Richard Fatica. Cleveland Clinic, Cleveland, OH, USA

347 **Periodontitis and Vitamin D Difficiency Are Strongly Associated in Chronic Kidney Disease Female Patients**
W. Samson, H. Swede, G. Fares, E. Ioannidou. University of Connecticut Health Center, Farmington, CT; Bay State Medical Center, Springfield, MA, USA

348 **Nephrotalk: Communication Skills for Nephrology Fellows**
Jane Schell, Jamie Green, and Robert Arnold. Duke University, Durham, North Carolina, and the University of Pittsburgh, Pittsburgh, Pennsylvania, USA

349 **Severe Thrombocytopenia Associated With Use of E-Beam Sterilized Polysulfone Dialyzer on a Patient with a Complicated Pregnancy**
Jun Sohn, Madhavi Katikaneni, Hugo Villanueva, Lin Lwin, Jinil Yoo. Nephrology, Montefiore Medical Center-North, Bronx, NY, USA

350 **Perceptions and Roles of the Nephrology Social Worker Within the Suicide Continuum of Care: A National Survey**
Matt Stricherz[2, 3], Jane Kwatcher[1], Andrea Mora[1], Jena Rendon Muhr[1], [1]DaVita, Inc, Denver, CO, [2]Cheyenne River Sioux Tribe, Eagle Butte, SD, [3]Sanford Health, Sioux Falls, SD, USA

351 **Intravenous (IV) Iron Chelates Inorganic Pyrophaspate (PPi) and Acutely Decreases Plasma PPi Level**
Ramin Tolouian[1], Sean Connery[1], Ajay Gupta[2]. [1]Division of Nephrology and Hypertension, Paul L. Foster School of Medicine, TTUHSC El Paso, Texas [2]Rockwell Medical, Wixom, MI, USA

352 **Evaluation of Transplant Education in 500 Dialysis Centers In 21 States: Are Dialysis Patients Making Informed Treatment Choices?**
Amy Waterman, Christina Goalby, Emily Herrington, Shelley Hyland, Washington University, Saint Louis, Missouri, USA

353 **Performance of CT-Guided Percutaneous Kidney Biopsy by Nephrologists with 100% Tissue Diagnosis and No Blood Transfusion Over 10-Year Period**
Jinil Yoo[1], Roger Carvajal [2], Nipresh Pradhan[2], Lin Lwin[1], Hugo Villanueva[1]. [1] Nephrology, Montefiore Medical Center North Bronx, NY, USA; [2] Renal Service, Metropolitan Hospital Center, New York, NY, USA

MODEL TO PREDICT RISK OF ACUTE KIDNEY INJURY IN PATIENTS AFTER TAAA REPAIR

Airy M, Dyquangico R, Minard C, LeMaire A.S, Mandayam S Baylor College of Medicine, Houston, Texas

AIM : To identify predictors of acute kidney injury in patients undergoing thoracoabdominal aortic aneurysm (TAAA)repair and develop pre-operative risk prediction model METHODS : Single centre retrospective study done on patients undergoing TAAA repair at Texas Heart Institute, Houston, Texas between May 2006 –May 2011. Pre-operative and operative variables such as age, sex, biomarker data, medical history information and surgical characteristics/times were collected for each patient. Standard statistical techniques were used for analysis. RESULTS : A total of 596 patients were studied The incidence of acute kidney injury (AKI) was about 13.8%.Predictive variables that reached significance in multivariate analysis were Age, pre-op GFR, phosphorous, intercostal and renal time during surgery(p-value <0.05). A stepwise selection method was used to build a multivariable logistic regression model to estimate the probability of AKI. α=0.05 level of significance was specified to define model entry and elimination criteria. A receiver operating characteristic curve was then used to assess the value of the final model in predicting AKI.

DISCUSSION & CONCLUSIONS: We have identified predictors of AKI in patients undergoing TAAA repair. Although pre-existing CKD predicts AKI, so does phosphorus level & h/o CVA. We aim to develop pre-operative tool for risk assessment.

AKI WITH USE OF SITAGLIPTIN – DO WE NEED TO BE CONCERNED?

Anushayanthan Alfred*, Dana V. Rizk*
*University of Alabama at Birmingham, Birmingham AL USA

Diabetic nephropathy is the leading cause of CKD worldwide. Newer agents like Sitagliptin (a dipeptidyl peptidase-4 [DPP-4] inhibitor) has been shown to improve glycemic control when used as adjunctive therapy. Its use in the setting of worsening glomerular filtration rate (GFR) requires dose adjustment, but is not contraindicated. We present here a case of acute kidney injury related to Sitagliptin use in CKD.

L.N is a 57 year old female with uncontrolled diabetes on Glipizide and CKD stage III with a baseline creatinine 1.8 to 2 mg/dl. She was started on Sitagliptin 100mg daily. Within two months of the drug initiation, her creatinine increased from 2 to 2.5 and then to 3.4 mg/dl (eGFR=17 ml/min/1.73m^2) at 5 months. She was hemodynamically stable and denied any concomitant use of NSAIDS or exposure to any nephrotoxins. Her HgbA1C improved from 9.1 to 7.4% during the same period. Due to her worsening renal failure that coincided with the initiation of Sitagliptin, the drug was stopped. Repeat creatinine 3 weeks and 3 months later was 2.1 and 2 mg/dl respectively with eGFR 31ml/min/1.73m^2.

Gliptins are a relatively novel class of oral anti-diabetic agents much needed in the fight against the diabetes epidemic. The package insert of Sitagliptin recommends dose adjustment in patients with moderate to severe renal insufficiency due to a decrease in drug excretion. This was not followed in our patient. More importantly, the occurrence of acute kidney injury from Sitaglitpin has not been documented to this date. Our case highlights a potentially unrecognized side effect that warrants further evaluation.

DOES OBTAINING URINARY DIAGNOSTIC STUDIES PRIOR TO RENAL CONSULTATION AFFECT OUTCOMES IN ACUTE KIDNEY INJURY PATIENTS

Naing Htike, Adeel Siddiqui, Geoffrey Teehan, Robert L Benz, Nephrology, Lankenau Medical Center and LIMR, Wynnewood, PA, USA.

Upon renal consultation for Acute Kidney Injury (AKI), diagnostic urinary data such as urine creatinine, urine electrolytes and urinalyses (UA) are often not available or ordered. We compared outcomes among those who did or did not have preconsult urine diagnostic studies (UDS).

This was a six month retrospective cohort study of AKI in a community teaching hospital. We defined AKI as creatinine >/= 0.3 mg/dl increased vs. baseline. Those with at least UA performed were group 1, and those without UA were group 2. Fisher's Exact Test and T-Test were employed.

116 patient charts were reviewed (Grp 1: N = 67; Grp 2: N = 49). The groups did not differ with respect to overall comorbidities (P = NS). There was a higher likelihood of having a full set of UDS in Grp 1 vs. Grp 2 (P = 0.001). Twice as many patients had renal imaging in Grp 1 (28%) vs. Grp 2 (14%) (P = 0.11). At least a doubling of baseline serum creatinine occurred in 41% of the cohort (48% in Grp 1 vs. 33% Grp 2) (P = 0.13). Death and the need for renal replacement therapy (RRT) occurred more in Grp 1 (3% vs. 2%) but did not reach statistical significance (P = 0.5 and 0.39 respectively). Return to baseline creatinine was similar between groups (P = 0.62)

While we support obtaining UDS prior to renal consultation, this study of 116 patients could not support the hypothesis that such studies preconsultation resulted in improved outcome vs. obtaining them upon consultation. We are unaware of evidence based studies to the contrary. A larger study is indicated to verify whether preconsult UDS, while empirically making sense, actually alters outcomes.

CYTOMEGALOVIRUS COLITIS IN A CRITICALLY ILL, DIALYSIS-DEPENDENT ACUTE KIDNEY INJURY PATIENT WITHOUT IMMUNOSUPRESSIVE THERAPY

Manmeet Brar[1], Kenneth Kokko[1], Éva Csongrádi[2], Bela Kanyicska[1], Tibor Fülöp[1]. [1]University of Mississippi Medical Center, Jackson, MS,USA; [2]1st Department of Medicine, University of Debrecen, Debrecen, Hungary

Historically, cytomegalovirus (CMV) infection in immunocompetent patients has been considered to have an indolent and self limited course, not warranting specific treatment.

We are presenting 72 year-old African-American male transferred to our Intensive Care Unit (ICU) with methicillin-resistant *Staphylococcus aureus* bacteremia, respiratory failure and dialysis-dependent acute kidney injury. While he recovered from bacteremia, he remained difficult to wean from respiratory support, had labile blood pressure and manifested persistent diarrhea. Stool antigen testing for *C. difficile* colitis returned repeatedly negative. Flexible sigmoidoscopy described diffuse ulceration, attributed to ischemic colitis. Colon biopsy specimen, however, described tissue-invasive CMV infection. Polymerase Chain Reaction (PCR) testing confirmed viremia 8,900 copies/mL. Human immunodeficiency virus antibody and PCR testing both returned negative. Absolute lymphocyte count varied between 80-450 mm3 during the admission. After I.V. gancyclovir initiation, diarrhea and respiratory failure resolved, while renal function recovered to his baseline.

The combination of critical illness and recent bacteremia likely represented a state of profound immunosuppression in this formerly healthy patient. CMV colitis may be under-diagnosed in sick ICU patients with renal failure and otherwise unexplained diarrhea. Serum PCR testing may aid in the diagnosis.

OUTCOMES OF PATIENTS WITH END STAGE LIVER DISEASE AND ACUTE KIDNEY INJURY REQUIRING DIALYSIS AT DISCHARGE

Stephen D. Clark, David G. Koch, Roberto Pisoni, Ruth C. Campbell
Medical University of South Carolina, Charleston, SC

Acute Kidney Injury (AKI) is a common complication in patients with End Stage Liver Disease (ESLD). There is little data on the survival of ESLD patients with prolonged AKI who require dialysis after hospital discharge. We have retrospectively reviewed outcomes for ESLD patients with AKI who required dialysis at discharge at our institution over the last five years.

Using billing codes and chart review, we identified hospitalized patients with ESLD who developed AKI who were dialysis dependent at discharge. Patients who received a liver transplant during the intial hospitalization were excluded, as were patients who were on dialysis prior to the index hospitalization. Twenty-one patients were identified. The median age was 54 (range 29-71) years. Sixty-two percent were male and 81% were Caucasian. The most common causes of ESLD were alcoholic cirrhosis (43%) and Hepatitis C (19%). The most common causes of AKI were hepatorenal syndrome (48%) and acute tubular necrosis (29%). Two patients were lost to follow up after discharge. Thirteen patients died (62%) with a median survival time of 45 (7-110) days. Four patients were listed for liver transplant at discharge and three additional patients were listed after hospital discharge. Four of the seven listed patients were transplanted (one liver and three liver-kidney) with a median time to transplant of 63 (30-210) days. One patient regained renal function and stopped dialysis . One is still alive and undergoing dialysis.

In conclusion, dialysis for patients with ESLD and AKI after discharge may provide a bridge to liver transplantion. Without liver transplantation, the outcome for these patients is very poor.

BATH SALTS AND ACUTE KIDNEY INJURY

Jacques Daoud, Teena Tandon, Richard Hellman.
Indiana University School of Medicine, Indianapolis, Indiana, USA.

Reports initially emphasized the psychosis-related effects of "bath salts", also known as Ivory white, Hurricane Charlie, and White lightening. However, more diverse adverse events were described later, first over the internet then in medical journals. We present a case that illustrates additional serious complications of "bath salts" intoxication including acute kidney injury (AKI) and colonic necrosis.

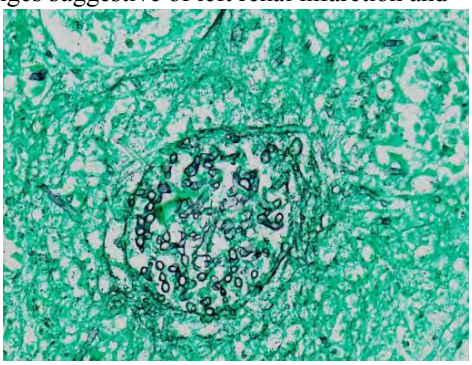
A 24-year-old white man in prior good health was hospitalized after being found unconscious in his car at work. On initial evaluation, he was febrile at 109°F (43°C), tachycardic and encephalopathic without focal deficits. He subsequently developed hypotension, cardiac arrest with successful resuscitation, rhabdomyolysis, anuric AKI, liver failure, diffuse intravascular coagulopathy and intestinal bleeding. He required multiple blood transfusions. A CT scan of the head did not show any abnormalities, and an EEG showed nonspecific diffuse changes. He continued to be agitated and encephalopathic. He became severely jaundiced, and developed anasarca. He was started on continuous venovenous hemofiltration (CVVH). A proctosigmoidectomy was done for ischemic colitis followed by a diverting ileostomy and a G tube placement for tube feeding. After a month, he improved clinically becoming more cognitive and interactive. He was transitioned to intermittent hemodialysis and was finally discharged after a two-month hospitalization. At the time of hospital discharge he had begun to have urine output and pre-dialysis serum creatinines were falling. Further history revealed that he had ingested "bath salts" along with benzodiazepine, phencyclidine (PCP), coffee, and an energy drink.

Our patient's AKI was felt to be due to vasoconstriction, hypotension and rhabdomyolysis, that was likely secondary to the malignant hyperthermia, and due to the combination of PCP and "bath salts" ingestion. "Bath salts" intoxication needs to be considered in the differential diagnosis for patients presenting with altered mental status and AKI.

GROSS HEMATURIA HERALDING DISSEMINATED MUCORMYCOSIS

Angelina Edwards, Aneel Kumar, Abdulla Salahudeen, Patricia Troncoso.
University of Texas MD Anderson Cancer Center, Houston, TX

A 53-year-old man with acute myeloid leukemia experienced the sudden onset of left-sided flank pain with gross hematuria. On examination, he had a mobile, 5-cm in diameter fluctuant sternal mass and a 2-cm in diameter right shin mass without overlying skin changes. Laboratory studies showed a serum creatinine value of 1.8 mg/dL (baseline creatinine of 1.2 mg/dL) and grossly bloody urine. Chest CT showed a 7.5 cm sternal mass, extending to the mediastinum. Abdominal CT showed changes suggestive of left renal infarction and left renal vein thrombosis, associated with several hypodensities in the right kidney. An aspirate of the sternal mass and biopsy specimen of the right kidney demonstrated extensive necrosis and broad, non-septate hyphae, consistent with mucormycosis (see GMS stain to the right). Accordingly, the patient received systemic antifungal therapy, debridement of the sternum, and left nephrectomy. The patient is currently in remission.



Mucormycosis is a rare and often fatal invasive fungal infection. Its angiophilic properties lead to mycotic thrombosis of arteries and veins. Specific involvement of the renal artery presents as flank pain and hematuria. Disseminated forms are common in patients who are immunosuppressed. Prompt diagnosis, antifungal therapy, and, at times, surgical intervention can lead to better outcomes.

TROUGH VANCOMYCIN LEVELS AND CHANGES IN KIDNEY FUNCTION.

Carlos Franco-Palacios, Myriam Vela, Qi Qian.
Division of Nephrology and Hypertension. Mayo Clinic.
Rochester, Minnesota.

Studies suggest that vancomycin might be associated with the development of acute kidney injury (AKI). The aim of the study was to examine the occurrence and potential risk factors of AKI in patients receiving intravenous vancomycin.

Of all patients treated with vancomycin at our institution in 2009, 785 were randomly selected using a computer statistical software program (Jump 9.0).

Serial serum creatinine levels and trough vancomycin levels were collected.

Vancomycin trough levels used for analysis were those before any acute elevation in serum creatinine (before AKI). Children, patients with AKI prior to the initiation of vancomycin and patients on dialysis were excluded. AKI was defined according to the AKIN criteria.

Of the 785 patients, 90 (14.7%) developed AKI. AKI was more common in patients with higher serum vancomycin trough levels (17.2 vs 13.3mg/l, $p<0.0001$) and longer duration of vancomycin treatment (11.3 vs 8.6 days, $p=0.04$). Moreover, there was a positive association between vancomycin trough levels and the occurrence of AKI, 9% AKI for those with vancomycin trough levels <10 mg/l, 8.5% for levels 10-15mg/l, 22% for levels >15mg/l and 30 % for levels >20 mg/l ($p<0.0001$). Patients who developed AKI also had higher baseline creatinine 1.17 vs 0.85 mg/dl ($p<0.001$), more CHF (20% vs 12.3% $p=0.04$), more ICU admissions (68.6% vs 52.6% $p=0.03$), more vasopressor use (44.4% vs 22.2% $p<0.001$). On multivariate analysis, higher vancomycin trough levels and longer treatment duration were independent risk factors for AKI, OR=1.07 (1.03, 1.11) and 1.03 (1.0, 1.05), $p<0.05$, respectively.

In this study, we found that serum vancomycin trough level and duration of vancomycin treatment are positively associated with the development of AKI.

ABDOMINAL COMPARTMENT SYNDROME PRESENTING AS DIURETIC-REFRACTORY CARDIORENAL SYNDROME

Brigid Hallinan, Lehigh Valley Health Network, Allentown, PA, USA

Abdominal compartment syndrome (ACS) is a life-threatening disorder caused by an acute increase in intraabdominal pressure that may complicate various disease processes. We present a case of ACS in a patient with diuretic-refractory cardiorenal syndrome (CRS).

An 85-year-old female with chronic systolic CHF with an estimated LVEF of 25% and CKD III with baseline Cr 1.2 presented with progressive shortness of breath, abdominal distention, decreased urine output and increasing lower extremity edema. She was found to be in acute decompensated heart failure (ADHF) and had acute renal failure with Cr 1.8. Despite administration of progressively increased doses of IV diuretics and a constant furosemide IV infusion she remained oliguric. Renal ultrasound demonstrated normal kidneys and mild to moderate ascites. An intrabdominal pressure of 35 mmHg measured by transurethral bladder catheter supported a diagnosis of ACS. The patient underwent therapeutic paracentesis, which yielded 1.5 L of ascitic fluid. Shortly thereafter, urine output increased to 100 cc/hr with diuretics. Within 3 days of paracentesis her weight decreased by 5 kg, Cr returned to baseline and her symptoms resolved.

ACS is characterized by sustained intraabdominal pressure ≥20 mmHg with resultant acute organ dysfunction. Traditionally associated with critically ill patients in the setting of trauma, abdominal surgery, sepsis, pancreatitis, massive fluid resuscitation or intraabdominal hemorrhage, ACS can also result from third spacing of fluid into the abdomen in patients with ADHF. Recent studies suggest that intraabdominal hypertension (intraabdominal pressure >12 mmHg) and fulminant ACS may play a more significant role in the pathophysiology of CRS than previously realized. The diagnosis of ACS should be considered- and intraabdominal pressure measurement obtained- in any patient with acute oligoanuric renal failure in the setting of volume overload, such as in ADHF. If ACS is diagnosed, prompt abdominal decompression with percutaneous fluid removal or decompressive laparotomy is indicated to prevent hemodynamic collapse and death.

IL-6 AND LIPOCALIN2/NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN MAY MEDIATE PODOCYTE DYSFUNCTION IN INFLAMMATORY KIDNEY DISEASE.

Sarah J. Lee, Emily Borsting, Nazila Sabri, Anne-Emilie Decleves and Robyn Cunard. Veterans Affairs San Diego Healthcare System and UCSD, San Diego, CA, USA

Inflammation is central to the development of kidney disease in both acute and chronic settings. Understanding the roles of inflammatory factors can provide future targets to alter disease course. We demonstrate that inflammatory activation of cultured podocytes rapidly and strongly induces IL-6. Microarray analysis on podocytes exposed to IL-6 revealed Lipocalin 2/Neutrophil Gelatinase-associated Lipocalin (Lcn2/Ngal) upregulation, a protein previously described to be induced in damaged tubules. We detect Lcn2/Ngal mRNA and protein expression in podocytes after inflammatory stimuli. Treatment of podocytes with Lcn2/Ngal appears to increase apoptosis, suggesting a pathway in which an inflammatory trigger through IL-6 may induce Lcn2/Ngal to cause glomerular injury via podocyte apoptosis.

To confirm that podocytes express Lcn2/Ngal *in vivo*, mice were injected with low-dose LPS and *in situ* hybridization for Lcn2/Ngal mRNA was performed on kidney sections. As expected, LPS-treated WT mice had robust expression of Lcn2/Ngal mRNA in the tubules. However, we also observed glomerular Lcn2/Ngal expression. At 24 hours post-injection, intraglomerular and parietal epithelial cell (PEC) expression of Lcn2/Ngal was seen. By 48 hours post-injection, the intraglomerular expression of Lcn2/Ngal was reduced and primarily in the PECs. We are actively pursuing studies in Lcn2/Ngal knockout mice to determine if there are alterations in the glomerular damage seen with low dose LPS injection. Surprisingly, Lcn2/Ngal expression in both tubules and glomeruli was not qualitatively altered in the IL-6 KO mouse, suggesting that while IL-6 may be sufficient for Lcn2/Ngal induction, it is not essential to its expression.

CLINICAL CHARACTERISTICS OF PATIENTS WITH ACUTE KIDNEY INJURY IN A INNER CITY TEACHING HOSPITAL Rakesh Malhotra[1], Jose Cardenas[3], Jolina Santos[3], Judy Tan[3], Venu Gopal Kankani[3], Ravi Mehta[2], Anjali Acharya[3]. [1]VA Medical Center, [2]University of California, San Diego, [3]Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA. Acute kidney injury (AKI) even if transient is associated with bad outcomes in critically ill patients. The aim of the study was to look into clinical characteristics of patients who developed AKI in an inner city intensive care unit (ICU). Our cohort consists of 677 of the 707 patients admitted to the medical intensive care unit (MICU) at Jacobi Medical Center between April 2009 and April 2011. 144 of 677 critically ill patients (21.3%) had AKI during the first week of ICU admission. 66 (45.8%) of these patients consented and are included in the analysis. Results:

Age year, mean (SD)		55.9±17.2
Gender,%	Male	57.6
Race/Ethnicity,%	African American	30.3
	Hispanic	30.3
Comorbidities, %	Hypertension	66.7
	Diabetes	34.8
	Congestive Heart Failure	22.7
	Chronic Liver Disease	19.9
Acute insults, %	Sepsis	39.4
	Hypotension	34.8
Clinical outcomes		
Mortality rate, %	ICU	22.7
	In-hospital	30.3
ICU stay, mean (SD)		11.1±12.8
Hospital stay, mean (SD)		19.2±23.0

BUN, sCR and mean BMI at ICU admission were (36.3±39.7 and 2.0±2.1), 31.5 ±22.1 respectively with BSA, m2 of 1.9±0.3. AKI developed 1.0 ± 1.0 days after ICU admission. By AKIN criteria, 86.4% had Stage 1, 12.1% had Stage 2 and 1.5% had Stage 3. Patients with persistent AKI (sCr change >0.3 mg/dl throughout the ICU stay) vs those without had ICU mortality of 34.4% vs, 11.8% respectively. This registry provides an overview of clinical characteristics of AKI patients in inner-city population.

EXPLORING A RARE CAUSE OF ACUTE KIDNEY INJURY

Nasim Mastouri, Chandandeep Takkar, Hasan J Salameh, Ricardo Baltodano, Pradeep Kadambi; University of Texas, Medical Branch at Galveston, Texas.

Spontaneous rupture of an abdominal aortic aneurysm into the inferior vena cava (IVC) is a rare cause of high-output cardiac failure and acute kidney injury (AKI). A high index of suspicion is needed for accurate diagnosis and management.

We report the case of a 63-year-old man who was admitted for dyspnea on exertion and lower extremity edema. Physical examination revealed normal blood pressure, sinus tachycardia, gallop rhythm, basilar pulmonary rales and a loud abdominal bruit. Shortly after admission, the patient developed cardiogenic shock with multiorgan failure, necessitating transfer to the intensive care unit and vasopressor support. Transthoracic echocardiography showed right ventricular systolic pressure >60 mm Hg and normal LVEF. Diagnostic left and right heart catheterization revealed the following values:

Pulmonary artery pressure	Pulmonary capillary wedge pressure	Cardiac output	IVC oxygen saturation
74/27 mm Hg	32 mm Hg	13.3 L/min	93%

Continuous renal replacement therapy was initiated for oliguric AKI. Due to unexplained cardiogenic shock and elevated IVC oxygen saturation, an aortogram was performed, which revealed an aneurysmal aorta with a fistulous connection between the distal aorta and IVC. Endovascular repair with an excluder aortic endograft was performed using the femoral retrograde approach. Thereafter, the patient's hemodynamics improved, was weaned off vasopressor support, and signs of peripheral hypoperfusion resolved. Subsequently, he was discharged to a long-term care facility.

This case highlights that aortocaval fistula (ACF) should be considered in the differential diagnosis of AKI in patients with an abdominal bruit and high-output cardiac failure. Although surgical correction is the most common method, we report a novel technique of endovascular repair using an excluder aortic endograft for the ACF.

ACUTE KIDNEY INJURY AFTER TOTAL HIP ARTHROPLASTY (THA) AND ANTIBIOTIC SPACER PLACEMENT. PLEASE TAKE OUT THE CEMENT!

Austine Mengnjo, Guillermo Carnero, Rajesh Govindasamy.
Geisinger Medical Center, Danville, PA

Antibiotic-impregnated cement spacer placement is a popular procedure in the treatment of prosthetic joint infections by targeted drug delivery, achieving high local levels while limiting the potential for host toxicity. Cases of acute kidney injury (AKI) occurring after spacer placement are rare, but have been reported. We present a case of AKI following spacer placement that improved after explantation.

A 67 year-old male with a history of left prosthetic hip underwent left total hip arthroplasty (THA) and antibiotic spacer placement consisting of 4.5 g tobramycin and 4 g vancomycin, for Methicillin-resistant Staph aureus (MRSA) infection. He developed AKI post-operatively that was attributed to non-oliguric acute tubular necrosis resulting from an episode of intra-operative hypotension. Intravenous fluid administration failed to improve his renal function. His hospital medications were intravenous hydromorphone and vancomycin to maintain trough levels 10 to 20 µg/mL. No previous NSAID, IV contrast agents or ACE-I/ARB were used prior to the injury. Renal US showed no obstruction. Urine microscopy was bland without proteinuria. Serum complement levels were normal. He was discharged after 7 days with a serum creatinine of 3.0 mg/dL, up from 0.9 mg/dL on admission.

He was followed closely after discharge. During clinic visits, patient felt well with normal physical examination and his left hip surgical wound had slowly healed. Serum creatinine however rose and peaked at 4.5 mg/dL on day 28 after discharge. Tobramycin and vancomycin trough level was 0.5 µg/mL and 18.1 µg/mL, respectively. Six weeks after surgery, he underwent a second THA for removal of antibiotic spacer. Post-operatively, serum creatinine improved and went down to 1.4 mg/dL 8 weeks after spacer removal. A presumptive diagnosis of aminoglycoside-induced nephrotoxicity was made.

Antibiotic-laden cement with aminoglycosides and/or vancomycin has the potential for systemic toxicity and should be used according to guidelines and with increased vigilance and prudent monitoring in patients at increased risk for nephrotoxicity.

SULFADIAZINE CRYSTALLURIA: PROPOSING NON-INVASIVE DIAGNOSTIC CRITERIA FOR A RE-EMERGING DISEASE

Madhav C Menon, Tonia Kim, Steven Dikman, Jaime Uribarri
Nephrology, Mount Sinai School of Medicine, New York. A-38-year -old-male with AIDS on highly active antiretroviral therapy presented with left ankle pneumococcal septic arthritis. For cerebral toxoplasmosis, he had been on pyrimethamine /sulfadiazine (SDZ) (2 gm every 6 hours) for 6 months. Baseline serum creatinine (Creat) was 1.5 mg/dl (eGFR >60 ml/min). He was maintained on ceftriaxone. Subsequently, he developed acute kidney injury (AKI) over 2 weeks (Creat- 3 mg/dl) without apparent hemodynamic or nephrotoxic insult. Urine studies revealed hematuria but no leukocyturia, and a protein-creatinine ratio 0.3gm/gm. Fractional excretion of sodium was 6%. Microscopy revealed numerous “sheaf of wheat” shaped crystals of SDZ (>5/hpf). Renal sonogram showed multiple bilateral hyper-echoic lesions in the pelvicalyceal system with shadowing. These echoes were absent in a prior sonogram from 6 months. Together the new ultrasound and urinary findings suggested sulfadiazine crystalluric nephropathy (SCN). SDZ was changed to clindamycin. He was placed on half normal saline with sodium bicarbonate for a goal urine pH > 7. Creat improved to 1.4 at 3 weeks after discharge.

Due to toxoplasma encephalitis in AIDS, the use of sulfonamides especially sulfadiazine in high doses, has resurged dramatically. SDZ is short-acting, well-absorbed (70-100%) and predominantly renally eliminated. 30-40% is acetylated for excretion and is relatively insoluble in urine at acidic pH. Elimination of SDZ is unpredictable at GFR < 30ml/min. In patients such as our patient with dynamic GFR in acute illness, the risk of SCN is substantially increased. Both experimental and clinical studies have confirmed the intratubular deposition of acetylated-SDZ with adjacent inflammation as the characteristic pathology. We propose that in the setting of AKI when on high dose sulfadiazine, the combination of new sonographic pelvicalyceal hyper-echoic lesions and demonstration of the characteristic urinary crystals of greater than 5/hpf in freshly collected urine be used as a non-invasive surrogate for diagnosis of SCN in these patients. Management should be then be discontinuing SDZ and alkalinizing urine.

FULMINANT WILSON'S CRISIS: PLASMAPHARESIS VS MARS

Authors: Prince Mohan; Abdallah Geara; Richard Kronfol; Jason Long; Jai Radhakrishnan; Amay Parikh
Columbia University Medical Center, New York, NY USA

Wilson's disease (WD) presents with chronic hepatic and neurologic dysfunction. In rare cases, it can present with fulminant liver failure and multiple organ dysfunction. Initial therapy aims to decrease the high levels of serum copper characteristic of Wilson's. Since copper is albumin bound, we evaluated the efficacy of 2 modalities of extra-corporeal copper clearance: Molecular Adsorbant Recirculating System (MARS) and plasmapheresis(PP). A 25-year-old woman with WD on Trientine presented with fulminant WD (hemolytic anemia, liver failure, AKI) due to medication noncompliance for 1 year. Blood Copper (Cu), Haptoglobin, and Ceruloplasmin levels were monitored. Treatments alternated between MARS and PP. MARS sessions consisted of 8 hours of albumin dialysis each followed by CVVHDF. PP sessions replaced 1.2 times the plasma volume with FFP. Copper reduction ratios (CRR) for each modality are shown in the table. The patient was bridged to liver transplantation following a total of 5 sessions (3 MARS and 2 PP). In this case, average CRR for MARS and PP were similar (18.6% vs. 26.9%, p=0.5).

	MARS 1	MARS 2	MARS 3	PP 1	PP 2
Cu pre (µg/dL)	183	115	86	154	81
Cu post	154	85	74	115	58
CRR	15.8%	26.1%	13.9%	25.3%	28.3%

Side effects of FFP replacement in pharesis are not seen with MARS. Both MARS and PP can be used to for copper clearance in Wilson's crisis and as a bridge to liver transplant.

FLUID OVERLOAD AND SURVIVAL IN ADULT BURN PATIENTS: A RETROSPECTIVE ANALYSIS

Benjamin Morrow[1], Ian J Stewart[1], Ellen Im[1], Molly Tilley[1], James Aden[2], Evan M Renz[2], Kevin K Chung[2]
[1]San Antonio Military Medical Center and [2]United States Army Institute of Surgical Research, Fort Sam Houston, TX.

Development of fluid overload has been shown to adversely affect outcomes, including mortality and recovery from acute kidney injury (AKI), in both adult and pediatric intensive care unit (ICU) populations. The purpose of this study was to define the prevalence of fluid overload in adult burn patients and examine the relationship between fluid overload and mortality in this population.

All admissions to our burn center from January 2003 to December 2008 were examined. Patients included were at least 18 years old and had a weight recorded on at least two separate days. Fluid overload was defined as an increase of $\geq$ 10% over the first recorded weight. Data collected included gender, age, percentage total body surface area burned (%TBSA), percentage of third degree burn, injury severity score (ISS), presence of AKI and severity by Acute Kidney Injury Network (AKIN) stage, mechanical ventilation, and in-hospital mortality. Demographic and outcome variables were stratified by the presence or absence of fluid overload and compared. Multiple logistic regression analysis to adjust for confounders was performed.

Of 1973 burn center admissions (both ICU and non-ICU), 839 met inclusion criteria. Fluid overload was present in 28.8% (n=242). The in-hospital mortality for the cohort was 10.5% (n=88). In hospital mortality for patients with fluid overload was 22.3% compared to 5.7% for those without overload ($p<0.0001$). Patients with fluid overload were more likely to have AKI (78.5% vs. 50.0%, $p<0.0001$), had higher requirements for renal replacement therapy (13.6% vs. 4.8%, $p<0.0001$) and mechanical ventilation (80.6% vs. 46.9%, $p<0.0001$). On multiple logistic regression, age, %TBSA, ISS, AKI, and RRT were found to be independent predictors of mortality, while fluid overload was not (OR 1.49, 95% CI 0.81-2.75, $p=0.20$).

While fluid overload was associated with mortality, it did not independently predict mortality after adjustment for age and severity of illness.

DE NOVO DIPSTICK PROTEINURIA (DP) AS PREDICTOR OF ACUTE KIDNEY INJURY (AKI) IN CRITICALLY ILL SEPTIC PATIENTS

Javier Neyra, George Maidaa, John Manllo, Gordon Jacobsen, Jerry Yee
Henry Ford Hospital, Detroit, MI (USA)

AKI occurs in nearly 30% of patients with severe sepsis and microalbuminuria has been described in up to 87% of septic patients. In order to determine the predictive value of de novo DP as an early biomarker of sepsis-associated AKI, we retrospectively analyzed data from patients with severe sepsis admitted to our institution's intensive care units between 01/2004 and 07/2011 for DP. Exclusion criteria included a baseline serum creatinine (SCr) level > 1.5 mg/dL, presence of DP within 3 months of the index admission date and common causes of false-positive DP, e.g., urinary tract infection or gross hematuria.

A total of 2,252 patients were screened and 470 were included in the study. Of these, 328 patients underwent DP-testing at admission. The SCr increased ≥ 0.3 mg/dL in 210 (64%) subjects within the first 72 hours of admission. In this group, new onset DP was found in 114 (54%) subjects ($p < 0.001$; PPV, 75%) and in 91 of 166 (55%) subjects with AKI by AKIN criteria ($p = 0.002$; PPV, 60%). By multivariable logistic regression (age, gender, race, comorbidities, hemodynamic status, etc.), de novo DP at time of admission independently predicted AKI (odds ratio [OR] 2.3, 95% confidence interval [CI] 1.4 -3.8, $p = 0.001$).

In conclusion, de novo DP represents a simple, inexpensive biomarker in sepsis with predictive power for AKI. Further studies are required to fully elucidate the significance of new onset DP in AKI.

TRABECTEDIN INDUCED ACUTE KIDNEY INJURY

Dhruval Patel, Apurv Khanna. SUNY Upstate, Syracuse, NY, USA Trabectedin is an orphan chemotherapy drug used in the treatment of resistant soft-tissue sarcomas. Its major side effects includes myelosupression, hepatic toxicity and in rare cases rhabdomyolysis induced nephrotoxicity. Here we present a case of metastatic renal leiomyosarcoma who was treated with trabectedin and developed irreversible acute renal failure, which was not due to rhabdomyolysis.

42 year old female with a history of metastatic leiomyosarcoma of left kidney treated with left nephrectomy and post operative radiation. She received 7 cycles of MAID chemotherapy, for liver metastasis. She was enrolled in a clinical trial using the study drug, Trabectedin because of her progression of the metastatic disease. Five days before the admission, she received the first dose of trabectedin 1.25 mg/m^2 via 24 hr intravenous infusion. Her creatinine was 1mg/dl four days before the trabectedin dose. She was admitted with acute kidney injury, labs revealed creatinine of 3.9 mg/dl, BUN of 64 mg/dl, bicarbonate of 12 mg/dl, potassium of 5 mg/dl. Her dipstick urinalysis revealed specific gravity of 1.010 with pH of 5.5, protein of 100 and 1+ hemoglobin. CPK was normal. Her creatinine and acidosis deteriorated despite initial aggressive volume expansion with normal saline, and later with D5W with 150 meq of bicarbonate. Unfortunately before hemodialysis can be started for worsening renal failure and acidosis, her clinical condition deteriorated further and family opted for comfort care and she died.

Here we present a fatal case of irreversible renal failure independent of rhabdomyolysis following single dose of Trabectedin. Mechanism of renal failure following Trabectedin is not very clear, but experiments in monkeys has shown tubular dilatation and necrosis following Trabectedin infusion. It is possible that acute tubular injury may be the etiology of Trabecetidin induced renal injury.

Our case illustrates that renal function needs to be monitored closely after Trabectedin therapy even in patients with normal renal function. Safety of Trabectedin in patients with impair renal function is questionable. Whether intravenous hydration before and after Trabectedin infusion will prevent or limit renal injury is unclear and needs further research.

CONTINUOUS RENAL REPLACEMENT THERAPY in ICU: ARE WE ACHIEVING PRESCRIBED FLUID BALANCE? Sagar S Patel, William Weber, Nand K Wadhwa. Stony Brook University, Stony Brook, NY, USA.

Excessive fluid overload contributes to increased mortality in patients with acute kidney injury (AKI) in the ICU setting. Continuous renal replacement therapy (CRRT) is used to optimize metabolic control and volume status in unstable patients with AKI. We investigated physician's CRRT orders compared to actual delivered CRRT treatments to evaluate if goals were achieved. We collected data in 18 consecutive patients (Mean age 53 $\pm$ 17 years (SD); 12 males and 6 females) with AKI undergoing CRRT using the Prisma M100 set with AN69 hemofilter from Feb to Nov, 2011 monitored up to five consecutive days. All patients received citrate anticoagulation as per protocol with an effluent rate of 25-30 ml/kg/hr. ICU flow sheets with admission weight (WT), daily WT and daily fluid balance calculations were compared with physician orders. The mean hours of filter survival was 53hrs. The mean hrs of treatment given was 19.9$\pm$ 7.3 on day 2. The mean admitting WT was 80.2 kg which increased to mean pre-CRRT WT of 99.0 $\pm$ 25.6 kg. After 2 consecutive days on CRRT, the mean weight decreased to 98$\pm$ 23.1 kg which was not significant. Mean total fluid loss over 2 days was 360 mL. However the mean weight on day 5 was 92.9$\pm$ 25.3 which was significantly (p=.01) lower from day 2. Mean total fluid loss over 5 days was 3200mL. The mean prescribed ultrafiltration (UF) rate was 35.3$\pm$ 28.4 mL/hr while delivered UF rate 52.7$\pm$ 48.6 mL/hr on day 2 (p=.02). On day 2, the mean fluid removal set on the Prisma machine was 6495 mL/day while mean net fluid removal was lower at 6014 mL/day which was significantly lower (p=.003). The data showed the net fluid removal was significantly lower than what was set at the Prisma machine. However significant weight loss and fluid removal was achieved by day 5. In conclusion, delivered ultrafiltation was higher than the prescribed.

DABIGATRAN ASSOCIATED ACUTE RENAL FAILURE (DAARF)

Patricio A. Pazmiño, Nephrology, Internal Medicine and Hypertension (NIH) Center and PFSM Texas Tech Univ. Health Science Center, El Paso, TX, USA

Dabigatran (Pradaxa®) is a direct thrombin inhibitor widely advertised for stroke prevention in atrial fibrillation (AF). No tests monitoring is recommended

DAARF has not been reported before and occurred in two patients 5 to 15 days after initiation of dabigatran. Information for one of the cases is provided.

Case 1: 69-year-old Hispanic male admitted for epistaxis increased bruising and bleeding on open scars. Evaluation showed hyperkalemia, acute renal failure, coagulopathy and cardiac arrhythmias. A year ago, he had an implantable cardioverter-defibrillator (ICD)/pacemaker post cardiopulmonary arrest. His PMH included hypertension, diabetes mellitus, obesity, gout, hypercholesterolemia, chronic obstructive pulmonary disease and mild renal insufficiency. He was doing well on his regular 12 outpatient medicines -that did not include nonsteroidal or nephrotoxic agents- until five before admission when he was started on dabigatran 150 mg twice daily. This was discontinued after 9 doses. Prior outpatient serum creatinines ranged from 2.0 to 1.3 mg/dL.

On admission the BP was 104/50, pulse 81,RR 18 , T 97.3 F, pulse ox 96% on room air, wt 250 lbs and ht 64". The remainder of the exam was negative except as noted above. The serum K 6.1 BUN 224, Cr 18.2, CO2 18, Cl 118, Glucose 162, AST 26, ALT 14, Lipase 100, CK 1188, CKMB 2, Troponin 0.07, and BNP 123. The WBC 9.900 with 77.9% neutrophils, 10.3% lymphocytes, 3% monocytes, 0.6% eosinophils. HCT 36.8%, platelets 204,000, PT 38.2, PTT 63, and INR 3.6. Urine toxicology screen: negative. Lactic acid 0.7, uric acid 8.2. CXR: mild cardiomegaly, pacer in place. Abdominal ultrasound: negative. ECG: AF with rapid ventricular response. He was treated overnight for hyperkalemia, given normal saline boluses and received Vitamin K, fresh frozen plasma and desmopressin for the coagulopathy. Later, he received two units of RBC's.

Because of recurrent episodes of malignant tachyarrhythmias, after the first hemodialysis (HD), he had ablation of arrhythmias and reprogramming of the dual chamber ICD. He required seven HD treatments, daily for 4 days and then 3 every other day. The serum creatinine decreased to 1.8 mg/dL and he was discharged home in an improved condition without dabigatran.

It is concluded that elderly and chronic kidney disease patients should get renal and hematologic parameters before and after the initiation of dabigatran therapy.

RESULTS OF A ONE-YEAR ASSESSMENT OF QUALITY INDICATORS IN AN ACUTE DIALYSIS PROGRAM OPERATED BY A LARGE DIALYSIS PROVIDER (LDO)

Joanne Brady, Benjamin Chen, Tom Seguine, David Stone, Robert Provenzano
DaVita Inc., Denver, CO, USA

The delivery of acute dialysis has traditionally operated outside the framework of formal clinical quality assessment and improvement programs. There has been scant information published about quality indicators in the provision of acute dialysis treatments. To improve quality of service, enhance communication among patient care teams, understand the nursing care given, and optimize clinical outcomes for patients, our nurses completed an **Acute Clinical Outcome Indicators (ACOI)** form for each dialysis treatment within an acute dialysis program for 2010. Participating facilities provided 288,885 treatments in 2010. We present key indicators of processes of care measures using the data from each treatment.

Question	Goal	Actual
Vascular access - signs and/or symptoms of infection present (% of No)	95%	97%
Hypotensive episode during treatment (% of No)	90%	77%
Pre-treatment report from hospital nurse (% of Yes)	100%	97%
Post-treatment report to hospital nurse (% of Yes)	100%	99%
Pre-weight completed (% of Yes)	95%	74%
Post-weight completed (% of Yes)	95%	66%
Hgb < 9.0 g/dL (% of No)	95%	79%
Dialyzer and/or system clotted during treatment (% of No)	95%	94%
Procedure education provided to patient and/or family (% of Yes)	85%	89%
Time-Out/Safety Process per LDO P&P performed (% of Yes)	100%	97%

Tracking of clinical measures using our ACOI process established baseline data in the provision of acute dialysis treatments. This data will be used as a benchmark to assure patients, payers and healthcare providers of the value of the prescribed therapy, as well as be valuable in establishing future safety and patient outcomes quality measures.

ACUTE KIDNEY INJURY IN HOSPITALIZED ADPKD PATIENTS: A RETROSPECTIVE STUDY

Vela Myriam, Qi Qian
Mayo Clinic, Rochester, MN

Studies have shown that incidence of acute kidney injury (AKI) in hospitalized patients is ~10-20%, and AKI is an independent predictor of mortality. In a recent case-control study, we show that patients with ADPKD, a common genetic disease, admitted to hospital for acute pneumonia had a significantly increased incidence of developing AKI than non-ADPKD patients with comparable kidney function. In this study, we further examined the incidence of AKI in all hospitalized ADPKD patients in our institution in the past 2 decades.

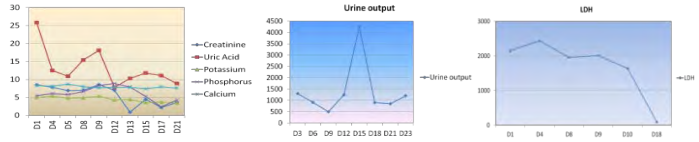
After excluding patients on dialysis, with organ transplantation and age <18 years, 122 ADPKD patients were enrolled. AKI was defined according to the AKIN criteria. The major causes for hospitalization in the 122 ADPKD patients were cyst-related procedures (de-roofing and/or resection) (45%), abdominal processes (complicated pain, vomiting, hernia and diverticulitis) (18%) and vascular surgeries (8%). Sixty-four (52.5%) of the 122 developed AKI based on AIKN criteria. Mean serum creatinine levels (in mg/dL) were 2.17±0.13(SEM) (on admission), 2.55±0.15 (peak) and 2.0±0.12 (at discharge). Two of 64 AKI patients were discharged on hemodialysis. Gender distribution was similar in 64 AKI and 59 non-AKI patients. AKI patients tended to be older (56.3±1.6 vs. 51.0±0.19 years), had a slightly higher mean baseline creatinine (1.78±0.10 vs. 1.48±0.13 mg/dL within 6 months of hospitalization), and had a higher level of comorbidities (4.2 vs. 3.5 clinical diagnoses on treatment). Patients who developed AKI also had a longer hospital stay and more frequent requirement of mechanical ventilation than those without AKI, 11.7±0.12 vs. 8.04±2.93 days ($P<0.01$) and 23 vs. 18 patients, respectively.

This study shows that hospitalized-ADPKD patients have a higher incidence of developing AKI, which contributes to a longer duration of hospital stay. ADPKD is likely a risk factor for AKI in hospitalized patients.

EXTRACAVITARY PRIMARY EFFUSION LYMPHOMA PRESENTING AS SPONTANEOUS TUMOR LYSIS SYNDROME: A CASE REPORT

Swarna P Rai, Peter Hart, Erin O'Sullivan
John H Stroger Jr. Hospital of Cook County, Chicago, Illinois.

58 year old man with a 10 year history of HIV(CD4 138) and Kaposi Sarcoma presented with a 7 day history of fever, abdominal pain and distension. Urine output was > 400 ml/day. Serum creatinine was 8.5 mg/dl (baseline 1.1 mg/dl), K of 5.0 meq/L, Uric Acid of 25.8 mg/dl, Phosphate of 5.5 mg/dl, Ca of 8.3 mg/dl and LDH of 2149 U/L Urine microscopy revealed renal tubular epithelial cells. CT scan showed diffuse soft tissue masses involving the transverse mesocolon, omentum, right perirenal space, bladder, pericaval and inguinal lymph nodes. There was also moderate ascites, splenomegaly and mild bilateral hydronephrosis. Endoscopy showed a large fungating mass in the duodenum and biopsy was positive for CD138 and focally positive for 79a. Immunostaining of biopsy samples were positive for HHV-8 and negative for EBV.A diagnosis of spontaneous tumor lysis syndrome with non oliguric acute kidney injury due to extracavitary Primary Effusion Lymphoma (PEL) was made. Rasburicase 4.5 mg was administered on admission and day 9.On day 10, the patient developed uremic encephalopathy and hemodialysis was initiated. Additionally, HAART was resumed and chemotherapy with Cyclophosphamide, Doxorubicin, Vincristine and Prednisone was administered. Renal function improved after three sessions of dialysis and at discharge serum creatinine was 2.2 mg/dl. CT done 2 weeks after initiation of chemotherapy showed interval reduction in size of the tumor. Patient was discharged after one month and is currently doing well after three cycles of chemotherapy.



Primary effusion Lymphoma is a very rare form of Non Hodgkin's Lymphoma (NHL) caused by HHV 8. Spontaneous tumor lysis syndrome has been reported in few cases but our patient is the first case of extracavitary PEL presenting as spontaneous tumor lysis syndrome, treated with chemotherapy and dialysis with good clinical response.

PITFALLS IN DOSING VANCOMYCIN: QUEST FOR THE HOLY GRAIL-ACHIEVING THE APPROPRIATE TROUGH LEVEL

Shivani Ruben, Farhan Bangash, Harold M. Szerlip
University of Arizona Health Network, Tucson AZ

Because of treatment failures newer consensus guidelines recommend dosing vancomycin to achieve a steady state trough level between 15-20mg/dl. Unfortunately, vancomycin nephrotoxicity rises steadily with trough levels > 20 mg/dl and therefore proper dosing is paramount. Dosing is based on a weight based loading dose with subsequent doses determined by creatinine clearance. The trough level should be checked just prior to the 4th dose. Achieving the appropriate trough level is oftentimes problematic. We reviewed charts of all patients whose vancomycin trough levels were > than 25 mg/dl during a 6 month period to determine the cause of the elevated levels.

54 elevated Vancomycin levels were identified in 38 patients. Incomplete data were available in 6 patients with 7 elevated trough levels. We analyzed 47 elevated levels in 32 patients. The elevated trough levels could be divided into 4 major causes: 1) Trough level checked at the wrong time (21%), 2) Incorrect dosing (19%), 3) Dosing based on incorrect creatinine clearance because of changing renal function (23%) and 4) abnormal pharmacokinetics (36%).

It is becoming increasingly recognized that elevated trough vancomycin levels are associated with nephrotoxicty. Although we were able to demonstrate that 40% of the elevated levels could likely be prevented with proper education, it would have been difficult to appropriately dose vancomycin in the majority of patients with elevated levels using current algorithms. Because of this we suggest that other potentially less toxic antibiotics be considered.

USE OF ULTRASOUND RESISTIVE INDEX IN PREDICTING RENAL FAILURE IN SEPTIC ICU PATIENTS

Sandilya, Sandipani. Parikh, Coral. Eisen, Lewis Golestaneh, Ladan.
Montefiore Medical Center, Bronx, New York, USA

The objective of this study is to determine whether ultrasound measured resistive index (RI) can be used to accurately predict the development of acute kidney injury (AKI) in patients with presumed sepsis and no prior renal disease. RI, a tool to assess resistance to flow in the renal arteries, has a normal value of 0.58 +/- 0.10. RI is calculated as (systolic velocity peak – diastolic velocity peak)/systolic velocity peak. In septic acute tubular necrosis (ATN), the spectral analysis shows low systolic peaks and reduction of the diastolic velocity in hypotensive phases, resulting in an elevated RI. When intra-renal vasoconstriction predominates, the RI can approach a value of 1, as diastolic flow can vanish. In a recent study by Darmon et. al, an RI of 0.795 or above was found to predict persistent AKI.

In this study, a renal ultrasound was performed upon admission to the medical care unit (MICU) on patients who satisfied the inclusion criteria: a diagnosis of the systemic inflammatory response syndrome with a presumed infection and a creatinine of less than 1.5 mg/dl prior to presentation. Patients were followed for development of AKI as defined by the RIFLE criteria. Thirteen patients have been recruited so far. Six patients were male and seven were female, with a median age of 59. Five patients were diabetic and seven had hypertension. The RIs ranged from 0.49 to 0.79. Three of the patients developed AKI. Based on our data from this prospective observational trial, there is a statistically significant correlation between higher RI and incidence of AKI in this group of ICU patients. The mean RI of those that developed AKI versus those that did not was 0.71 +/- -0.07 vs 0.61 +/- 0.07, $P < 0.045$. There were no significant differences in age, gender, body mass index, heart rate, or mean arterial pressures between the patients who developed AKI and those who did not.

Our data shows that a RI above 0.71 correlates with the development of AKI. RI can be used as a screening tool in septic MICU patients without prior renal disease to predict the development of AKI.

RECURRENT RHABDOMYOLYSIS-INDUCED ACUTE KIDNEY INJURY (AKI) IN A PATIENT WITH HIV ON ANTIRETROVIRAL THERAPY

Peter Bryan Schrier, Hitesh H. Shah. Division of Kidney Diseases and Hypertension, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

Antiretroviral medications, specifically tenofovir, have recently been linked to acute tubular necrosis in humans with a suggested mechanism of direct tubular injury. Recently, rhabdomyolysis has been described in an HIV patient on both antiretroviral therapy and a statin. We report a case of recurrent rhabdomyolysis-induced severe AKI in a patient with HIV on triple antiretroviral therapy.

A 42-year-old man with known history of HIV on tenofovir, efavirenz, and emtricitabine presented with oliguric AKI with a serum creatinine of 7.38 mg/dl. Further laboratory evaluation revealed elevated creatinine kinase (199,000 u/L), and elevated LFTs. The patient denied statin or illicit drug use. HIV viral load was undetectable. Antiretroviral therapy was discontinued on admission. The patient was initiated on hemodialysis. A kidney biopsy showed acute tubular necrosis with myoglobin casts. His renal function started to improve and his creatinine kinase (CK) normalized after two weeks. Hemodialysis was subsequently discontinued and his serum creatinine normalized after two months.

Four months later, the patient was restarted on efavirenz and emtricitabine. Pt was also started on abacavir. Two weeks later, he presented with rhabdomyolysis (CK 233,000 u/L) and non-oliguric AKI with a serum creatinine of 4.04 mg/dl. His LFTs were also elevated. Both renal function and CK levels improved after discontinuation of antiretroviral therapy and intravenous hydration.

Three months later, the creatinine improved to 1.41 mg/dl. CK was 212 u/L. The patient was restarted only on efavirenz and emtricitabine. Six months later, the patient's serum creatinine remains stable at 1.4 mg/dl.

In conclusion, we report a unique case of recurrent rhabdomyolysis-induced acute kidney injury in a patient on antiretroviral therapy. We believe that first tenofovir and then abacavir were responsible for rhabdomyolysis and AKI in our patient.

COLLAPSING GLOMERULOPATHY DUE TO PARVOVIRUS: A MYSTERIOUS CASE OF ACUTE KIDNEY INJURY.

Yuvraj Sharma, Glenn Ladinsky and Alan Barman. Crozer Chester Medical Center, Upland, PA, USA

Collapsing focal segmental glomerulosclerosis (FSGS) is characterized by higher incidence of nephrotic syndrome and rapid progression to renal failure. The causes of collapsing glomerulopathy include idiopathic, heroin abuse, HIV, parvovirus B19 infection and pamidronate.

We report the case of a 29 year old African American male who presented with 3 day history of abdominal pain with nausea, myalgias and decreased urine output. He had a past medical history of poly-substance abuse and depression. Examination was unremarkable, except for 2+ pitting edema in lower extremities. Initial laboratory data revealed blood urea nitrogen (BUN) of 44 mg/dl and serum creatinine of 10.2 mg/dl. Two weeks prior, his BUN was 8 mg/dl and serum creatinine was 1.3 mg/dl. So, he was evaluated for acute kidney injury (AKI). Urine analysis showed 500 mg/dl proteins, 1+ blood with no casts; and his 24 hour urinary protein was 3.1 grams. Urinary drug screen was positive for cannabis, cocaine and PCP. CT scan of abdomen showed no hydronephrosis. An extensive workup including hepatitis B/C serology, HIV serology, ANA, P-ANCA and C-ANCA was negative. On further evaluation, patient was found to have positive Parvovirus Ig M serology. This was attributed as the cause of AKI after his renal biopsy showed collapsing FSGS with immunoperoxidase staining positive for Parvovirus. He was treated with hemodialysis and corticosteroid therapy. Over the course of 4 months, the patient had a dramatic response to corticosteroids. He was taken off hemodialysis, with the BUN and serum creatinine at 37 mg/dl and 2.9 mg/dl respectively.

Collapsing FSGS associated with Parvovirus B19 infection is a rare disease with no clear optimum treatment, immunosuppressive have been tried by some with limited success. This case illustrates that Parvovirus B19 infection should be considered in the differential diagnosis of acute renal failure with nephrotic presentation and supports the role of corticosteroids in treating Parvovirus B19 infection associated collapsing FSGS.

COMPARISON OF METHODS FOR ESTIMATING BASELINE CREATININE FOR RIFLE CLASSIFICATION IN BURNED COMBAT CASUALTIES

Ian Stewart[1], Jesse Wickham[1], Molly Tilley[1], James Aden[2], Evan M Renz[2], Kevin K Chung[2]

[1]San Antonio Military Medical Center and [2]United States Army Institute of Surgical Research, Fort Sam Houston, Texas

A common problem in epidemiologic studies of acute kidney injury (AKI) is the absence of baseline serum creatinine (SCr) for estimating AKI stage. Patients injured in combat are at risk for AKI, but progress in this area has been challenging because few subjects have known baseline SCr levels. The purpose of this study is to analyze 4 different methods for the estimation of baseline creatinine for RIFLE stage.

We retrospectively reviewed burned military casualties evacuated to our institution from January 2003 to November 2008. Baseline creatine was then determined by (1) back-calculating the Modification of Diet in Renal Disease (MDRD) equation assuming a estimated Glomerular Filtration Rate (eGFR) of 75ml/min/m^2, (2) assuming a GFR of 100ml/min/m^2, (3) the lowest SCr measured in the first 7 days of hospitalization, and (4) measured admission SCr. Receiver-operator characteristic curves for the outcome of mortality were generated and the area under the curves (AUC) compared.

Of 744 consecutive admissions, 543 meet criteria for inclusion and were analyzed. These majority of these patients were male (98%) and had an average age of 25.5$\pm$ 6.1 years. The mortality rate for the cohort was 7.6% and 4.8% of patients required renal replacement therapy. Median total body surface area burned was 12% with an interquartile range of 5-31%. AUCs for 7-day-low, eGFR 100, eGFR 75 and admission SCr were 0.92, 0.90, 0.87 and 0.76, respectively. Assuming an eGFR of 100 ($p=0.0005$), eGFR of 75 ($p=0.026$) and the lowest SCr in the first 7 days ($p<0.0001$) were all superior to SCr at admission. There were no other statistically significant differences observed between methods.

Among burned combat casualties, estimation of baseline creatinine from the 7-day low measured SCr was most predictive of subsequent mortality, however this difference was not significantly different from back calculating based on the MDRD equation.

DOUBLE TROUBLE: A PATIENT WITH SLE AND TTP

Chandandeep Takkar, Nasim Mastouri, Hasan J Salameh, Ricardo Baltodano, Robert E. Beach. University of Texas, Medical Branch at Galveston

Systemic Lupus Erythematosus (SLE) exacerbation can present with Micro Angiopathic Hemolytic Anemia (MAHA) and thrombocytopenia. At the same time, diagnosis of alternative causes for MAHA and thrombocytopenia including Thrombotic Thrombocytopenic Purpura (TTP) can be challenging and yet, extremely important for optimal management.

We describe a 30 year old patient with SLE who presented with a 3 week history of fever, arthralgias, epistaxis and oral ulcers. On physical exam, she was normotensive and had a temperature of 38^{o} C. She was alert and had no neurological deficits. She was pale and had multiple, shallow ulcers in her oral cavity. Skin and extremity exam revealed a diffuse petechial rash. Studies were remarkable for thrombocytopenia (platelets- $3000/mm^3$), anemia (hgb-8.6 g/dl) and a creatinine of 1.7 mg/dl. Peripheral blood smear showed 4-5 schistocytes/hpf. A direct Coomb's test was positive and she had positive ANA (1:1280), anti -- dsDNA and Anti Smith antibodies. Serum LDH and unconjugated bilirubin was elevated, haptoglobin was low. Based upon clinical and laboratory data, she was strongly suspected to have TTP along with SLE exacerbation and initiated on treatment with high dose steroids and daily plasmapheresis. The level of ADAMTS 13 was obtained and was <5%, confirming the suspicion of TTP. Due to a poor response to plasmapheresis, she was administered rituximab which induced a complete clinical remission.

In conclusion, we emphasize the importance of recognizing alternative causes for MAHA and thrombocytopenia such as TTP, in a patient with known SLE. Furthermore, we report a complete remission with rituximab in this patient with plasmapheresis-resistant TTP.

SALT WASTING NEPHROPATHY AND HYPOKALEMIA: CLINICAL UTILITY FOR DIAGNOSING LEPTOSPIROSIS-INDUCED NON-OLIGURIC ACUTE RENAL FAILURE

Ekamol Tantisattamo, Jason Dinh
Department of Medicine, University of Hawaii, Honolulu, Hawaii

Leptospirosis can manifest with a wide spectrum from self-limited acute anicteric febrile illness to septic shock with multiorgan failure. This leads to difficulty in diagnosis. Even though serum leptospirosis IgM is very sensitive, false negative may occur. Non-oliguric acute tubulointerstitial nephritis with salt wasting and hypokalemia is another clue that is often overlooked in patients with leptospirosis. We report a case of man who had recurrent leptospirosis, but serum leptospirosis IgM was negative. Repeat serum leptospirosis IgM retuned positive.

A 36-year-old man with remote history of leptospirosis presented with fever, generalized muscle ache for 3 days. He had a history of fresh water contact. He was admitted due to septic shock. Laboratory data were significant for total bilirubin of 1.9 mg/dl, and it went up to the peak of 16.6 mg/dl. He had non-oliguric acute renal failure with BUN of 55 mg/dl and serum creatinine of 5.2 mg/dl. Urinalysis showed 50-100 RBC/hpf and no glucosuria or proteinuria. Serum potassium was persistent low with a range of 2.9 – 3.6 mmol/l. Spot urine potassium was 36.7 mEq/l. He also had hypernatremia due to osmotic urea diuresis. Serum sodium was corrected with free water. Serum creatinine was improved to 1.3 mg/dl. He was initially treated with doxycycline for presumable leptospirosis. Serum leptospirosis IgM was negative. His conditions were improved. Repeat serum leptospirosis IgM returned positive.

Leptospirosis-induced acute renal failure occurs 5-10% of cases and has unique renal manifestations. No glucosuria suggested preserved proximal tubular dysfunction. Additionally, non-oliguric acute tubulointerstitial nephritis with salt wasting nephropathy and hypokalemia indicates the defect in the thick ascending limb of loop of Henle typically found in leptospirosis renal disease.

Salt wasting nephropathy and hypokalemia in non-oliguric acute renal failure should raise a suspicion for leptospirosis especially in the patient who has acute febrile illness and risks of disease exposure; even though initial serum leptospirosis IgM may be false positive.

IPILIMUMAB INDUCED GRANULOMATOUS INTERSTITIAL NEPHRITIS

Bijin Thajudeen,Sireesha Koppula,Machiah Madhrira
University of Arizona,Tucson Arizona

Drug-induced interstitial nephritis is a recognized cause of acute and chronic renal failure. Some of them lead to formation of granulomata .T cell mediated immune response is implicated in the pathogenesis. Here we describe the case of a 74 yr old male patient with metastatic melanoma who was referred to our clinic with history of rash and worsening renal function.Because of subacute onset, progressively worsening renal function in presence of skin rash, elevated liver enzymes and in the back ground of exposure ,medication induced interstitial nephritis was suspected.He received 3 doses of Ipilimumab, a novel drug used in the treatment of metastatic melanoma within 3 months prior to onset of renal failure.In addition there was history of exposure to ibuprofen,omeparazole and ciprofloxacin even though renal function started worsening even before the exposure to ibuprofen and ciprofloxacin.All medications were stopped and retesting one week later showed worsening renal function.Hence a renal biopsy was done which showed granulomatous interstitial nephritis.Renal biopsy findings ,temporal relation between renal failure and exposure to medication and review of literature supported a diagnosis of Ipilimumab induced renal failure. He was started on steroids and renal function recovered in the next one month. Immune related adverse reaction is one of the common side effects of Ipilimumab.Ipilimumab induced hepatitis and colitis have been previously reported in literature. This is the first ever case report of Ipilimumab induced Granulomatous Interstitial nephritis.

PHENTERMINE INDUCED ACUTE INTERSTITIAL NEPHRITIS- Jiwan Thapa, Ankit Sakhuja, Brian Stephany, Cleveland Clinic Foundation, Cleveland, Ohio

We present a case of previously healthy, normotensive 59 yr old Caucasian female with baseline Serum Creatinine (S.Cr) of 0.9 mg/dl who presented with fatigue, low grade fever, nausea, dyspnea and low urine output for 2 weeks. Her BP was 182/92 mmHg and examination revealed normal heart & lung findings and absent edema, JVD, rash, lymphadenopathy or eye findings. She had finished a 6 wk course of Phentermine 2 wks prior to presentation with 20 lbs weight loss and was not on any NSAIDS, antibiotics or over the counter medications.

Initial lab work revealed BUN/S.Cr of 35/3.65 mg/dl which peaked at 65/4.38 mg/dl on day 6 of admission. Urine studies showed no proteinuria, hematuria or eosinophiluria and few WBC casts. Blood-work showed normocalcemia, normocytic anemia with peripheral eosinophilia and negative SPEP/UPEP. Other relevant studies included negative urine and blood cultures, Hepatitis panel, HIV, ANA, ANCA. USG showed relatively large kidneys (12.7 and 13.9 cm). Renal biopsy was done on day 3 which revealed Granulomatous interstitial nephritis with lymphocytic infiltration and no Schaumann bodies. Immunoflourescence was negative as were AFB and GMS stain. Subsequent work up including PPD, Quantiferon assay, Histoplasma serology and chest X-ray was unremarkable. Treatment was initiated with 60 mg /day oral prednisone tapered over 6 weeks. S.Cr trended down to 1.2 mg/dl at completion of steroid taper.

Phentermine is a sympathomimetic anorexiant which remains in use as a diet suppressant despite concerns for pulmonary hypertension and valvular heart disease. It has been linked to renal failure due to rhabdomyolysis. Our case reports convincing evidence of Phentermine induced acute interstitial nephritis (AIN) treated successfully with steroid. AIN is a rare side effect of this diet pill which, to our knowledge, has been reported only once in the past.

INTRAVENOUS BLEACH INJECTION-RELATED AKI Ashish Verma, Sunitha Golla, Fernando Ottino, Matthew Trainor, Konstantin Abramov. University of Massachusetts Medical School, Worcester, MA. **Introduction** Sodium hypochlorite (NaClO) is the key ingredient of household bleach (1-6%solution). Oral ingestion of bleach is not uncommon but parental injection is exceedingly rare. We report the first case of parental administration of bleach leading to acute kidney injury (AKI) necessitating dialytic support. **Case report** An 18-year-old female presented with black urine following self infusion of 100mL of bleach through a Port-A-Cath meant for parental administration of antibiotics for chronic Lyme disease. Patient was awake, confused and hemodynamically stable. Physical exam was unremarkable. Serial specimens were rejected by automated analyzers due of hemolysis. Subsequently, she was found to have intrinsic acute kidney injury with hemolysis. Urine was charcoal black and sediment only showed monomorphic RBCs. Kidney biopsy confirmed acute tubular necrosis. Patient was hemodialysed for removal of toxin and a week later, she had complete renal recovery with resolution of hemolysis. **Discussion** NaClO has been used as a disinfectant for syringes, dialysis machines and in dental procedures. Its nephrotoxicity is due to direct tubular injury and hemolysis from rapid protein degradation, alkalization and hypertonicity of solution. No antidote is known but forced diuresis, hydration and sodium thiosulfate have been used with unclear benefits. NaClO molecule is easily dialyzable due to low molecular weight and small volume of distribution. Early hemodialysis may prevent toxic injury. Large volume injection of IV bleach has not been previously described and though it causes severe AKI - it is recoverable. We should suspect bleach toxicity in AKI with 'black urine' apart from falciparum malaria and other causes of severe hemolysis.

Day	Creatinine	HCT	LDH	Bilirubin
0	0.63	43.4	145	0.2
1	2.99	27.7	1984	2.3
2	4.42	24.5	1603	1.4
3	6.26	22.9	1058	1.2
4	7.43	21	743	-
>28	0.61	39.1	623	0.5

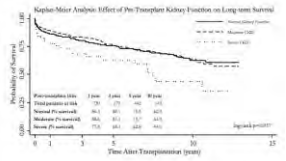
PANCREATITIS-INDUCED HUS-TTP Ashish Verma, Vishesh Chhibber, Eric Iida. University of Massachusetts Medical School, Worcester, MA. The thrombotic thrombocytopenic purpura-hemolytic uremic syndromes (TTP-HUS) have diverse etiologies but events that may trigger an acute episode are often unclear. We describe a rare occurrence of TTP-HUS following acute pancreatitis. A 28-year-old white woman with Crohn's disease presented with sudden onset of severe abdominal pain and vomiting. Her Crohn's disease was at baseline on Mesalamine. At presentation, she was alert, afebrile, normotensive and without a rash. Lipase and CT with oral contrast confirmed acute pancreatitis. Mesalamine was discontinued as the potential cause. Pain improved with supportive management. However, two days later, she developed acute kidney injury with microangiopathic hemolytic anemia. There was no evidence of sepsis, DIC or autoimmune hemolytic anemia. Urine dipstick was 3+ for blood; sediment had muddy-brown casts with no red cells. She empirically received a single dose of therapeutic plasma exchange (TPE) and made a complete recovery without recurrence. ADAMTS13 subsequently returned not deficient. Pancreatitis may follow but here clearly preceded the HUS-TTP and has only rarely been reported. Pancreatitis may trigger episodes of TTP-HUS through inflammatory cytokines that 1) stimulate endothelial cell release of ultra large and hyper-reactive Von Willebrand factor multimers and 2) inhibit the cleavage of these multimers by ADAMTS13. This case highlights pancreatitis as a possible trigger for HUS-TTP and the unclear role of TPE in its management.

Day	Hgb	Hct	Platelet	LDH	Lipase	Creatinine
1	14.8	37.1	591	-	1130	0.88
3	8.3	24.2	108	1637	384	3
5	6.6	18.7	24	2139	153	4.23
Post-TPE	8.4	24.3	65	893	-	2.92
>14	13.6	40.2	237	245	-	0.79

DOES MODERATE KIDNEY DYSFUNCTION ESTIMATED BY CKD-EPI FORMULA IMPACT LONG-TERM SURVIVAL FOLLOWING HEART TRANSPLANTATION?

*Ammar Almehmi, Halit Yerebakan, Mengxi Ji, Alexandra Ross, J Jiang, LK Soni, S Jones, M Argenziano, CR Smith Jr, Y Naka, H Takayama, PC Schulze, Faisal H. Cheema. *U of Tennessee, Memphis, TN. Columbia University, New York, NY.

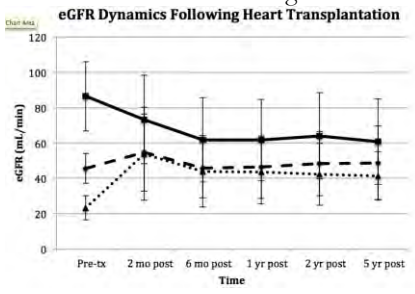
Chronic kidney disease (CKD) is associated with poor survival in patients undergoing orthotopic heart transplantation (OHT). Current guidelines preclude patients with decreased estimated glomerular filtration rate (eGFR) from being listed for OHT. We sought to examine whether pre-OHT eGFR thresholds are associated with long-term survival. 844 OHT recipients between 1998 and 2010 were retrospectively reviewed. eGFR was calculated using the CKD-EPI equation. Patients were grouped based on pre-OHT eGFR (ml/min) level: normal kidney function (eGFR>60; n=446), moderate CKD (eGFR>30-60; n=352), and severe CKD (eGFR ≤30; n=46). Kaplan-Meier estimates were used to determine actuarial survival. The primary endpoint was all-cause mortality after OHT. Mean pre-OHT eGFR (mean±SD, ml/min) was 86.4±19.7, 45.6±8.5 and 23.3±6.8 in normal, moderate and severe CKD groups, respectively. Corresponding in-hospital mortality was 8.24%, 6.67%, and 17.78% (p=0.036). Of note, moderate CKD did not predispose OHT recipients to decreased survival when compared to the normal group (68.7% vs. 71.33%; p=0.481) at 5 years post-OHT. However, the severe group compared to all others (normal and moderate combined) had significantly lower 5-year survival (69.9% vs. 54.1%; p = 0.043). Overall long-term survival was significantly reduced in the severe group when compared against other groups (see figure; log-rank p=0.017). Long-term survival outcomes are comparable in normal and moderate CKD groups. These data suggest that moderate reduction in eGFR should not be considered a contraindication for listing patients for OHT. Further investigation to determine the actual eGFR threshold associated with worsened outcomes in OHT recipients is warranted.



DYNAMICS OF KIDNEY FUNCTION FOLLOWING ORTHOTOPIC HEART TRANSPLANTATION USING CKD-EPI BASED GFR ESTIMATION

Halit Yerebakan, *Ammar Almehmi, Mengxi Ji, Alexandra Ross, J Jiang, L Soni, S Jones, M Argenziano, CR Smith, Y Naka, H Takayama, PC Schulze, Faisal H. Cheema. Columbia University, New York, NY. *Univ of Tennessee, Memphis, TN.

Although chronic kidney disease (CKD) is a common complication following orthotopic heart transplantation (OHT), the long-term effect of OHT on estimated glomerular filtration rate (eGFR) is not well defined. We sought to characterize the dynamics of eGFR among OHT recipients. We retrospectively reviewed 844 patients who underwent OHT between 1998 and 2010. eGFR was calculated using the CKD-EPI formula. Based on pre-transplant eGFR (ml/min), patients were divided into 3 groups: normal kidney function (eGFR >60), moderate CKD (eGFR >30-60), and severe CKD (eGFR ≤30). Mean age was 52.3±13.1 years with 23.9% females and 14.5% African Americans. Pre-transplant eGFR (mean ± SD) in the normal kidney function, moderate CKD and severe CKD groups was 86.38±19.66, 45.59±8.47 and 23.26±6.84, respectively. Patients with moderate and severe CKD demonstrated initial improvement in eGFR at 2 months post-transplantation but stabilized at 6 months following OHT (Figure; p<0.001). Conversely, patients with normal kidney function showed a progressive decline in eGFR, reaching a nadir at 6 months following OHT; thereafter, eGFR remained stable throughout the follow up period up to 5 years (Figure; p< 0.001). Whereas patients with moderate and severe CKD showed biphasic changes in eGFR during the first 6 months following OHT, those with normal kidney function demonstrated a steady decline in eGFR. Such fluctuations of eGFR, related to loss of muscle mass or immunosuppressive therapy, warrant close monitoring of renal function in OHT recipients.



MANAGEMENT OF CHRONIC KIDNEY DISEASE IN PATIENTS WITH AND WITHOUT CONGESTIVE HEART FAILURE

Manthodi Faisal[1], Peter Burke[2], Wei Zhang[3], James Bowen[3], Claudine Jurkovitz[3], Rubeen Israni[1]

[1]Nephrology Associates PA; [2]Christiana Care Health Systems; [3]Christiana Care Center for Outcomes Research; Newark, DE

Chronic kidney disease (CKD) has been shown to be independently associated with worsening outcomes in patients with congestive heart failure (CHF). The prevalence of anemia, metabolic bone disease and malnutrition increases with advancing CKD. The management of CKD co-morbid conditions as well as preparation for dialysis in patients with CHF has not been studied.

A retrospective cohort of patients followed in a large Nephrology practice between 2000 and 2010 was evaluated. Adult patients with CKD stage 3 and above were included. Dialysis and Transplant patients were excluded. The practice electronic health records (EHRs) were linked to the health system's hospital EHR to identify patients with CHF (hospital admission with a primary or secondary diagnosis of CHF). Anemia, malnutrition and metabolic bone disease management was compared between patients with and without CHF.

A total of 15,448 patients were included in the analysis, of whom 3,650 (23.6%) had CHF; 46.0% of the CHF patients were female versus 48.3% of those without CHF (p=0.0187); 50.8% of those with CHF were white versus 55.5%; Comparing patients **with** CHF versus **without** CHF: mean age (SD) was 68.7 (12.9) versus 64.6 (14.5), p<0.0001; 63.4% had CKD stage 3 versus 77.4%, 29.6% had CKD stage 4 versus 18.1% and 7.0% CKD had stage 5 versus 4.5% at entry in the study (overall p<0.0001); 14.1% never had serum albumin measured versus 9.2%, p<0.0001; mean albumin was 3.7 (0.5) mg/dL versus 3.9 (0.5), p<0.0001; mean calcium was 9.1 (0.6) mg/dL versus 9.3 (0.6), p<0.0001; only 3.0% never had calcium measured versus 1.4%, p<0.0001, whereas as many as 62.2% never had hydroxy Vitamin D measured versus 55.6%, p<0.0001; mean intact PTH was 144.6 (141.6) and 95.1 (112.8), p<0.0001; mean hemoglobin was 11.6 (1.4) versus 12.2 (1.7), p<0.0001. Finally the ratio of catheters to fistulas was 2.2 for CHF patients and 1.6 for non CHF patients.

Overall CKD management was better in the non-CHF group compared to the CHF group. Differences in the management of these conditions in CKD patients with and without CHF may contribute to the higher mortality seen in CHF patients and point to modifiable risk factors.

ASSOCIATION OF ERYTHROPOESIS STIMULATING AGENT INDEX (ESAI) HYPORESPONSIVENESS WITH MORTALITY IN NON-DIALYSIS DEPENDANT CHRONIC KIDNEY DISEASE (NDD-CKD) PATIENTS AND EFFECT MODIFICATION BY PLATELET

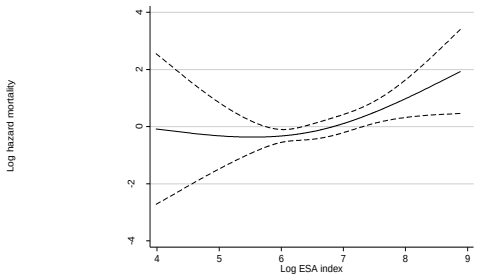
Suchet Kaur, Carilion Clinic, Roanoke, Virginia; Jun L Lu, Salem Research Institute, Salem, Virginia; Kamyar Kalantar-Zadeh, Harbor-UCLA, Torrance, California; Csaba P Kovesdy, Salem VA Medical Center, Salem, Virginia.

ESA therapy targeting higher hemoglobin may be harmful due to off-target effects of higher ESA doses, like inducing thrombocytosis.

We examined the association between ESAi (the ratio of weekly ESA dose and blood hemoglobin) and all-cause mortality in 1,232 males with CKD stage 1-5 of which 585 patients died (mortality rate, 95%CI: 117/1000 patient-years (108-127)) over a median follow-up 3.6 years. Associations of time-varying ESAi with pre-dialysis mortality overall and in subgroups with different platelet counts were examined in Cox models with adjustment for demographics, comorbidities and labs. Nonlinear associations were explored by using cubic splines.

A one log-unit higher ESAi was associated with a mortality hazard ratio (95%CI) of 1.95 (1.25-3.02), p=0.003). Compared to patients on no ESA, in those with ESAi >1200 the adjusted HR of mortality (95% CI) in patients with platelet counts of <130, 130-320 and >320 was 2.3 (0.9-6.0), 1.2 (0.5-2.5) and 3.1 (0.6-15.4).

Increasing ESAi is associated with higher mortality in patients with moderate and advanced NDD-CKD. This could be mediated by changes in platelet counts



VITAMIN D RECEPTOR AGONISTS UPREGULATE KLOTHO AND DECREASE VASCULAR CALCIFICATION IN MICE WITH MILD CHRONIC KIDNEY DISEASE

Wei Ling Lau[1], Elizabeth M. Leaf[1], Ming Chang Hu[2], Makoto Kuro-o[2], Orson W. Moe[2], Cecilia M. Giachelli[1]
[1]University of Washington, Seattle, Washington, USA
[2]University of Texas Southwestern Medical Center, Dallas, Texas, USA

Vascular calcification (VC) is common in CKD and ESRD patients, where cardiovascular mortality is the leading cause of death. CKD patients are often prescribed vitamin D receptor agonists (VDRAs), however the mechanisms underlying the survival benefit of these agents remain unclear. The purpose of this study was to examine the effects of two VDRAs, calcitriol and paricalcitol, on VC in mice with mild CKD.

DBA/2J mice underwent partial renal ablation followed by high-phosphate diet x3 weeks. We evaluated VC after treatment with calcitriol (30 ng/kg) or its analog paricalcitol (100 ng/kg and 300 ng/kg) injected IP 3X per week for 3 weeks. CKD was achieved with average BUN 40$\pm$9 mg/dL *vs* 27$\pm$5 mg/dL in control mice. CKD mice fed a high-phosphate diet had elevated serum calcium, phosphate, FGF-23 and PTH levels, and very low serum klotho. These mice developed aortic calcification in the range of 22.6$\pm$18.1 ug calcium per mg dry weight. Both VDRAs significantly decreased aortic calcification by ~50% and this was associated with increased serum klotho, lowering of serum FGF-23, increased renal phosphate clearance and normalization of serum calcium and phosphate. Serum BUN and PTH remained elevated in the VDRA-treated mice.

In conclusion, calcitriol and its analog paricalcitol were equally effective in decreasing VC in high-phosphate fed mice with mild CKD. Furthermore, these studies are the first to suggest a therapeutic role for klotho upregulation in the cardiovascular benefits of VDRAs on VC.

INFLUENCE OF KIDNEY FUNCTION ON RISK OF HEMORRHAGE AMONG PATIENTS TAKING WARFARIN

Mohit Limdi, Michael Crowley, Nita Limdi, Michael Allon
University of Alabama at Birmingham, Birmingham AL

Chronic kidney disease (CKD) is common in patients with cardiovascular diseases. Doctors have noted that patients with CKD more adverse drug effects on cardiovascular medications (e.g. warfarin) as compared to those without CKD. The **aim** of this study is to determine if the risk of major hemorrhage is higher among patients with CKD and if the risk is higher in patients with Stage 3b CKD compared to Stage 3a CKD.

Methods /Procedures: Glomerular filtration rate (GFR) was calculated for 1248 patients on warfarin therapy. Incidence rates of hemorrhage were compared across kidney function. Time to hemorrhage was analyzed using survival analysis. The risk of hemorrhage was analyzed before and after adjustment for clinical and genetic factors.

Results: As GFR decreases the incidence rate of major hemorrhage increases. Patients with stage 3b CKD have a 2.5 fold higher incidence of major hemorrhage than patients with stage 3a CKD. Compared to patients with GFR>60, those with stage 3b CKD are at a 2.1 fold higher risk of major hemorrhage ($p=0.035$) while those with stage 3a CKD are not at a higher risk ($p= 0.98$). Compared to patients with GFR>60, those with GFR<30 are at a 3.4 fold-higher risk ($p<0.0001$).

Conclusion: This study shows that among patients taking warfarin kidney impairment is an important risk factor for developing major hemorrhage. Studies should be conducted to understand the risk-benefit of warfarin in patients with different levels of kidney function. The FDA should require clinical trials to recruit a study population that mimics the population seen in clinical practice.

MANNITOL – POTENTIAL PROPHYLACTIC ROLE IN HEMODIALYSIS INITIATION

Finnian R. Mc Causland, Sushrut S. Waikar
Renal Division, Brigham and Women's Hospital, Boston, MA, USA

The hemodialysis procedure presents a unique set of physiological stressors to the human body, particularly during initiation. Relatively rapid shifts in blood composition and osmolality may predispose to symptoms of dialysis disequilibrium and intra-dialytic hypotension. We sought to evaluate the use of mannitol during hemodialysis initiation, hypothesizing that mannitol use would be associated with lesser drop in systolic blood pressure (SBP) during dialysis.

We prospectively collected hemodynamic and clinical data from 88 individuals during their 3 hemodialysis initiation sessions at 2 major teaching hospitals in Boston. These centers differ in their standard practice in relation to mannitol prescription, thereby reducing potential confounding by indication. Available data included demographics, laboratory measures, co-morbid conditions, hemodynamic parameters, ultrafiltration volume and details of the dialysis prescription. We used general linear models to determine the association between mannitol use and intra-dialytic hypotension during these treatments.

Mean age was 60.6 yrs (SD 16.8); 68% were male, 19% were black and 40% were diabetic. Mannitol was used in 50% of individuals, with no significant difference in age, race, heart failure or diabetic status. Comparing mean pre-dialysis SBP for mannitol vs none: 139.9 vs 137.4mmHg on day 1 ($p=0.68$); 141.5 vs 136.6mmHg on day 2 ($p=0.40$); and 134.7 vs 141.0mmHg ($p=0.35$) on day 3. Compared to no mannitol use, mannitol was associated with a lesser drop in SBP in both unadjusted (7.5mmHg; p-difference<0.01) and adjusted (7.7mmHg; p-difference <0.01) analyses. In case-mix adjusted models, mannitol was associated with a higher minimum recorded SBP during dialysis (+13mmHg compared to no mannitol; $p<0.01$).

In a preliminary observational study, it appears that administration of mannitol during the first three sessions of hemodialysis initiation significantly lessens the maximal drop in systolic blood pressure. Future work is required to confirm this association, to examine potential underlying biological mechanisms and to identify appropriate blood pressure goals during dialysis.

DETERIORATION OF ANKLE AND TOE BRACHIAL PRESSURE INDICES (ABI-TBI) VALUES DURING A HEMODIALYSIS (HD) TREATMENT PREDICTS IMPAIRED PERIPHERAL CIRCULATION IN HD PATIENTS

Takayo Ogaki, Kayoko Horimoto, Kazuko Arita, Katsutoshi Maeda, Hiroaki Oda, Shigehiro Doi, Takao Masaki
Oda Medical Clinic, Hiroshima University Hospital, Hiroshima, Japan.

Although peripheral arterial disease (PAD) is commonly found in HD patients, few data exist describing hemodynamic changes in lower limbs during an HD treatment in relation to cardiovascular diseases. The purpose of this study was to clarify clinical features playing a role in impaired peripheral circulation caused by PAD. ABI-TBI values were measured at the start and end of an HD treatment and ΔABI-TBI (change ratio %) was calculated in 100 out patients and multi-regression analysis was applied to evaluate suspected clinical features in relation to PAD. Proportions of patients showing ABI≤0.9; 28% and TBI<0.7; 37% at the start of an HD treatment were increased to 30% and 40% at the end of an HD treatment, respectively. ΔABI (R^2=0.300) had a significant relationship to DM (p=0.021), hypotension at the end of a HD treatment (p=0.002), removed volume of body fluid (p=0.003) and a history of stenting of coronary arteries (p=0.018), so as ΔTBI (R^2=0.333) to serum concentrations of creatinine (p=0.021) and total protein (p=0.014). In conclusion, patients with DM as well as ischemic heart disease showing HD-induced hypotension by removing much body fluid have a risk of impaired peripheral circulation caused by PAD.

EVALUATION OF VASCULAR FUNCTION IN END-STAGE RENAL DISEASE: SMALL ARTERY ELASTICITY INDEX CORRELATES WITH PULSE WAVE VELOCITY

William Paulson, Allison Dubner, John White, David Pollock, Jennifer Pollock, Gaston Kapuku. Charlie Norwood VA Medical Center and Georgia Health Sciences University, Augusta, GA

Cardiovascular disease is the most important cause of morbidity and mortality in end-stage renal disease (ESRD). Tests of vascular function are important in evaluating and treating these problems, but standard methods such as pulse wave velocity (PWV) and flow mediated dilatation (FMD) may not be fast and easy enough for widespread use. Measurement of arterial elasticity may meet this need since it is easy to apply and has correlated with clinical outcomes.

Forty stable chronic hemodialysis patients with mean age = 47 years (range 19 - 78) underwent measurement of arterial blood pressure, small artery elasticity index (SAE) and large artery elasticity index (LAE) by the HDI/PulseWave System, carotid-femoral PWV by the SphygmoCor System, and FMD by standard protocol. SAE and LAE are measured with a tonometer that is applied noninvasively over the radial artery; the tonometer performs a pulse contour analysis of the arterial waveform.

Mean values were consistent with arterial dysfunction: high systolic (144 ± 22 mmHg [±SD]) and pulse pressures (62 ± 12 mmHg), low SAE (5.4 ± 2.5 ml/mmHg x100) and LAE (14.5 ± 6.4 ml/mmHg x10), high PWV (9.4 ± 2.8 m/sec), and low FMD (6.2 ± 4.2%). In simple regression analysis, SAE negatively correlated with PWV ($R^2 = 0.26$, $P = 0.002$), but did not correlate with FMD ($R^2 = 0.01$). In multiple regression analysis, SAE correlated with the independent variables PWV, pulse pressure, body mass index, and mean arterial pressure ($R^2 = 0.69$, all $P < 0.002$). LAE did not have any significant correlations.

In conclusion, SAE correlated with PWV and other indicators of vascular function, and is fast and easy to apply. These results support the concept that SAE may be a useful alternative measure of vascular dysfunction in ESRD. Further studies with larger numbers of patients are needed to confirm these promising results.

METROPOLITAN HISTOPATHOLOGICAL CENTER

[1]Jun Wu, [1]Ye Lin, [1]Shengqiang Yu, [1]Xuezhi Zhao, [1]Chaoyang Ye, [1]Lin li, [1]Hongchen GU, [1]Zhenhao Hua, [1]Yanwen Wang, [1]Changlin Mei, [2]Qi Qian

[1]Kidney Institute of PLA, Second Military Medical University, Shanghai, China. [2]Mayo Clinic, Rochester, MN, USA

Idiopathic nodular glomerulosclerosis (ING) is a rare condition. To date, fewer than 70 cases have been reported in English literature. There has been no published information on this entity in Chinese. We retrospectively examined all native kidney biopsy specimens in 2009 and 2010 from a kidney histopathological center in Shanghai. We describe the incidence and clinicopathological features of ING in this patient population.

A total of 2970 kidney biopsy specimen were reviewed. Fifty-two unique non-diabetic cases showed pathological evidence of nodular glomerulosclerosis. After excluding 18 lupus nephritis, 11 amyloidosis, 3 light chain deposition disease, and 2 IgA nephropathy, the remaining 18 cases were classified as ING. Patients with ING had a medium age of 53.5 years, 83.3% were men, 17 (94.4%) of the 18 were overweight (BMI>25), and 6 (33.3%) were obese (BMI>30). Seventeen (94.4%) of the 18 were active smokers at the time of kidney biopsy with a mean accumulative cigarette use of 22±6.7 (SEM) pack years. Sixteen (88.9%) of the 18 had hypertension and 10 (55.6%) had hyperlipidemia on treatment. All 18 patients had proteinuria (>1 g/day) with a mean urine protein of 2.93 ± 0.36 g/d; among them, 7 had nephrotic range proteinuria. Mean serum creatinine level of the 18 patients was 358.2±47.9μmol/L. Histopathologically, in addition to nodular sclerosis, 100% had arterial hyalinosis and glomerular basement membrane (GBM) thickening. Immunofluorescence showed nonspecific staining and electron microscopy showed focal mesangial matrix expansion and focal GBM thickening.

In this study, we show that ING occurs infrequently (~1 in 165 kidney biopsies) in Chinese patients. Consistent with the findings in Caucasian, this disease entity appears positively associated with overweight, smoking and hypertension in Chinese.

PREVALENCE OF ASPIRIN RESISTANCE IN CHRONIC KIDNEY DISEASE PATIENTS

Chadi Saifan, Rabih Nasr, Suzanne E. El Sayegh. Nephrology,Staten Island University Hospital, Staten Island, NY

Background: Aspirin resistance is a new concern with a prevalence of 28% in the population with cardiovascular diseases without a history of CKD. In the hemodialysis population this prevalence was observed to be 34.7%. Aspirin is prescribed frequently in Chronic Kidney Disease (CKD) patients for primary and secondary prevention of cardiovascular diseases. The aim of this study was to determine the prevalence of aspirin resistance in patients with CKD.

Methods: In a cross-sectional study, we measured platelets reactivity in CKD patients on aspirin therapy. A total of 19 patients with CKD stage III and IV were evaluated in this study. The resistance to aspirin was assessed by evaluating the Aspirin Reaction Units (ARU) using platelet function analyzer-100 (VerifyNow Aspirin®). Aspirin resistance is defined as ARU > 550. The control group was a cohort of patients with cardiovascular diseases on aspirin but without CKD.

Results: In the nineteen CKD patients on aspirin the mean ARU was 425.2 compared to 468.03 in the hundred patients in control group ($p<0.003$). The control group was found to have 10% aspirin resistance with ARU >550.

Conclusions: We were able to conclude that our patient with CKD stage III and IV do not have characteristic findings of aspirin resistance by testing ARU. Although our sample size was small this information is helpful as these patients carry a high degree of cardiovascular risk.

AQUAPHERESIS IS ASSOCIATED WITH DECLINED IN RENAL FUNCTION IN CHF PATIENTS

Walter Shakespeare, Hasan Arif, Irfan Ahmed, Nauman Shahid, Ziauddin Ahmed
Drexel University College of Medicine

Treatment of CHF with Aquapheresis using the Aquadex FlexFlow to the patients with poor ejection fraction who were resistant to diuretics showed improved volume removal and reduction in hospital readmission rate. Effect of pure ultra filtration on renal function in patients with Chronic Kidney disease is not known.

Kidney disease is common in patients with advanced heart failure and can be result from intrinsic parenchymal disease or from reversible hemodynamic factors.

We have reviewed the charts of 12 patients who had received ultra filtration by Aquapheresis machine. Aquapheresis was ordered and continued as per cardiology protocol. Ten of the 12 patients had CKD stage 3 and 4 before the treatment. The mean Pre Aquapheresis EF was 27.3%. The mean rate of ultra filtration (UF) was 188.50/hr. The mean duration of treatment per patient was 103 hrs. The indication of Aquapheresis in 66% was due to diuretic resistance and 33% was due to physician's clinical judgment. Two patients needed renal replacement therapy and remained permanently on Dialysis. The changes in BP, ultra filtration rate or presence of other co morbidities did not correlate with the outcome. Mean Pre Aquapheresis SCr was 1.8942 (+/-0.95781) and Post was 2.4892(+/-1.11069) with (P= 0.026). Clinical symptoms of heart failure improved and remaining patients were discharged on oral diuretics along with other cardiac medications except ACEI or ARB.

Renal function declined in all 12 patients at the end of the Aquapheresis treatment despite improvement of CHF symptoms and adequate ultra filtration. Role of isolated UF in CKD patients with advance CHF is not known.

SUBDURAL HEMATOMA MIMICKING TRANSIENT ISCHEMIC ATTACK IN AN END-STAGE RENAL DISEASE PATIENT

Ekamol Tantisattamo, Melvin H.C. Yee
Department of Medicine, University of Hawaii, Honolulu, Hawaii

Subdural hematoma (SDH) usually presents with altered mental status; however, it may mimic a transient ischemic attack (TIA). Even though secondary prophylaxis with antiplatelets is warranted for TIA, it could potentially lead to disastrous results for the patients with SDH. Head CT scan is an initial diagnostic imaging of choice, but misdiagnosed SDH may occur. We report a case of woman presenting with acute left visual loss and expressive aphasia. Head CT scan was interpreted as no intracranial hemorrhage (ICH). Her symptoms were spontaneously resolved within 1 hour. Followup brain MRI revealed 8 mm left parieto-temporal subacute SDH.

A 52 year-old woman with history of end-stage renal disease (ESRD), recent fall with resultant facial injury, presented with bright red blood per rectum. Her baseline Hb of 14 g/dl was dropped to 9.4 g/dl. INR was normal. She took aspirin 81 mg daily. Upper endoscopy showed chronic gastritis. Colonoscopy revealed two 5 cm rectal polyps which was the source of bleeding. She did not have further episode of GI bleeding. One day later, she underwent hemodialysis without heparin for anticoagulants. Intermittent intradialytic hypotension occurred with the lowest SBP of 92 mmHg. Sixteen hours later, she had blurred vision of the left eye and difficulty in formulating words. Head CT scan reported no ICH. The symptoms were resolved 1 hour later. TPA administration was considered but not given. Brain MRI showed 8 mm left parieto-temporal subacute SDH. Eye examination revealed vitreous hemorrhage of the left eye. Antiplatelets was not initiated. Retrospective review of the head CT scan showed subacute left parieto-temporal convexity SDH with mild mass effect.

SDH can present with transient acute focal neurological deficit mimicking TIA. It should be considered in dialysis patients having several risk factors of bleeding including uremic platelet dysfunction, antiplatelet therapy, and hypertension. A SDH should be considered in the differential diagnosis for any TIA. Clinician should be vigilant to review head CT scan, and brain MRI is warranted if initial head CT scan was inconclusive for SDH in patients with high risk of bleeding.

VENTRICULAR ASSIST DEVICES- A TREATMENT OPTION FOR CARDIORENAL SYNDROME. Abraham Thomas, Geetha Bhat, Antoine Tatooles. Advocate Christ Medical Center, Oak Lawn, Illinois. Left Ventricular Assist Device (LVAD) implantation is an effective therapy for patients with end stage heart failure and has been shown to improve functional capacity and quality of life. LVAD implantation may be an option to improve end organ perfusion and reverse declining renal function in selected patients with cardio renal syndrome. Most of these patients are refractory to diuretic therapy and tolerate ultra filtration poorly. A chart review of 30 patients with advanced heart failure (HF) and baseline GFR <45 ml/mt treated with VAD placement was performed. GFR was calculated using the MDRD equation. Over a six year period (2004-2010) one hundred and seventy one VAD's were placed at this institution with a period mortality rate of 38%. Thirty patients had a baseline pre- implantation GFR of <45 ml/mt. The majority of these patients were Caucasian (73%) and male (83%) and their average pre- implantation GFR was 37.4 ml/mt (+- SD 6.7 ml/mt). Five patients (16%) had required renal replacement therapy within 6 months prior to VAD placement. After one year of follow up 21 patients (70%) were alive and their average GFR had increased by 17 % to 43ml/mt (+- SD 11.8 ml/mt). Dialysis was not required for any of these patients. In conclusion the average GFR in patients with advanced stage 3 or 4 chronic kidney disease (CKD) increased by 17% one year after VAD placement as destination therapy for advanced HF. VAD placement should be considered as a treatment option for selected patients with advanced CKD and heart failure.

TRENDS IN HEMOGLOBIN PRE- AND POST-BUNDLE IN HOSPITAL-BASED DIALYSIS CLINICS

Anjali Acharya[1], Nathan Thompson[1], Gregory A. Maglinte[2], Chun-Lan Chang[3], Jerrold Hill[3], David J. Harrison[2], Akhtar Ashfaq[2], Jeffrey Petersen[2], George N. Coritsidis[1]

[1]NYC Health and Hospitals Corporation, New York, NY; [2]Amgen, Thousand Oaks, CA; [3]IMS Health, Plymouth Meeting, PA

In Jan 2011, the Centers for Medicare and Medicaid implemented the ESRD Prospective Payment System (PPS or bundle) to manage the costs of dialysis services. We studied Hb trends in hospital-based dialysis clinics (HBDCs) before and after bundle implementation.

Monthly cross-sectional analyses of electronic medical records from ~3700 hemodialysis patients (≥18 years old and ≥1 Hb in each month) in 59 HBDCs were conducted from Mar 2010 to Sep 2011. We examined changes in mean monthly Hb and the distribution with Hb<10 and >12 g/dL by quarter.

From Mar 2010 to Dec 2010, 20.7% more patients (11.1% to 13.4%) had mean monthly Hb<10 g/dL, and 11.5% fewer patients (29.6% to 26.2%) had Hb>12 g/dL. From Dec 2010 to Sep 2011, the percent of patients with Hb<10 g/dL further increased 34.3% (13.4% to 18.0%), and the percent of patients with Hb>12 g/dL rapidly decreased 34.0% (26.2% to 17.3%).

Since ESRD PPS implementation, the decline in percent of patients with mean monthly Hb>12 g/dL has continued, but the rapid increase in patients with Hb<10 g/dL is concerning and has implications for increased blood transfusions and HLA sensitization. More research is needed to understand these trends, and the associated long-term clinical and financial consequences should be monitored.

	Mean (SD)	Mean Monthly Hb Distribution (% of pts)	
	Monthly Hb (g/dL)	<10 g/dL	>12 g/dL
Mar 2010	11.4 (1.2)	11.1%	29.6%
Jun 2010	11.3 (1.2)	12.3%	27.0%
Sep 2010	11.3 (1.2)	12.6%	29.4%
Dec 2010	11.3 (1.2)	13.4%	26.2%
Mar 2011	11.1 (1.2)	15.1%	21.5%
Jun 2011	11.1 (1.2)	15.7%	20.2%
Sep 2011	11.0 (1.2)	18.0%	17.3%

HEMOGLOBIN RESPONSE TO THRICE WEEKLY INTRAVENOUS VERSUS ONCE WEEKLY SUBCUTANEOUS EPOETIN DOSE IN HEMODIALYSIS PATIENTS

Irfan Ahmed, Sandeep Aggarwal, M. W. Khattak, Karthik Ranganna, Ziauddin Ahmed, Ami Patel.
Drexel University College of Medicine, Philadelphia

Intravenous epoetin given during hemodialysis is easy to administer and does not cause any discomfort resulting in widespread patient acceptance and compliance. Studies have shown that subcutaneous (S/C) epoetin administration results in 25-30 % reduction in epoetin dose compared to intravenous (IV) route to achieve same level of target hemoglobin .We aimed to study the impact of change in route and frequency of epoetin administration on hemoglobin and epoetin dose prescription in Medicare hemodialysis patients in our inner city hemodialysis unit. We identified 44 Medicare hemodialysis patients who were on stable maintenance three times a week IV epoetin dose and were transitioned to once a week s/c epoeitin in January 2011.We compared the mean weekly epoetin alpha dose, hemoglobin (Hb) and Iron stores over the period of three months before and after the conversion to S/C epoetin administration. The transition from IV to S/C epoetin resulted in a 28 % reduction in the dose prescription. The mean hemoglobin remained with in target range of 10-12 gm/dl.

	Sample mean	SD	P value
Weekly IV epoetin dose (U)	3930.58	4049.40	0.11
Weekly s/c epoetin dose (U)	2830.55	2291.05	
Hb on IV epoetin (gm/dl)	10.86	0.962	0.72
Hb on s/c epoetin (gm/dl)	10.99	1.25	

Conclusion: In outpatient hemodialysis patients, transition from IV thrice weekly to once weekly epoetin administration lead to 28% eduction in epoetin dose prescription while still maintaining Hb in target range.

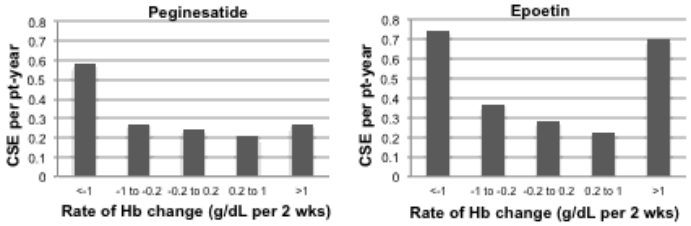
CARDIOVASCULAR EVENTS AND RATE OF HEMOGLOBIN CHANGE IN HEMODIALYSIS PATIENTS ON PEGINESATIDE

Anatole Besarab[1], Wadi Suki[1], Bruce Spinowitz[1], Anne-Marie Duliege[2], Hina Patel[2], Dan Cooper[2], Helen Tang[2], Hong-Ye Gao[2], Martha Mayo[2], Steven Fishbane[1]
[1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA

Rapid hemoglobin (Hb) change after ESA treatment has been associated with cardiovascular (CV) event risk (Unger et al. 2010 NEJM 362:189). Peginesatide, a synthetic, PEGylated, investigational, peptide-based ESA, was shown noninferior to epoetin in maintaining Hb in hemodialysis (HD) pts with anemia due to chronic kidney disease in two Phase 3 randomized, active-controlled, open-label trials (EMERALD 1, 2). This is a retrospective, event-based analysis of the temporal relationship of CV events and rate of Hb change.

The two trials compared peginesatide (1x monthly; N=1066) with epoetin (1-3x wkly; N=542) in HD pts previously on stable epoetin. Pooled, adjudicated CV composite safety endpoints (CSE; including stroke, myocardial infarction, death, and SAEs of congestive heart failure, unstable angina, and arrhythmia) were evaluated for association with rate of pre-event Hb change (estimated by linear regression). Event rate (CSEs/pt-year) was calculated as number of CSEs divided by time-at-risk for each category of Hb rate of change.

While on study medication, 18% (195/1066) pts on peginesatide had 343 total CSE events,vs 22% (121/542) pts on epoetin with 242 events.



Both arms had higher CSE rates associated with rapid Hb decline. The epoetin arm showed higher CSE rates with rapidly increasing Hb.

These results suggest an association of CV events with decreasing Hb levels (<-1 g/dL per 2 wks) for both peginesatide and epoetin; the association with increasing Hb (>1 g/dL per 2 wks) was less clear.

HEMOGLOBIN (Hb) RECOVERY FOLLOWING HOSPITALIZATION IN ESRD PATIENTS

T. Christopher Bond[1], Jaime Rubin[1], Steven Wang[1], Alex Yang[2]; Mahesh Krishnan[1] (1)DaVita Clinical Research, Minneapolis, MN, USA;(2)Affymax, Palo Alto, CA, USA

In 2009, 36% of hemodialysis patients were re-hospitalized (hosp) within 30 days of discharge. Post-hosp anemia control has been shown to reduce re-hosp rates (Chan *et al*). This analysis determined time from discharge to Hb recovery using every pre- and post-hosp Hb test.

In a retrospective survival analysis, we analyzed hosp between 1/1/2009 and 12/31/2010 from adult (≥18 yrs old) hemodialysis (HD) patients that were preceded by > 30 hospital-free days. For patients experiencing a drop in Hb in the 30 days after hosp compared to the 30 days before hosp, a time-to-event analysis assessed Hb recovery time (in days) to reach ≥ pre-hosp Hb levels. Patients were stratified by their mean Hb level in the 30 days before hosp: below range (<10 mg/dL), in range (10-12 mg/dL), or above range (> 12 mg/dL).

Overall, 176,199 hosp were available for analysis with a median length of stay of 5 days. The mean Hb level fell from 11.48 mg/dL to 10.88 mg/dL), a drop of 0.6 g/dL. 66.7% of events were associated with drop in hemoglobin (mean of 11.87 mg/dL to 10.55 mg/dL).

Pre-hosp Hb levels	**Re-hosp before Hb recovery (%)**	**Recovery (mean days)**	**Recovery (median days)**
< 10 mg/dL	45.0%	41.7	29.0
10-12 mg/dL	39.4%	54.3	41.0
>12 mg/dL	54.5%	180.5	85.0
Overall	46.3%	112.4	53.0

In this analysis, 46.3% of dialysis patients were re-hosp before Hb recovery to pre-hosp levels. Of those who did recover, median Hb post-hosp was 53 days with faster recovery if pre-hosp Hb level was < 10 or 10-12 mg/dL. Mean time was longer and skewed by patients who recovered late or not at all. Given the frequency of hosp in the ESRD population and length of time for Hb to recover post-hosp, hosp and the subsequent drops in Hb are likely significant contributing factors to the Hb variability in the ESRD population. Strategies to control anemia post-hosp should be considered.

MORE FREQUENT HEMOGLOBIN (HB) MEASUREMENTS AND ERYTHROPOIESIS-STIMULATING AGENT (ESA) TITRATIONS ARE NOT ASSOCIATED WITH INCREASED TIME IN TARGET HB RANGE

T. Christopher Bond[1], Jaime Rubin[1], Steven Wang[1] and Alex Yang[2]
[1]DaVita Clinical Research, Minneapolis, MN, USA, [2]Affymax, Inc., Palo Alto, CA, USA

The treatment of anemia patients is always ultimately determined by physicians, who often closely monitor and may adjust ESA treatments frequently to best meet the needs of their patients (pts). This retrospective analysis quantified the frequency of Hb measurements and ESA dose titrations, and evaluated their relationship to ability to keep pts within a target Hb range of 10-12 g/dL. Data from prevalent (≥ 120 days), adult (> 18 years old) hemodialysis pts, dialyzing at DaVita clinics ≥ 3 times/week between 01/01/09-12/31/10 were included. Dose titration was defined as a difference of > 10% between any of: the mean dose of 2 consecutive stable periods (≥ 3 doses during which dose did not change more than 10%); the mean dose of a stable period and next/previous dose in a transition period; or 2 consecutive doses in a transition period. Associations among measures were assessed using Pearson product-moment correlation at the physician and facility levels. For the 2,266 physicians assessed, the mean number of ESA dose titrations was 1.12 ± 0.23 per pt-month, and the mean number of Hb tests was 2.98 ± 0.64 per pt-month. At the facility level, the mean ESA dose titrations was 1.13 ± 0.24 per pt-month, and the mean Hb tests was 3.02 ± 0.70 per pt-month. The mean percent of pt-time in target Hb range annually was 57.2% ± 6.1% among physicians, and 57.1% ± 5.8% at the facility level. There was a strong significant association between titration frequency and Hb testing frequency at both the physician and facility level ($r=0.47$; $p<0.0001$ for both). However, the association between dose titration frequency and time in target Hb range was negligible ($r=0.07$; $p=0.0042$) at the physician level, and not significant at the facility level ($p=0.1192$), adjusted for race, vascular access, comorbidities, age, vintage and BMI. There was no significant association between Hb testing frequency and time in Hb target range at either level. These associations demonstrate the need to assess current Hb testing and ESA dose titration practices.

TSAT AND FERRITIN LEVELS FOLLOWING IV IRON MAINTENANCE AND REPLETION REGIMENS: DATA FROM OVER 50,000 PATIENTS.

Linda H Ficociello, Norma J Ofsthun, Mayuri Thakuria, Claudy Mullon, Jose Diaz-Buxo. Fresenius Medical Care North America, Waltham, MA.

The goal of IV iron therapy is to replenish iron stores, i.e TSAT in the range of 20-50% and ferritin levels > 200. This retrospective, observational study compares TSAT and ferritin levels in 51,121 patients prescribed maintenance or repletion IV Iron (Venofer®) regimens during Jan 1-June 30, 2010. Repletion was defined as a minimum of 5 to 10 sequential doses of 100 mg during the 6 month period. Maintenance was defined as ≤100 mg of IV iron/week for ≥ 10 weeks during the 6 month period. All patients were required to have TSAT and ferritin measured in the following three months. Associations were tested using Chi-sq tests.

IV Iron dosing	TSAT (%)			Ferritin (ng/ml)		
	<20	20-50	>50	<200	200-1200	>1200
Maintenance (% of patients) n=13,786	10.8	82.3	6.9	4.6	84.3	11.1
Repletion (% of patients) n=37,335	20.9	72.5	6.6	12.3	74.6	13.1

Overall, there was a statistically significant difference in TSAT ($p<0.0001$) and ferritin ($p<0.0001$) ranges for patients on maintenance and repletion. Differences were found between groups for TSAT <20% ($p<0.0001$), 20-30% ($p<0.0001$), but not > 50% ($p=0.15$). Differences were found between groups for ferritin < 200, 200-1200, and > 1200 ng/ml ($p<0.0001$, all comparisons). Patients prescribed a maintenance regimen of IV iron during these 6 months were more likely to achieve target range TSAT and ferritin levels in their next measurements (within 3 months) than patients prescribed repletion regimens.

TRANSFUSION TRENDS AMONG HEMODIALYSIS PATIENTS WITH Hb LEVELS BELOW 10 g/dL.

David T. Gilbertson[1], Thomas Arneson[1], Melissa Skeans[1], Keri Monda[2], Brian Bradbury[2], Allan Collins[1]. [1]Chronic Disease Research Group, Minneapolis, MN; [2]Amgen, Inc., Thousand Oaks, CA.

From 1991 to 2006, Hb levels increased in hemodialysis (HD) pts receiving ESAs, and the percent of pts receiving transfusions generally declined. Starting in 2006, a combination of factors including results from RCTs and FDA label changes resulted in changes in anemia management, specifically a decline in mean Hb levels. A consequence of this has been an increase the percent of patients with Hb <10 g/dL. To date, no study has examined the effect this shift has had on transfusion rates in the dialysis population.

We identified point prevalent Medicare HD patients as of Jan 1 each year between 1999 and 2009. Patients with a mean Hb <10 g/dL during Apr-Jun in each year were identified. We then estimated the unadjusted transfusion rate during the subsequent 3 months (Jul-Sep) in each year.

Between 1999 and 2009, the percent of pts with Hb <10 g/dL declined from 10% in 1999 to 3.7% in 2005-2007, but then increased to 5.6% in 2009. During this same period, transfusion rates initially increased between 1999 and 2003-2005, and then decreased slightly through 2009. The absolute number of transfusions in these patients declined between 1999 and 2006, and then rose through 2009 (table).

A number of factors have contributed to these trends, including changes in anemia management resulting in fluctuations in the numbers of patients with Hb <10. Notably, while the transfusion rate has declined slightly since 2005 in the sub-10 population, the absolute number of transfusions has increased. Future analyses will explore underlying explanations for these complex and interwoven trends.

Year	Total Number of HD Patients	Percent of Pts with Hb < 10	Transf. Rate/100 Pt. Mo	Number of transfusions
1999	123,582	9.8	8.2	2,809
2000	131,100	7.9	8.5	2,485
2001	139,513	6.8	10.7	2,826
2002	149,636	5.5	11.2	2,556
2003	157,265	4.6	12.6	2,525
2004	165,450	4.1	12.3	2,324
2005	172,616	3.7	13.0	2,284
2006	175,399	3.8	10.8	1,973
2007	180,813	3.7	11.7	2,182
2008	187,105	4.9	11.4	2,919
2009	190,663	5.6	11.1	3,325

DESCRIPTIVE ANALYSIS OF RED BLOOD CELL TRANSFUSION LOCATIONS AMONG DIALYSIS PATIENTS

Andrew Lee[1], David M Spiegel[2], Zhun Cao[3], Jeffrey L Carson[4], Brian Custer[5], Helen Varker[3], Katherine Capell[3], Akhtar Ashfaq[1], Matthew Gitlin[1], [1]Amgen Inc., Thousand Oaks, CA; [2]University of Colorado, Denver, CO; [3]Thomson Reuters, Cambridge, MA; [4]UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ; [5]Blood Systems Research Institute, San Francisco, CA

With the new capitated Medicare payment system which excludes blood products and the removal of the lower hemoglobin (Hb) quality incentive metric (Hb <10 g/dL), red blood cell (RBC) transfusion use may increase among dialysis patients. Dialysis patients are managed across multiple settings, thus we estimate where RBC transfusion utilization occurs as this will have implications on the coordination of patient care.

Using Thomson Reuters MarketScan® claims data (1/1/02-10/31/10), we analyzed data from dialysis patients who had ≥1 RBC transfusion claim. Using RBC blood acquisition and administration codes, we examined the distribution of place of service.

A total of 8,546 dialysis patients were included with 26,723 RBC transfusion claims. Patients had a mean (SD) age of 61.9 (14.5) years, 56% males, and 43% had Medicare supplemental insurance. Mean (SD) Charlson comorbidity index was 4.3 (2.4). Our results show that more than half of RBC transfusions occur in the inpatient setting.

Place of Service	Number of Claims	Percent
Inpatient Hospital	14,088	52.7%
Outpatient Hospital	10,773	40.3%
Dialysis Facility	1,224	4.6%
Emergency Room	258	1.0%
Office	121	0.4%
Other	259	1.0%

With RBC transfusions commonly occurring in hospital settings, utilization may be unknown when coordinating patient care across treatment settings. Dialysis providers will require significant coordination of care to manage RBC transfusion utilization across treatment settings.

STANDARDIZATION OF ERYTHROPOIESIS STIMULATING AGENT (ESA) IMMUNOGENICITY TESTING: DEVELOPMENT OF A HUMAN ANTI-ESA ANTIBODY REFERENCE PANEL

Daniel T. Mytych[1], Troy Barger[1], Chadwick King[2], Stephanie Simmons[2], Sergio Sanchez[1], Andrew Kuck[1], Jilin Sun[1], Francesca Civoli[1], and Steven J. Swanson[1].

[1]Amgen, Thousand Oaks, California, USA; [2]Amgen British Columbia, Burnaby, BC, Canada

Nephrologists often treat anemia patients with recombinant erythropoietin, an ESA. Antibody-mediated pure red cell aplasia (PRCA) is a rare but serious condition that results from antibodies directed to erythropoietin. Currently, there are no universally accepted analytical methodologies to detect the full complement of binding and neutralizing anti-ESA antibodies in human serum. We developed a novel panel of human recombinant anti-erythropoietin antibodies using XenoMouse technology. These antibodies can be used as reference reagents to guide standardization of ESA immunogenicity assays.

Clone	Human Isotype	Affinity	Assay Sensitivity (ng/mL)		
		KD (pM)	Bioassay	Biacore	ELISA
8C10	IgG1,2,4	49	121	34	< 10
9F7	IgM	100,000	NA	54	1260
9F7	IgG2	121,000	NA	77	1260
11D12	IgM	3,400	26300	272	< 10
11D12	IgG2	3,610	23990	272	< 10
3F5	IgG1	36,800	8110	24	> 10000
3A4	IgG4	460	1782	20	< 10

Antibody characteristics were selected based on the prevalence of non-neutralizing IgG and IgM antibodies in non-PRCA patients and neutralizing IgG antibodies in subjects who developed antibody-mediated PRCA. Our reference panel includes high- and low-affinity, neutralizing and non-neutralizing antibodies with binding specificity to erythropoietin epitopes (see table). The human antibodies can be used to select appropriate immunogenicity assays, guide assay validation and monitor performance. Therefore, the reagents may facilitate the standardization of ESA immunogenicity testing across assay platforms.

RELATIONSHIP BETWEEN CARDIOVASCULAR EVENTS AND HEMOGLOBIN LEVEL IN HEMODIALYSIS PATIENTS ON PEGINESATIDE TREATMENT FOR ANEMIA

Pablo E. Pergola[1], Steven Fishbane[1], Amit Sharma[1], Steven Zeig[1], Rebecca Schmidt[1], Anne-Marie Duliege[2], Minjia Chen[2], Sandra Tong[2], Carol Francisco[2], Hong-Ye Gao[2], Krishna Polu[2], Robert Provenzano[1]
[1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA

Persistently low hemoglobin (Hb) levels during treatment with ESAs have previously been associated with increased rate of cardiovascular (CV) events in hemodialysis (HD) patients (pts) (Unger et al. 2010 NEJM 362:189). Peginesatide is a synthetic, PEGylated, investigational, peptide-based ESA developed for the treatment of anemia due to chronic kidney disease in pts on dialysis. Peginesatide demonstrated noninferiority to epoetin in maintenance of Hb levels in HD pts in two Phase 3 randomized, active-controlled, open-label trials (EMERALD 1, 2). A pre-specified on-drug analysis (≤28 days post last dose) of a pooled, adjudicated CV composite safety endpoint (CSE) showed a hazard ratio of 0.85 (95% CI, 0.68-1.07). This retrospective, event-based analysis further investigated the temporal relationship between Hb levels and CSE events.

The two trials compared peginesatide (1x monthly; N=1066) with epoetin (1-3x wkly; N=542) in HD pts previously on stable epoetin. The CSE included stroke, myocardial infarction, death, and SAEs of congestive heart failure, unstable angina, arrhythmia. Exposure-adjusted CSEs, defined as the number of on-drug CSE events divided by time-at-risk for each Hb category (CSE events/pt-year), were evaluated for association with four Hb level categories.

CSE event rates were highest in the lowest Hb level category (≤10 g/dL) for both peginesatide and epoetin treated patients (Table).

	CSE Rate by Hb Category			
Hb category	**≤10 g/dL**	**10-11 g/dL**	**11-12 g/dL**	**>12 g/dL**
Peginesatide	0.64	0.29	0.18	0.15
Epoetin	0.90	0.38	0.27	0.19

This study suggests an association between an increased rate of CV events in HD patients with low achieved Hb levels (≤10g/dL) receiving either peginesatide or epoetin.

SAFETY AND EFFICACY OF INTERCHANGE FROM FERRLECIT TO FERAHEME IN OUTPATIENT DIALYSIS POPULATION.

Erdal Sarac , Nivin Haroon , Jisha John, David Gemmel. St Elizabeth Health Center, Youngstown,OH

Crossover study of dialysis patients (n=52) admitted to outpatient dialysis facilities undergoing therapeutic interchange of Ferrlecit(FR) to Feraheme(FH) was undertaken according to iron replacement protocol. On interchange patients, Hemoglobin(Hgb), serum iron, TSAT, ferritin and Epogen (Epo) dosing data was collected three months prior to and three months after the iron loading dose was given. FH dose was calculated and converted to FR using 510mg: 500 mg (FH: FR) dosing ratio.

In the study group, patients were 65.0 $\pm$ 1.9 years of age, 44 % were male, and 48% were non-white. Hypertension and diabetes were prevalent in 83% and 40% of patients, respectively.

When average Hgb level three months after FR initiation and three months before dose initiation were compared, Hgb levels were significantly higher, on average 0.41 mg/dL, compared to the same interval when FH was given, 0.08 mg/dl. However, after dose adjustment for dry weight, no significant differences were observed ($p=0.217$). EPO dose requirements was not statistically significantly different in both groups ($p=0.189$). No adverse events were reported with both iron preparations during study period.

FH can be used as an alternative to FR in outpatient dialysis population with similar clinical outcomes.

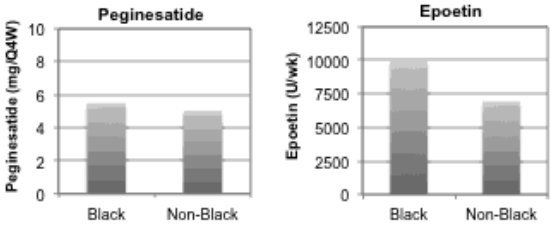
PEGINESATIDE VERSUS EPOETIN DOSES FOR TREATMENT OF ANEMIA IN BLACK HEMODIALYSIS (HD) PATIENTS

Amit Sharma[1], Pablo Pergola[1], Mark Kaplan[1], Diogo Belo[1], Alex Yang[2], Martha Mayo[2], Carol Francisco[2], Sandra Tong[2], Nathan Levin[1]
[1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA

Peginesatide is a synthetic, PEGylated, investigational, peptide-based ESA developed for the treatment of anemia due to chronic kidney disease in patients (pts) on dialysis. Black pts historically have lower hemoglobin (Hb) and higher ESA requirements (Lea et al. 2008 AJN 28:732). We conducted a retrospective subgroup analysis of dose requirements and Hb levels in black vs. non-black pts enrolled in EMERALD 1 and 2, two Phase 3 randomized, active-controlled, open-label trials that demonstrated noninferiority of peginesatide to epoetin in Hb maintenance in HD pts.

Pooled data from the two trials compared peginesatide (1x monthly; N=1066) with epoetin (1-3x wkly; N=542) in HD pts previously on stable epoetin. Mean Hb change from baseline (BL) to evaluation period (EP; wks 29-36) and dose requirements were determined.

399 (37%) and 211 (39%) black pts enrolled in the peginesatide and epoetin arms, respectively. Among black pts, median epoetin doses at baseline were 11,937 and 12,480 U/wk for epoetin and peginesatide arms, respectively, compared with non-black pts, whose baseline doses were 7771 and 7446 U/wk, respectively. Hb levels at baseline and during EP were similar for black and non-black pts in either arm. Median peginesatide dose at EP was similar for black and non-black pts (5.5 vs. 5.0 mg/Q4W), whereas black pts received 44% higher median doses of epoetin than non-black pts (10,000 vs 6943 U/wk; Figure).



Dose requirements differed between black and non-black pts on epoetin, but differences were not observed for pts on peginesatide.

DOES NON-INVASIVE TESTING OF HEMOGLOBIN HAVE ANY ROLE IN CKD ANEMIA CLINICS?

Rupesh Raina, Grace Snyder, Charbel Salem, and James F Simon. Cleveland Clinic, Cleveland, OH, USA.

Non-invasive monitoring of hemoglobin (Hb) could possibly spare patients in CKD anemia clinics frequent phlebotomies. We investigated the precision of its readings compared to more conventional methods. 65 non-dialysis CKD patients each underwent simultaneous Hb measurements with pronto-7, point of care (POC) from IV blood, and invasive plasma Hb draws. Bland-Altman difference plot and analysis was used to test the agreement between the three measurements. The mean difference between invasive plasma Hb and pronto-7 measurements was small (0.70), and the Pearson correlation coefficient showed strong correlation ($p<.0001$). However the 95% limits of agreement ranged between -1.51 and 2.92. The agreement between POC and invasive plasma Hb draws was tighter. While the non-invasive pronto-7 measurement correlated well with the actual plasma laboratory level of Hb, the Bland-Altman plots show a wide range of agreement.

We conclude that while pronto-7 could be used for a snapshot assessment of Hb, using it in clinics, where therapy is tailored to achieve a strict range of Hb, could generate inappropriate decisions in ESA and iron dosage.

	Mean Difference	**95% Limits of Agreement**	
Non-inv vs. Lab	0.70	-1.51	2.92
Non-inv vs. POC	0.57	-1.66	2.81
POC vs. Lab	0.13	-0.64	0.91

IMPACT OF DIABETES ON SAFETY AND EFFICACY OF PEGINESATIDE IN HEMODIALYSIS PATIENTS

Bruce Spinowitz[1], Raja Zabaneh[1], Edouard Martin[1], Bhasker Rai Mehta[1], Jieshi Yan[1], Alex Yang[2], Minjia Chen[2], Helen Tang[2], Dan Cooper[2], Krishna Polu[2], Brigitte Schiller[1]
[1]AFX01-12 and -14 Peginesatide Study Groups; [2]Affymax, Inc., Palo Alto, CA

Anemia of CKD is associated with poor prognosis in diabetics (Vlagopoulos et al. 2005 JASN 16:3403). Peginesatide (P), a synthetic, PEGylated, investigational, peptide-based erythropoiesis-stimulating agent (ESA), previously demonstrated noninferiority to epoetin (E) in maintaining hemoglobin (Hb) levels in hemodialysis (HD) patients (pts) in two large Phase 3 randomized active-controlled, open label trials (EMERALD 1, 2). This retrospective subgroup analysis evaluated the safety and efficacy of P vs E in diabetic and non-diabetic pts.

Pooled data from the two trials compared P (1x monthly; N=1066) with E (1-3x wkly; N=542) in HD pts previously on stable doses of E. Mean Hb change from baseline (BL) to evaluation period (EP; wks 29-36) and dose requirements were assessed. Adverse events (AEs) and serious AEs (SAEs) were also assessed.

536 (50%) and 275 (51%) diabetic pts were enrolled in the P and E arms, respectively. E doses at BL and mean change in BL to EP Hb levels were similar in all subgroups. Across treatment arms, diabetic pts required ~15-21% more ESA than non-diabetic pts.

	Peginesatide		Epoetin	
	Diabetic (N=536)	Non-diabetic (N=530)	Diabetic (N=275)	Non-diabetic (N=267)
Median ESA dose during EP, mg or U/wk	5.5	4.8	8880	7314
Mean change from BL to EP Hb, g/dl	-0.20	-0.10	-0.15	-0.11

AE rates were similar across subgroups (97% P, 95% E in diabetics; 92% P, 91% E in non-diabetics). Diabetics had more SAEs than non-diabetics (61% P, 65% E in diabetics; 46% P, 49% E in non-diabetics).

Diabetic pts tended to require higher ESA doses and had more SAEs than non-diabetic pts across treatment arms. P and E had similar safety profiles in diabetic and non-diabetic pts.

DIFFERENTIAL HEMOGLOBIN RESPONSE FOLLOWING TREATMENT WITH TWO IV IRONS IN PATIENTS ON HEMODIALYSIS OR WITH MORE SEVERE ANEMIA: RESULTS FROM THE **F**ERUMOXYTOL COMPARED TO **IR**ON **S**UCROSE **T**RIAL (FIRST)

William Strauss, Joe Li, Justin McLaughlin, Susan Farkas, Joachim Hertel, Diogo Belo
AMAG Pharmaceuticals Inc., Lexington MA

Few well-controlled clinical trials have compared two IV irons head-to-head for the treatment of iron deficiency anemia. In the recently completed FIRST trial, 162 patients both on and not on dialysis (HD or ND, respectively) were randomized 1:1 to either: 1) ferumoxytol (FER), administered as 2 injections of 510 mg 5±3 days apart; or 2) iron sucrose (IS), administered as ten 100 mg injections within 3 weeks to HD patients or as five 200 mg injections within approximately 2 weeks to ND patients. The efficacy endpoints were the mean change in hemoglobin (Hgb) from Baseline to Week 5 and the proportion of patients achieving a ≥1 g/dL increase in Hgb from Baseline at Week 5. Patients were stratified at Baseline by dialysis status and by Hgb level (7-9 g/dL and >9-11 g/dL).

Efficacy Results from the Intent-to-Treat (ITT) Population

	FER	**IS**
Mean Δ Hgb from Baseline to Day 35 (g/dL)		
ITT Population (FER n=80; IS n=82)	0.89	0.80
Subjects on HD (FER n=34; IS n=36)	1.02	0.54
Subjects with Baseline Hgb 7-9g/dL (FER n=10; IS n=11)	1.39	0.63
Percent achieving ≥1 g increase in Hgb from Baseline to Day 35		
ITT Population	50%	42%
Subjects on HD	56%	39%
Subjects with Baseline Hgb 7-9g/dL	70%	46%

Patients on HD and those with more severe anemia had a greater hematopoietic response following treatment with FER relative to IS, evidenced by both the mean change in Hgb (1.02 vs 0.54 g/dL, and 1.39 vs. 0.63 g/dL, respectively) and the proportion achieving ≥ 1 g increase in Hgb (56 vs. 39%, and 70 vs. 46%, respectively). This may be due to delivery of more iron earlier with the FER dosing regimen.

IMPACT OF FREQUENT HEMOGLOBIN (HB) MEASUREMENT AND ESA DOSE TITRATION ON HB STABILITY IN DIALYSIS

Lynda Szczech[1], David Gilbertson[2], Ali Hariri[3], Pratyush Kumar[4], Alex Yang[5]

[1]Duke Nephrology, Durham, NC; [2]Chronic Disease Research Group, MMRF, Minneapolis, MN; [3]Takeda, Deerfield, IL; [4]ZS Associates, San Francisco, CA; [5]Affymax, Inc., Palo Alto, CA

There are increasing financial pressures to scrutinize the provision of optional services and their relationship to outcomes for ESRD patients (pts). Using patient (pt) data collected from a large US dialysis provider, we evaluated the relationship between the frequency of Hb measurement, epoetin dose titrations and use, and Hb stability.

Dialysis facilities were split into 3 cohorts based on Hb measurement frequency: <2, 2 to <3, and ≥3 measurements/pt-month. Hb stability was calculated as mean proportion of pts within a facility whose last Hb measurement of each month was within 10-12 g/dL. Demographics, comorbidities, acute events, and lab values were compared.

Across 1630 dialysis facilities (N=141,631 pts) in 2010, 5.8, 58.5, and 35.7% averaged <2, 2 to <3, and ≥3 Hb measurements/pt-month. Demographics, comorbidities, hospital admission/duration, albumin, and ferritin were similar across all groups. Hb measurement frequency, epoetin titrations (≥ ±10%) and dose, and Hb stability are described.

	Hb Measurement Frequency (per pt-month)		
	<2	**≥2 to <3**	**≥3**
Number of facilities, n	94	954	582
Mean Hb Measurements/pt-month	1.8	2.5	3.6
Mean Dose Titrations/pt-month	0.8	1.0	1.2
Mean Epoetin Use (U/pt-month)	57813	68921	72023
Hb Stability (% pts, 10-12 g/dL)	59.9	61.8	60.9
Hb Variability (mean SD w/in Hb unit)	0.72	0.73	0.72

Across facilities, there exists variability in the frequency of Hb measurement, which does not appear to be related to sicker cohorts of pts. This variability is associated with greater frequency of ESA dose titration and greater ESA dose, but is not associated with an increased percentage of pts in goal hemoglobin range.

ANEMIA MANAGEMENT RETROSPECTIVE ANALYSIS AT RENAL RESEARCH INSTITUTE CLINICS FROM 2009-2011

Mayuri Thakuria[1], Linda H Ficociello[1], Len A Usvyat[2], Claudy Mullon[1], Paul Balter[2], Paul M. Zabetakis[2], and Jose A. Diaz-Buxo[1].
[1]Fresenius Medical Care-NA, Waltham, MA, United States and [2]Renal Research Institute (RRI), New York, NY, United States.

Anemia management practices have been evolving based on various factors including the anemia guidelines under the Quality Incentive Program (QIP). This study analyzed retrospective data on hemoglobin (Hgb), iron indices, erythropoietin (Epo®), IV iron (Venofer®) dosing and neutrophil-to-lymphocyte ratio (NLR) from 15 RRI clinics for the first 6months of 2009, 2010, and 2011. Prevalent HD patients with vintage >90 days were categorized into three Hgb ranges (A: <10g/dL, B: 10-12g/dL and C: >12g/dL).

The percent of (B) patients increased from 72% in 2009 to 79% in 2010 and 84% in 2011, while the percent of (C) patients decreased from 23% in 2009 to 16% in 2010 and 11% in 2011. The percent of (A) patients remained the same across the years (5%). Mean weekly Epo doses decreased by 33% in (A), 33% in (B) and 44% in (C) from 2009 to 2011. The majority of patients (>90%) received IV iron from 2009 to 2011 for all Hgb groups. Mean weekly IV iron doses increased by 23% (B), and 17% (C) from 2009 to 2011. However, IV iron doses in (A) increased by 19% from 2009 to 2010, but decreased by 17% back to 2009 levels in 2011. TSAT levels remained within 28-35% and ferritin levels increased from 682 to 937ng/ml (A), 721 to 1010ng/ml (B), and 653 to 881ng/ml (C) from 2009-2011. Mean NLR was > 4 (indicative of inflammation) across all years in only the Hgb <10g/dL group.

The percent of patients with Hgb > 12g/dL decreased by 52%, patients with Hgb 10-12g/dL increased by 17%, and patients with <10g/dL remained 5% from 2009 to 2011. Hence, this retrospective analysis showed that decreasing Epo while increasing IV iron was consistent with achieving recommended QIP anemia guidelines of Hgb 10-12g/dL.

DO SAFETY WARNINGS CHANGE PRESCRIBING AMONG THE US DIALYSIS POPULATION?

Mae Thamer, Yi Zhang, Onkar Kshirsagar, Dennis Cotter
Medical Technology and Practice Patterns Institute, Bethesda, MD

On March 9, 2007, as a result of emerging safety concerns, a Black Box warning was issued by the Food and Drug Administration (FDA) recommending use of the lowest possible erythropoiesis-stimulating agent (ESA) dose for the treatment of anemia associated with renal disease. The **goal** of this study is to determine if these new recommendations resulted in a change in physician prescribing among US dialysis patients and whether potential changes in prescribing are dependent on patient sociodemographics, clinical characteristics, and/or dialysis facility characteristics. To conduct this research, we used computerized United States Renal Disease System (USRDS) data from March 2006 through March 2009 to evaluate prescribing patterns in the year before and two years after the FDA Black Box Warning. An interrupted time series model was used to assess the impact of the dire Black Box Warnings in influencing physician prescribing.

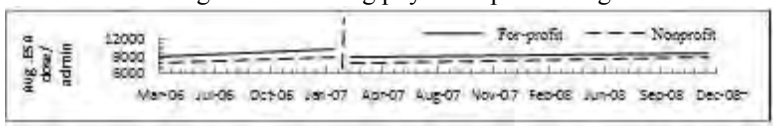


Figure 1 above shows the monthly average ESA dose/administration by facility profit status before and after the March 2007 warnings and suggests that there was a significantly smaller rate of increase in average dose prescribed following the Black Box Warning (pre vs. post slopes 4.9 vs 0.9 and 3.2 vs 1.6 for profits and not profits, respectively).

In conclusion, we found significant declines in rates of ESA dosing after the FDA Black warning by patient demographics (age, race, gender), responsiveness to therapy (hemoglobin >10 g/dL), cause of ESRD (diabetes, other cause), and facility characteristics (chain status, facility size and profit status), although the rates of decline did not differ within each strata (except for a more dramatic decline in dose among hyporesponsive vs. responsive patients). Our study provides important information regarding the influence of government agencies in prescribing of drugs, particularly those with safety issues such as ESAs. How best to prescribe expensive drugs with potentially serious adverse side effects to both enhance their effectiveness as well as diminish their risk remains challenging.

CHARACTERIZING MISSED DIALYSIS SESSIONS IN THE ESRD PATIENT POPULATION

Steven Wang[1], T. Christopher Bond[1], Jaime Rubin[1], Alex Yang[2]
[1]DaVita Clinical Research, Minneapolis, MN, USA;[2]Affymax, Palo Alto, CA, USA

Missed dialysis sessions may increase risk of hospitalization and mortality (Anderson et al 2009; Kobrin et al 1991) and also have a direct impact on facility costs under the prospective payment system. We characterized missed sessions and reasons for missed sessions in order to better understand underlying patterns.

In a retrospective analysis, we assessed missed session data between 1/1/2010 and 12/31/2010 from adult (≥ 18 yrs old), hemodialysis (HD) patients. A missed session was defined as an expected dialysis session that the patient did not attend and did not make up. Each missed session identified in the dataset was assigned a reason, and the frequency of reasons for missed sessions was calculated at both the patient and facility level. Misses occurring consecutively without interruption by an attended session were considered part of a missed session "episode."

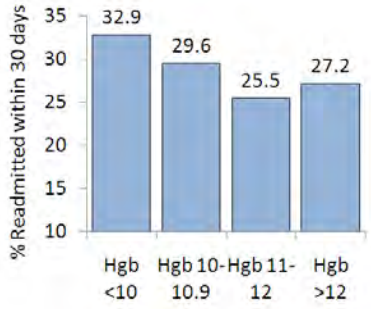
Of 903,179 patient-months analyzed, the mean number of attended sessions was 12.01 ± 2.24 (mean ± SD) or 92.0% of expected sessions per patient-month. Of these 12.01 sessions, 11.95 were attended at patients' "home" facilities (where the majority of sessions take place) and 0.06 attended at other facilities. The mean number of missed sessions was 1.05 ± 2.20 (8.0% of expected sessions) per patient-month, with 0.41 (3.1%) missed due to hospitalization, 0.52 (4.0%) missed due to other reasons, and 0.12 (0.9%) missed due to discontinuation, including death, transplant, and other causes. There was relatively little variation in the number of missed sessions at the facility level (11.98 ± 0.73 missed sessions/patient-month). Missed session episodes averaged 2.07 ± 2.25 sessions. Hospitalization was a major cause of missed sessions. Missed session episode lengths greater than 3 sessions were primarily attributable to hospitalizations and discontinuations.

Most expected dialysis session were attended and occurred at the patients' "home" facility, suggesting that missed sessions are relatively infrequent.

POST-HOSPITAL RAPID ANEMIA MANAGEMENT REDUCES RATE OF READMISSION: THE RIGHTRETURN PROGRAM

Rebecca Wingard, Kevin Chan, Raymond Hakim
Fresenius Medical Care North America, Brentwood, TN, USA

Hospital readmission rates within 30 days of discharge for ESRD patients are reported to be 40% higher than the average Medicare beneficiary. We studied rate of readmission according to hgb level, and the impact of the RightReturn Program's rapid anemia management (RAM) on 30-day readmission for HD pts. 3689 admissions were documented in 45 clinics during Oct 2009-June 2011. Of these admissions, 2427 received RAM consisting of hgb draw on the 1st or 2nd treatment after hospital discharge, followed by ESA dose adjustment and administration by the 3rd treatment per the clinic's algorithm. Results were compared to two control groups in the same clinics that did not receive RAM. Control (1) included all readmissions, while Control (2) excluded pts who had a prior hospitalization within 30 days of the index hospitalization.



There was an inverse correlation between post-hospital hgb and higher 30-day readmission rate (see graph); pts in the RAM group had fewer readmissions when compared to the control groups.

Group	30-Day Readmission Rate
Rapid Anemia Management	28.3%
Control (1)	43.8%
Control (2)	31.3%

We conclude that low hgb post-hospital discharge is associated with increased 30-day readmission rate. RAM within 7 days of discharge reduces the rate of readmission when compared to a control group.

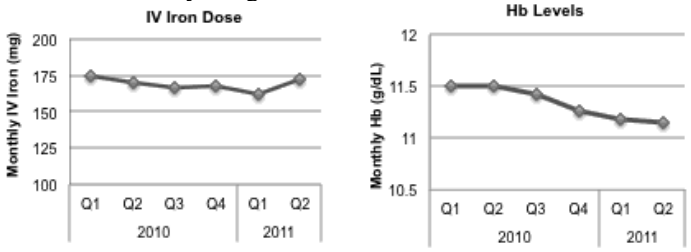
TRENDS IN ANEMIA MANAGEMENT FOR END STAGE RENAL DISEASE (ESRD) PATIENTS ON DIALYSIS

Jay Wish[1], Ali Hariri[2], Will Harrison[3], Alex Yang[4]
[1]Cleveland Case Medical Center, Cleveland, OH; [2]Takeda, Deerfield, IL; [3]ZS Associates, San Mateo, CA; [4]Affymax, Inc., Palo Alto, CA

The ESRD prospective payment system (PPS) bundle was implemented in the US in January 2011. From August 2010 to April 2011, DOPPS reported a 6-7% decrease in epoetin use, a 21% increase in patients who were prescribed IV iron, and a 0.1 g/dL decrease in average hemoglobin (Hb) levels. We attempted to confirm these trends by analyzing quarterly records (Q1 2010–Q2 2011) of epoetin dosing, IV iron dosing, and Hb levels of patients (N=200,170) from a large US dialysis provider.

A limited data set was constructed using anonymous patient-level data. Epoetin and IV iron use were averaged at a monthly level. Quarterly monthly use was calculated by averaging all patient monthly values across the quarter. Mean Hb levels were based on the last recorded Hb value for each month in a quarter.

As displayed in the Figures below, from Q1 2010 to Q2 2011, IV iron utilization remained stable. Average epoetin use declined. Average Hb levels decreased by 0.3 g/dL.



Consistent with expectations, ESA use declined following PPS bundle implementation. IV iron use did not increase as many expected, possibly because of earlier adoption of more aggressive IV iron protocols by the provider examined than US providers in general. The decline in Hb values since Q3 2010 may be due to several factors including concerns from TREAT trial results, implementation of new REMS for ESAs, anticipation and implementation of the PPS bundle in 2011, and anticipation of the ESA label change.

QUANTIFYING THE EFFECT OF INFECTION ON HEMOGLOBIN IN DIALYSIS PATIENTS RECEIVING ERYTHROPOIETIN

Suman Yadam, Michael Brier
Kidney Disease Program, University of Louisville, Louisville, KY

The leading cause of temporary resistance to exogenous erythropoietin (EPO) is infection. The purpose of this work was to determine the magnitude and duration of the effect of infection on hemoglobin in patients receiving in-center hemodialysis and EPO for the treatment of anemia.

Subjects were identified from a population of about 180 in-center hemodialysis patients that received antibiotics for greater than 14 days, had positive cultures, or other obvious signs of infection. Subjects were included if a definite baseline Hb could be determined and Hb eventually returned to that baseline level. The data were visually inspected to determine the baseline Hb and EPO, magnitude of the decrease in Hb concentration, and duration of the effect. Only one episode of infection per patient was included in the analysis.

We identified 44 subjects that contributed data for the analysis. 20 subjects were not hospitalized (NH) and 24 subjects were hospitalized (H). Hemoglobin (Hb) and EPO data were collected on each potential subject. The most frequent type of infection was site infection (NH) and septicemia (H). We observed a decrease in Hb in all subjects with a mean of 3.2±2.3 g/dL (NH) and 3.1±1.7 g/dL (H) (p=ns). The duration of the effect on Hb was variable with mean 3.7 ± 2.2 months (NH) and 3.4±1.1 months (H). Sufficient information on EPO dose was available in 32 subjects and increased in 30 subjects by 3.5 ± 3.0 fold with a range of 0.1 to 12 fold.

In conclusion, we have documented the effect of infection on Hb for both NH and H. Despite increasing EPO doses, Hb fell by about 3 g/dL and the effect lasted for months following the resolution of the infection regardless of hospitalization. Infection of any type results in important alterations in EPO response, even those treated in the unit.

CLINICAL OUTCOMES & C0ST DIFFERENCES BETWEEN IV VITAMIN D ANALOGUES VERSUS ORAL CALCITRIOL IN HEMODIALYSIS PATIENTS

Sandeep Aggarwal, Ellie Kelepouris, Ami Patel
Drexel University College of Medicine, Philadelphia, PA

Vitamin D analogues such as paricalcitol and doxercalciferol have gained popularity for the treatment of secondary hyperparathyroidism. With the move toward bundled payment for dialysis, alternative agents are being considered to save cost without impairing clinical outcome. Therefore, a comparative study was performed to determine whether oral calcitriol is equivalent and more cost effective alternative to injectable vitamin D analogues in the treatment of secondary hyperparathyroidism as indicated by KDIGO guidelines.

We conducted a retrospective study of a single inner city dialysis unit where a cohort of 52 dialysis patients were converted from intravenous vitamin D analogues (paricalcitol or doxercalciferol) to oral calcitriol. We investigated the differences in calcium, phosphorus, and intact PTH levels before and after implementation of calcitriol therapy.

There was no significant difference in calcium and phosphorus levels detected after switching to calcitriol at 3 months (interim analysis) and at the end of study period at 9 months. The intact PTH levels and serum calcium levels were higher after introduction of calcitriol but did not reach statistical significance. Furthermore, these values remained within the KDIGO guideline targets.

In conclusion, oral calcitriol is equivalent and a more cost effective alternative to injectable vitamin D analogues in the treatment of secondary hyperparathyroidism.

	Vit D Analogue	Calcitriol	*p*-val
iPTH (pmol/L)	360 ± 235	418 ± 297	0.351
Calcium (mg/dL)	9.19 ± 0.73	9.5 ± 0.79	0.078
phosphorus(mg/dL)	5.59 ± 1.78	5.8 ± 2.0	0.627
Cost/week/patient	$ 116.4	$ 6.6	

2,8 DIHYDROXYADENINE CRYSTALLINE NEPHROPATHY AS A RARE METABOLIC CAUSE OF CHRONIC KIDNEY DISEASE

Samer Diab Agha, Pamela C. Gibson, Samih H. Nasr, Varun Agrawal.
Burlington VT and Rochester MN.

A 44 year old Caucasian woman was referred for acute kidney injury (AKI, creatinine [Cr] 3.6 mg/dl with baseline Cr 1.1 mg/dl). She had no symptoms and no exposure to nephrotoxic agents. She was diagnosed with mild mental retardation and slow response time at 6 years of age.

She has an identical twin with similar developmental delay who presented one year ago with renal failure due to nephrolithiasis requiring chronic hemodialysis. Stone analysis was not performed. Her parents had a consanguineous marriage (first-cousins) and two female siblings are healthy. Ultrasound showed no kidney stones. Urine studies revealed pH 6.0, 0.3 g protein/ g Cr, no RBC and 5-10 WBC/hpf. Kidney biopsy was performed for unexplained AKI.

We observed numerous brown pointed crystals in the tubular lumina, epithelium and interstitial histiocytes on light microscopy. Moderate to severe degree of chronic interstitial nephritis was seen. Crystals were strongly birefringent and appeared yellow when parallel to the polarizer suggesting uric acid composition. However, uric acid levels in serum (5.5 mg/dl) and urine (156 mg/day) were normal.

The reference laboratory identified the crystals as 2,8 Dihydroxy-Adenine (DHA) based on morphology. X-ray microanalysis ruled out oxalate component. Adenine Phospho Ribosyl Transferase (APRT) activity in the RBC will be studied for confirmation. Low purine diet and allopurinol were started with close monitoring for dialysis needs.

APRT deficiency is an autosomal recessive disorder of purine metabolism that leads to overproduction of DHA. DHA crystals cause chronic tubulointerstitial nephritis and can be mistaken for uric acid nephropathy. Identifying DHA as a rare cause of crystalline nephropathy has important implications as allopurinol therapy can prevent further renal injury and recurrence in a transplanted kidney.

INFLUENCE OF BSMI VITAMIN D RECEPTOR GENE POLYMORPHISM ON RESPONSE TO ORAL VITAMIN D THERAPY IN PREDIALYSIS PATIENTS

Chanel Agness, Thomas Dowling, Hongbing Wang, Michael Hise, Linhao Li. University of Maryland School of Pharmacy, University of Maryland School of Medicine, Baltimore VA Medical Center, Baltimore, Maryland, USA.

In the predialysis population, the BsmI vitamin D receptor (VDR) polymorphism has been identified as a potential modulator of mineral and bone disorder severity and response to vitamin D therapy. The lower frequency BB allele (13.7-28.9%) has been associated with attenuated disease severity and increased response to therapy.

In this observational, open-label study we compared response rate by BsmI genotype to a 6-month course of vitamin D therapy in veterans with Stage 1-5 CKD and low 25(OH)D or elevated iPTH levels. Study participants were genotyped at baseline and outcomes determined at baseline, 6 and 12 months. Group 1 included participants with BB allele versus Group 2 with non-BB (Bb, bb) alleles. Response was defined as 25(OH)D levels above 30ng/mL or at least 30% decrease in iPTH levels at 6 months.

Since January 2010, 22 participants have been enrolled and 6 month data available for 18 participants. At baseline, duration of CKD was 2±1.6 years, 91% (N=19) were African-American. Nine participants (41%) had BB allele, and 12 (55%) had non-BB alleles. Baseline eGFR was 31±15mL/min/1.73m^2 with a trend towards significant difference between Groups (p=0.07). Average baseline 25(OH)D and iPTH levels was 19.77ng/ml and 215.4pg/ml, respectively. Overall response to vitamin D therapy was low, 25(OH)D (33%) and iPTH (29%). There was no significant difference in response rate between Groups, 25(OH)D (p=0.22) and iPTH (p=0.81).

These preliminary findings suggest that allelic differences may influence decline in eGFR but response to vitamin D therapy in the early CKD is yet to be determined due to low overall response rate and small sample size. Increased frequency of BB allele in this predominantly African-American population was an unexpected finding and may influence disease progression. This study provides informative pilot data for further hypothesis testing and investigation.

THE EFFECT OF VITAMIN D {25(OH)D3} DEFICIENCY ON THE OCCURRENCE OF SECONDARDY HYPERPARATHYROIDISM (SHPT) AMONG CHRONIC KIDNEY DISEASE (CKD) PATIENTS.

Alsadek Sultan, Anju Oommen, Chukwuma Ndibe, Arshad Ali, Claire Douglas, Wambui Machua, Balsam Elhammali, Amy M. Kwon, Khalid Bashir, Morehouse School of Medicine, Atlanta, GA, USA

National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF K/DOQI) guidelines suggest measuring 25(OH)D3 levels in patients with stage 3 & 4 CKD who have SHPT. There is paucity of information on 25(OH)D3 deficiency & SHPT in African American (AA) population during various stages of CKD.

We observed the records of 420 pts (average age 60.3±14.5 yrs, 78% AA) with CKD stages 1 to 5 at Grady Memorial Hospital's Renal Clinic that provides healthcare services to underserved and minority populations. 25(OH)D3 level was defined as sufficient (> 30 ng/dl), insufficient (20-29) or deficient (< 20).The data was analyzed with binary logistic regression equation for the occurrence of SHPT and the relationship of the occurrence probabilities with 25(OH)D3 levels was observed after adjusting for CKD stages. The fitness of model was tested using LRT test and score test.

25(OH)D3 level was checked in 71% of pts and the overall mean level was 21.46 (±12.59) ng/ml. PTH was checked in 93% of pts and was above the NKF K/DOQI target range for each CKD stage. According to the results, the effect of log transformed 25(OH)D3 and CKD stages on SHPT were both statistically significant with p-value of 0.0133 and 0.005. CKD stage 3 or 4 pts were more likely to have SHPT (~ 4.5 times in OR) in comparison to those in CKD stage 1 or 2 at the same 25(OH)D3 level. In addition, as the log transformed 25(OH)D3 level increased one unit, the odds to be exposed to SHPT decreased by 0.58 times.

NKF K/DOQI guidelines for measuring 25(OH)D3 levels in CKD pts with SHPT were met in most of our pts. There is a strong association between 25(OH)D3 deficiency & SHPT in our CKD population.

EGG CLUB INITIATIVE DID NOT IMPROVE SERUM ALBUMIN LEVELS IN ESRD PATIENTS

Shamik Bhadra, Hiral Desai, Linda Feder, Ziauddin Ahmed

Low serum albumin level is a strong predictor of mortality and morbidity among hemodialysis patients. The relative importance of nutritional barriers versus inflammation in contributing to hypoalbuminemia is unclear. Interventions are needed to improve serum albumin levels. Some suggest that lack of nutrition knowledge is an important barrier to optimal albumin levels.

In March of 2011, a patient care technician at the DCI clinic in Philadelphia encouraged a group of chronic hemodialysis patients to organize themselves in to an "egg club." Fourteen patients became active participants. Members of the "club" take turns bringing in hard-boiled eggs to share with the other members. The eggs, usually one per person, are eaten at the end of the dialysis treatment session. To support this project, the unit dietitian provided educational handouts about the nutritional value of egg protein, and food safety issues related to eggs.

Clinic records show that pre-egg club, 23% of all patients in the clinic (census: 120-130) had serum albumin levels below 3.5 g/dL. Among the 14 egg club members, the mean serum albumin level was 3.85. Eight months later, 22.6% of all patients have a serum albumin level below 3.5 g/dL. Among the egg club participants, the mean serum albumin level is 3.83, despite the intervention. The patient-organized egg club did not have any effect on the serum albumin levels of its participants.

This is not an unexpected result, in view of the small intervention (only 6 grams of additional protein, 3 times a week), and the many other factors that affect serum albumin, including fluid overload and inflammation. The egg club participants had a baseline mean serum albumin level that was higher than the overall clinic population. It is unknown if the "egg club" would have had a positive effect on patients with lower serum albumin levels or daily egg intake would have any better effect.

EFFECT OF A DIETITIAN MANAGED BONE ALGORITHM ON SERUM PHOSPHORUS LEVEL IN MAINTENANCE HEMODIALYSIS PATIENTS. Debra Blair,[1,2] Laura Byham-Gray,[1] Stephen Sweet,[3] Robert Denmark,[1] Scott Parrott,[1] Emily Lewis,[2] Susan McCaffrey,[2] Susan Thomson[2]. [1]University of Medicine and Dentistry of New Jersey, Newark, NJ, [2]Fresenius Medical Care (FMC-NA), [3]Western New England Renal & Transplant Assoc., Springfield, MA.

This study examined the effectiveness of a dietitian (RD) managed bone metabolism algorithm compared to non-RD (RN & MD) managed on serum phosphorus (PO_4) and related clinical outcomes [corrected serum calcium (cCa), intact parathyroid hormone (iPTH), incidence of parathyroidectomy] among maintenance hemodialysis (MHD) patients.

The study was an 18-month retrospective record review of adult MHD patients (n=252) at five dialysis centers in western MA and CT before and after change in the management of a comprehensive bone metabolism treatment algorithm which included IV vitamin D, phosphate binding medication, and calcimimetic. Timepoints (TP) representing 3-month averages during the non-RD (11/08 – 7/09) and RD (8/09 – 4/10) managed periods were used for analyses. Outcomes at calendar-matched TPs [i.e. non-RD managed TP 2 (2/09 – 4/09) and RD managed TP 6 (2/10 – 4/10)] were compared via repeated measures ANOVA considering potential confounders. Alpha was set at $p<0.05$.

Mean serum PO_4 was lower during the RD managed TPs (range = 5.16–5.19 mg/dL) compared to non-RD managed (range = 5.24–5.37 mg/dL), though the difference between TP 2 and 6 was nonsignificant ($F=.108$, $p=.74$) after controlling for age, enPCR, and eKdrt/V. Mean cCa (range = 8.71–8.79 mg/dL) varied little throughout the study, and the difference between serum iPTH at TP 6 (363.0 $\pm$ 296.8 pg/mL; mean $\pm$ standard deviation) compared to TP 2 (319.8 $\pm$ 251.5 pg/mL) was nonsignificant after controlling for age. There were fewer parathyroidectomies during the RD managed period (0.8%, n=2) compared to the non-RD managed (1.6%, n=4).

Results demonstrate that RDs may be equally effective as non-RDs in bone metabolism algorithm management with respect to serum PO_4, cCa and iPTH control in MHD patients. Further research is needed to prospectively evaluate the effect of RD management on these bone mineral outcomes.

MULTIDISCIPLINARY APPROACH TO CALCIFIC UREMIC ARTERIOLOPATHY IN PERITONEAL DIALYSIS

Beverly Deliz Tirado, Jorge Lamarche, Alfredo Peguero, Craig Courville, University of South Florida College of Medicine, James A. Haley Veterans Hospital, Tampa, Florida, USA

Calcific uremic arteriolopathy (CUA) or calciphylaxis carries a high morbidity and mortality. Complications like superimposed sepsis are a major cause of death and more than 50% die within one year of diagnosis. The pathogenesis of CUA is not well understood, but many risk factors have been identified. Peritoneal dialysis (PD) has been recognized as a risk factor, but the exact mechanism of this presumed increased incidence is not well understood.

We present two PD patients that developed CUA in our institution, histological diagnosis confirmed. The first patient is a 53 y/o female with end-stage renal disease (ESRD) 2ry to systemic lupus erythematosus (SLE) who had been on PD for approximately four years and developed CUA. The second patient is a 61 y/o male with ESRD secondary to hypertension and diabetes mellitus, who developed CUA after being on PD for approximately 4.5 years. Both patients were high transporters on the peritoneal equilibration test. An early multidisciplinary approach was implemented. This included changing the modality to hemodialysis (HD), intravenous sodium thiosulfate, parathyroid hormone and phosphate control, biphosphonates, and wound care. Both patients improved remarkably with this approach.

In a condition that is so debilitating and has such poor outcomes, a high index of suspicion is vital for diagnosis and an early aggressive multidisciplinary approach is imperative. PD is now recognized as a possible risk factor for CUA, although the mechanism is unclear. Perhaps it is associated with the accumulation of middle molecules as the clearance of such molecules may be less efficient in some PD patients, in our cases high average transporters. More studies are needed to further identify the mechanism of this presumed increase incidence.

UNDERREPORTING OF NON-COMPLIANCE WITH PHOSPHORUS BINDERS MAY CONTRIBUTE TO POOR PHOSPHORUS CONTROL IN DIALYSIS POPULATION

Nischala Dhanekula, Roopa Yarlagadda, Wei Wang, Virginia Lyons, Vijay Jain, Wajid Choudhry
Unity Health System, Rochester, New York

Dialysis Outcomes and Practice Patterns Study annual report in 2010 reported that only 58% of the dialysis patients have phosphorus levels in the target range. Our aim is to evaluate the factors possibly contributing to the poor phosphorus control in dialysis population.

We interviewed 60 adult dialysis patients with mean phosphorus levels ≥5.5mg/dl using a questionnaire and compared with the control group patients (40 patients with mean phosphorus levels <5.5mg/dl). Both groups had minimal or no residual renal function. Twenty five point four percent of the uncontrolled patients admitted that they missed their medications on a daily basis, which was significantly higher than that of the control group (2.5%, $p<0.001$). However, pharmacy records indicated that 41.7% of the uncontrolled patients were not filling their prescriptions regularly, indicating that about 16% of this group underreported their noncompliance. Patient's knowledge about high phosphorus diet did not differ significantly between the groups. Interestingly, the uncontrolled patients were better able to identify the health risks associated with a high phosphorus ($p<0.001$).

Drug dispensing information from pharmacy may play a role in controlling hyperphosphatemia.

	Control group (N=42)	Uncontrolled group (N=60)	P value
% of patients with poor knowledge about diet	35.0 (14)	35.0 (21)	**0.995**
% of patients unable to identify risks of high phosphorus	69.0 (29)	30.0 (18)	**<0.001**
% of patients to miss pills on a daily basis	2.5 (1)	25.4 (15)	**<0.001**
% of patients with irregular refills from pharmacy	14.3 (6)	41.7 (25)	**0.016**

EFFECT OF INTERLABORATORY DIFFERENCES IN TREATING SECONDARY HYPERPARATHYROIDISM

Hassan Fehmi, Lynne Gafford
Henry Ford Health System, Detroit, Michigan, USA

In our patient population, a large discrepancy in I-PTH values was noticed when we switched from an outside laboratory analyzing our I-PTH (Lab 1) to the laboratory already analyzing all the rest of our hemodialysis patient's blood (Lab 2). Subsequently, we realized a large increase in the amount of Vitamin D analog (Vit D) prescribed to treat Secondary Hyperparathyroidism (SPTH). The purpose of this study was to compare the I-PTH results from these two laboratories and to identify how that impacted our Vit D dosing to treat SHPT.

A retrospective chart review for monthly I-PTH values and Vit D dose average per month was conducted for 99 in-center hemodialysis patients, comparing 6 months from Lab 1 and then the following 6 months from Lab 2. At the end of 1 year, we collected blood and analyzed I-PTH of the same 99 patients comparing Labs 1 & 2, and a representative sample of 30 patients had the I-PTH analyzed at a third independent laboratory (Lab 3).

One-way ANOVA was used to compare the end of the year samples showing significant differences between Lab 1 and Lab 2. One-way ANOVA was also used to compare the means and medians for the two time periods for Lab 1 and Lab 2. In both cases, the difference was statistically significant. Another analysis with one-way ANOVA was used to compare the dosage of Vit D for the first time period versus the second time period. Significant difference was also found. Finally, the 30 blood samples analyzed for I-PTH at Lab 3 were tabulated side by side with Lab 1 values. The paired samples T-test showed similar concordance.

Variability in I-PTH results in between different laboratories can be related to both antibody specificity and standardization reasons. The unacceptable consequence is that varying treatment paradigms may be pursued in a given patient depending on the I-PTH assay used. We propose the use of assay-specific decisions, or to identify a correcting factor to the I-PTH results obtained with any given assay in order to render a standardized therapy.

CRYPTOCCAL IMMUNE RECONSTITUITION INFLAMMATORY SYNDROME COMPLICATED BY HYPERCALCEMIA IN AN HIV-INFECTED PATIENT

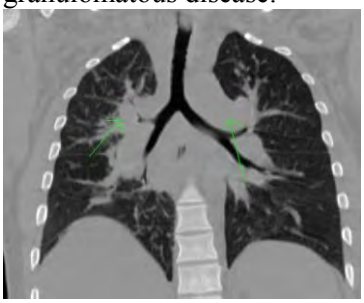
Shabnum Haleem, Sandeep Aggarwal, Irfan Ahmed, Nauman Shahid

Hypercalcemia is a rare complication of Immune reconstitution inflammatory syndrome (IRIS) in association with granulomatous disease following Highly active antiretroviral therapy (HAART). The proposed mechanism is increased activity of α-1-hydroxylase in the granulomas.

Herein we present a case of a 28 y/o African American HIV infected male patient who developed cryptococcal skin and fungemia 9 days and severe hypercalcemia 57 days after initiation of HAART.

At presentation patient's serum creatinine was 2.8 mg/dl (baseline 0.95 mg/dl) and serum calcium 15.4 mg/dl, on recent blood work. On physical exam he was found to have multiple crusted healing lesions on the face, and upper extremities. Further labs studies showed: iPTH 3 pg/ml, 25(OH)D2 28.6, 1,25(OH)D3 19, and ACEI 96. CT of chest showed nodules consistent with Fungal granulomas (figure attached)

The patient was treated with IV fluids and pamidronate and antifungal agent with improvement in serum calcium and renal function. The patient was diagnosed with hypercalcemia from granulomatous disease.



IATROGENIC TERTIARY HYPERPARATHYROIDISM IN A CASE OF FABRY DISEASE TREATED WITH AGALSIDASE BETA

Hilana Hatoum[1], Adepeju Jinadu[1], Anita Patel[1], Dhanwada Sudhaker Rao [2]. 1: Nephrology Department. 2: Endocrinology Department. Henry Ford Hospital, Detroit, Michigan.

Tertiary hyperthyroidism is a serious complication in ESRD and renal transplantation and the main treatment is still surgical. NKF KDOQI guidelines recommend recurrent measurement of iPTH as a first test for diagnosis and follow-up of hyperparathyroidism. But, the availability of different assays to measure iPTH affects the interpretation of the results and in some cases the management. A 50-Yr-O man with a history of ESRD secondary to Fabry disease status post living related kidney transplant was diagnosed with tertiary hyperparathyroidism due to persistently elevated iPTH (1200-1300 pg/mL) by using immunoreactivity based reaction assay. The patient was taking in addition to his immunosuppressive medications fabrazyme® (agalsidase beta) for his Fabry disease. The patient denied any complaints. Physical exam other than a palpable graft was unremarkable. Alkaline phosphatase, calcium, phosphorus and vitamin D levels were in normal ranges. Endocrine skeletal survey and bone densitometry were also normal. The patient was referred to a bone and mineral metabolism clinic for further evaluation. A repeated iPTH measure using a different assay showed a level of 123 mcg/mL. Because the patient was on fabrazyme that is a glycoprotein produced by non-human recombinant DNA technology (Chinese Hamster Ovary mammalian cell) and the generation of antibodies is not uncommon side effect of this drug. We presumed that the reason of this in vitro tertiary hyperparathyroidism as secondary to an interaction between our in house assay and possible antibodies induced by fabrazyme. The confirmation of falsely high iPTH level by using another assay was sane; it helped to avoid unnecessary invasive and costly procedures in an immunosuppressed patient. As a conclusion; the diagnosis of tertiary hyperparathyroidism remains a challenging entity in both nephrology and endocrinology fields. Pending evidence-based studies, it is reasonable to double check iPTH level with different assays in front of any atypical tertiary hyperparathyroidism before moving forward.

ACCURACY OF 24 HOUR URINE COLLECTIONS FOR EVALUATION FOR NEPHROLITHIASIS

R.Allan Jhagroo, K Penniston, S Nakada. UW Madison, Madison, WI

Nephrolithiasis is a common problem in the United States affecting approximately 10% of the population at some point in their lives. Recurrence is approximately 50% at 10 years since the initial event. Multiple parameters such as urine calcium, oxalate, and citrate identified on 24 hour urine collections have been implicated as risk factors for recurrence. Identification of these risk factors guide providers in initiation and modification of medical and nutritional recommendations provided to patients. Unfortunately the act of collection of a 24 hour urine sample provides an opportunity for error and thus incorrect diagnosis leading to mismanagement. The purpose of this study was to determine the degree in error of collection that can be expected in kidney stone patients.

To evaluate this problem we reviewed 143 twenty-four hour urine studies of patients in our clinic with multiple collections. We were then able to determine averages of their collections and describe the variation seen between collections. In addition patients who have indwelling catheters were reviewed as the expectation was that collections in this population would be more precisely 24 hours.

Our findings showed a 34.9 % variation from the mean in the 143 patients. Only 18% variation was noted in our patients with Permanent urinary catheters.

In conclusion, among our kidney stone patients a large variation in the accuracy of collections exist (34.9%). While only about 18% would seem attributable to physiologic variation. This implies that our conclusions drawn from individual studies may be greatly flawed especially when only a small number of studies are available.

BMI AS A PREDICTOR OF 24 HOUR URINE COLLECTION ACCURACY

R. Allan Jhagroo, KL Penniston, S Nakada
UW Madison, Madison, WI

Kidney stones burden approximately 10% of the U.S. population. Recurrence is about 50% in a ten year period of time. Many dietary and medical treatments have been found to be successful in reducing recurrence. The use of these interventions is guided by the use of 24 hour urine collections. Unfortunately the reliability of these measures can be poor. To help identify miss-collections the urine creatinine is measured. Ranges listed on common 24 hour test have large ranges for example 800-2000mg creatinine per day. This leaves an enormous opportunity for error and mistreatment.

To address this we used the 24 hour collections of near 200 studies of patients who performed multiple collections and determined the mean creatinine and accepted that as the true value. Then using the patients BMI data correlated this to the mean creatinines separately for men and women.

What we found is that multiplying the BMI by 62.2 for men and 50 for women produced a number that was within 14% of the accepted true creatinine.

In conclusion, using the BMI multiplied by 62.2 which can be rounded to 62 for men and 50 for women can be a useful tool to help determine the accuracy of a 24 hour urine collection. This would likely help prevent under and over diagnosis of conditions related to kidney stone recurrence.

SPOT SPECIFIC GRAVITY MEASUREMENT IN PREDICTING 24-H URINE VOLUME IN KIDNEY STONE FORMERS

R. Allan Jhagroo, Kristina L. Penniston, and Stephen Y. Nakada
UW Madison, Madison, WI

The supersaturation of urine is a predictor of renal crystal formation and growth. Urine supersaturation is highly dependent on urinary volume, yet many patients have difficulty achieving the minimum target of 2 liters per day on a consistent basis. While insensible losses, may account for some of this difficulty, there appears to be a disconnect in what they perceive to be drinking and actual urine volumes. We investigated the efficacy of specific gravity (SG) measures as a patient education tool to estimate 24-h urine volume.

Healthy individuals (n=7) were recruited and trained to use both a urine dipstick (Siemens, Tarytown, NY) and a hand-held hydrometer (Pet Smart, purchased online, typically used in measuring salinity of aquatic habitats) for quantifying the SG of their urine at 4 consistent time points during the day.. Urine output was recorded for volume determination.

24-h urine volumes ranging from 1000-3150 mL were obtained. Individuals were grouped into low-volume (LV, <2 L/d) and high-volume (HV, >2 L/d) groups. Mean SG for each day correlated inversely with 24-h urine volume and was different ($p=0.03$ for hydrometer and $p=0.007$ for dipstick) between groups. The mean SG measure for the HV group did not exceed 1.020 at 3 of 4 daily measurement points whereas the SG for the LV never went below 1.015 for those in the LV group but was below that at 3 of 4 time points for those in the HV group. SG measures obtained from urine dipstick and hydrometer were highly correlated ($R=0.79$).

SG measured at specific time points during the day is useful in predicting total daily urine volume and may be a useful patient education and adherence tool. While the hand-held hydrometer was more sensitive in measuring minute differences in SG and easier to read, the urine dipstick, which uses a graded color scheme consisting of 6 categories, appears adequate as well.

FGF-23 ASSOCIATED WITH CALCIFICATION PROGRESSION IN DIALYIS PATIENTS

Abigail M. Khan, Julio Chirinos, Harold Litt, Peter Yang, Sylvia E. Rosas, University of Pennsylvania, Philadelphia, PA

Our aim was to determine if fibroblast growth factor 23 (FGF-23), a regulator of phosphorus metabolism. predicts coronary artery calcification (CAC) progression. FGF-23 levels and CAC by CT were measured in 100 individuals initiating dialysis. 64 individuals underwent repeat CAC assessment. CAC score was calculated by Agatston score. CAC progression was measured by the difference in score between CT/time between CT and by the square root volume difference. Linear regression tested the association of CAC progression with FGF23 adjusting for potential confounders. The mean age was 50 years . A third was women and 64% were black. There was no association between FGF-23 and CAC score (P=0.18). Multivariable models are adjusted for baseline Agatston score, age, gender, race, diabetes status, and phosphate. Baseline FGF-23 levels were significantly associated with CAC change (Table 1). FGF-23 is significantly associated with CAC progression. FGF-23 may be an important marker of cardiovascular risk in individuals with CKD.

Table 1. FGF-23 (log) and CAC progression	**Annual CAC score (Agatston score)**		**Calcium volume square root change**	
	Coefficient (st. error)	P-value	Coefficient (st. error)	P-value
Adjusted for baseline CAC score	90.9(60.1)	0.14	0.92 (0.65)	0.16
Multivariable model	183.4(69)	0.01	1.93(0.72)	0.01
• **+ hsCRP**	183.6(70)	0.01	1.94(0.72)	0.01
• **+ serum 25-OH vit D**	188.5(71)	0.01	1.89(0.73)	0.01
• **+phos binder use**	184.1(69)	0.01	2.05(0.73)	0.01
• **All above + creatinine**	195.9(76.1)	0.01	2.17(0.78)	0.008

IDENTIFYING THE COMPARISON GROUP IN STUDIES OF VITAMIN D EFFECTS USING A PROPENSITY SCORE

Ryan D. Kilpatrick[1], Francesca Tentori[2], Hal Morgenstern[3] Karminder Gill[1], and Brian D. Bradbury[1]; [1]Amgen, Inc, [2]Arbor Research Collaborative For Health; [3]Univ of Michigan, Ann Arbor

In nonrandomized studies of drug effects, bias arises when untreated patients (pts) differ from treated pts with regard to underlying prognosis. Most studies of vitamin D (VitD) use and mortality risk have attempted to control for pt differences using standard adjustment methods. However, these methods may not control all bias if pts with certain levels of prognostic factors nearly always or never receive treatment. Propensity scores (PS) can be used to identify such pts, and are a statistically efficient way to directly control bias through matching or other means. We first characterized potential bias across PTH levels, the biggest driver of VitD initiation, then evaluated the comparability of VitD treated and untreated pts using a PS among incident dialysis pts enrolled in the DOPPS (2002-2004). We observed large differences in risk factors across PTH levels (table). Pts in the highest PTH category are more likely to receive VitD therapy, and they are less likely to be exposed to other factors that increase the risk of CV disease or dying. The expected result is bias toward a protective effect of Vit D. Next, we derived PSs and compared their distributions for VitD users and nonusers. We observed substantial non-overlap; 25% of VitD users with PTH < 150 & 76% of users with PTH > 600 Vit D could not be matched to nonusers on PS. Inclusion of pts for whom there is no overlap in the PS, as is likely in previous analyses relating mortality risk to VD use, raises potential for substantial residual bias.

	PTH at Baseline (pg/ml)			
	<150	150-300	300-600	>600
	(N=167)	(N=126)	(N=130)	(N=86)
Vitamin D Initiated by Month 4 (yes)	14%	33%	61%	67%
African American Race	12%	18%	38%	35%
Gender (Male)	53%	49%	58%	50%
Age (>= 65 Years)	55%	53%	52%	34%
Diabetes	61%	63%	58%	46%
Hypertension	84%	93%	94%	91%
Comorbidity (yes)				
Coronary Heart Disease	65%	63%	55%	50%
Cerebrovascular Disease	20%	18%	17%	9%
Congestive Heart Failure	47%	53%	42%	50%
Peripheral Vascular Disease	35%	31%	25%	24%
Other Cardiovascular Disease	29%	33%	34%	27%
Cancer (Other Than Skin)	16%	11%	16%	10%

ETHANOL INJECTION FOR MANAGEMENT OF REFRACTORY HYPERPARATHYROIDISM IN CKD: CASE REPORTS

Ivana Lazich, Marc Alonzo, Carolyn Donaldson, Stuart M. Sprague, NorthShore University Health System, University of Chicago, Evanston, Illinois

Objective: To evaluate the utility of percutaneous ethanol injection therapy (PEIT) for the management of severe hyperparathyroidism with hypercalcemia in patients with nodular hyperplasia of parathyroid.

Methods: Two patients with ESRD on HD that underwent PEIT with parathyroid nodular hyperplasia and PTH concentrations >2000 pg/ml and hypercalcemia and 1 patient of ESRD s/p DDRT with persistent hypercalcemia and nodular parathyroid hyperplasia. All subjects were treated with cinacalcet and the dialysis patients were also treated with paricalcitol. Parathyroid nodules were located via doppler ultrasound (US) and 98 % ethanol (<1 ml) was injected via US guidance. The procedure was repeated up to two times in 3-4 week intervals if necessary to obtain adequate response. Outcome: The 2 dialysis patients had remarkable decrease in serum PTH levels along with normalization of serum calcium in the course of 2 months following 3 and 1 injections, respectively. The transplant patient also responded with normalization of PTH. Cinacalcet was discontinued in all subjects.

	Serum PTH		Serum Ca++	
	Before PEIT w/cinacalcet	After PEIT w/o cinacalcet	Before PEIT w/cinacalcet	After PEIT w/o cinacalcet
ESRD 1	2922	771	11	9.7
ESRD 2	2501	1053	10.9	8.9
Transplant	152	59	11.5	9.1

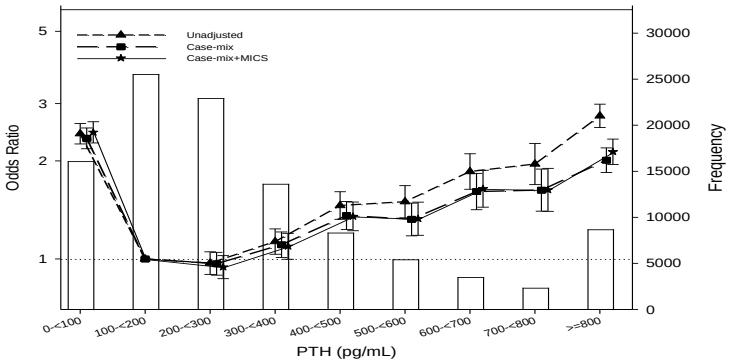
Conclusion: Severe hyperparathyroidism with hypercalcemia could be controlled with PEIT in CKD patients resistant to therapy. PEIT offers a safe alternative for management of refractory hyperparathyroidism with nodular hyperplasia.

THE LIKELIHOOD OF HYPERCALCEMIA ACROSS SERUM PTH LEVELS IN HEMODIALYSIS PATIENTS

Jinnan Li, J. Zaritsky, M. Z. Molnar, J. J. Sim, E. Streja, C. P. Kovesdy, I. Salusky, and K. Kalantar-Zadeh.

Harold Simmons Center, Harbor-UCLA, Torrance, CA, Salem VAMC, Salem, VA, David Geffen School of Medicine at UCLA, Los Angeles, CA; Kaiser Permanente, CA

The correlates of serum PTH level in maintenance hemodialysis (MHD) are not well known. We hypothesized both lower and higher serum PTH level is associated with higher risk of hypercalcemia. Over an eight year period (7/2001-6/2009), we identified 106,760 MHD patients with PTH and calcium data in DaVita dialysis clinics. Logistic regression models were examined to assess the association between likelihood of hypercalcemia (Ca≥ 10.2 mg/dL) and serum PTH increments. Patients were 61±16 years old and included 45% women, 59% diabetics and 32% Blacks. Compared to the group with PTH 100-



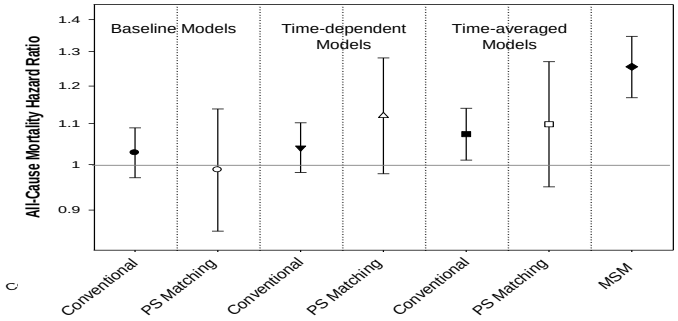
<200 pg/ml (ref), patients with PTH <100, 500-<600, 600-<700, 700-<800 and ≥800 pg/ml had more than two times, 33%, 64%, 63% and more than two times higher risk of hypercalcemia, respectively. Hence, the association of PTH level with high level of serum calcium is U-shaped, in that both very low levels and high levels of PTH are associated with hypercalcemia.

PARICALCITOL DOSE AND SURVIVAL IN HEMODIALYSIS PATIENTS: A MARGINAL STRUCTURAL MODEL ANALYSIS

Jessica E Miller, Miklos Z Molnar, Csaba P Kovesdy, Joshua J Zaritsky, Isidro Salusky, Onyebuchi A Arah, and Kamyar Kalantar-Zadeh

Harold Simmons Center, Harbor-UCLA, Torrance, CA, Salem VAMC, Salem, VA, UCLA, Los Angeles, CA, USA.

Selective vitamin D receptor activators (VDRA) including paricalcitol appear associated with greater survival in maintenance hemodialysis (MHD) patients. However, patients with higher serum PTH, a surrogate for higher death risk, are usually given higher VDRA doses, which can lead to confounding by indication and attenuate the expected survival advantage of high VDRA doses. We examined mortality-predictability of low (>1 but <10 μg/week) versus high (≥10 μg/week) dose of administered paricalcitol over time in a contemporary cohort of 15,442 MHD patients (age 64±15 years, 55% men, 44% diabetes, 35% African Americans) from all DaVita dialysis clinics across the USA (7/2001-6/2006 with survival follow-up until 6/2007).



We conducted conventional Cox regression, propensity score (PS) matching, and marginal structural model (MSM) analyses. Compared to high dose of paricalcitol, low dose was associated with a 26% higher risk of mortality (HR: 1.26, 95% CI: 1.19-1.35) in the MSM analysis. Hence, higher dose of paricalcitol may be associated with survival in MHD patients. Randomized controlled trials need to verify these data.

CINACALCET AND TERTIARY HYPERPARATHYROIDISM

Rabih Nasr, Chadi Saifan, Suzanne El-Sayegh. Staten Island University Hospital, Staten Island, NY

Hypercalcemia in patients with ESRD is a frequent finding because of the bone and mineral abnormalities. PTH, calcium, phosphorus and vitamin D play a major role in the control of the bone turnover. Tertiary hyperparathyroidism is the result of an overproduction of PTH due to parathyroid hyperplasia in ESRD patients. We report a case of resistant hypercalcemia secondary to tertiary hyperparathyroidism which responded to high dose of cinacalcet.

47 y/o woman with a history of ESRD on hemodialysis since 3 years, hypertension, bipolar disorder, diabetes and hypothyroidism, was admitted to the medical floor for hypercalcemia of 14.7 mg/dl. She was on levothyroxin, lopressor, sevelamer, and lamictal. The rest of the blood tests showed a phosphorus of 7.7 mg/dl, and albumin of 3.8 g/dl, PTH of 747 pg/ml, 25(OH) vitamin D of 9.5 mg/dl, and normal vitamin A level, SPEP, and PTHrp. CT chest and abdomen, mammogram and pap smear were negative for malignancy. Patient was dialyzed three times with low calcium bath of 2 meq/l, and was given calcitonin. The calcium remained elevated. Cinacalcet was started first at the lowest dose of 30 mg and was increased gradually to 60 mg then 90 mg/day and was able to control the calcium level reaching a level of 10 mg/dl after 6 weeks of treatment. Hyperaparathyroidectomy was not performed because of the good response to cincalcet.

Cinacalect is used in the treatment of secondary hyperparathyroidism. It decreases PTH level by increasing the calcium sensing receptor sensitivity on the parathyroid cells. In this particular case, cinacalcet was able to treat a refractory hypercalcemia due to tertiary hyperparathyroidism resistant to conventional therapy, and a surgical parathyroidectomy was avoided.

GRADUAL VS. RAPID REPLETION OF D DEFICIENT RATS

C Helvig[1], N Ramjit[1], D Cuerrier[1], C Hosfield[1] and M Petkovich[1,2]
[1]Cytochroma Inc., Markham, and [2]Queen's University, Kingston, Ontario, Canada

Current therapy for vitamin D insufficiency in CKD patients consists of over the counter vitamin D_2 or D_3, or Drisdol® (Rx vitamin D_2). However, such treatments do not reliably increase 25-hydroxyvitamin D (25D) or effectively or consistently lower intact parathyroid hormone (iPTH). We hypothesized that the lack of effectiveness of these therapies may be due to upregulation of the phosphaturic hormone FGF23, which exacerbates vitamin D catabolism via induction of the vitamin D catabolic enzyme, CYP24A1.

In the present study, we evaluated the effect of different modes of repletion on FGF23, CYP24A1, as well as CYP27B1(the enzyme responsible for activating 25D to 1,25-dihydroxyvitamin D) and intact parathyroid hormone (iPTH). Vitamin D deficient rats were administered calcifediol by intravenous (IV) bolus (4.5µg) or gradually via CTAP101 micro-capsules (4.5µg), a modified-release oral formulation. Animals were sacrificed at various times over 24hrs for measurement of serum calcifediol, calcitriol, iPTH, FGF23, calcium (Ca), phosphorus (P), and kidney expression of CYP24A1 and CYP27B1.

Our results showed that IV administration rapidly raised blood 25D3 levels substantially higher than that observed for CTAP101, yet both modes of 25D administration exhibited similar levels of iPTH suppression and normalization of calcitriol. Furthermore, IV calcifediol induced rapid and marked increases in FGF23 and CYP24A1 along with complete suppression of CYP27B1. In contrast, CTAP101 more gradually increased 25D3 levels that did not induce either FGF23 or CYP24A1 and had a marginal effect on kidney CYP27B1.

Our findings suggest that upregulation of vitamin D catabolic pathways may at least partially explain why large doses of immediate release replacement therapy have limited effeciveness and that the rate of repletion may be an important consideration in treating vitamin D deficiency.

ACUTE ONSET OF METASTATIC CALCIFICATION IN A DIALYSIS PATIENT – A CASE REPORT

Ajith Puram, Naheed Ansari, Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY

Metastatic calcification in ESRD patients is due to alteration in calcium and phosphorus balance. Calcium phosphate deposition can occur in any soft tissues such as blood vessels, myocardium, and cardiac valves. Growing evidence suggests that increased risk of cardiac mortality in ESRD patients may be partly due to vascular calcification. Metastatic calcification usually occurs slowly in the dialysis patients. We report an unusual case of rapidly occurring metastatic calcification within few days in a critically ill dialysis patient.

A 36 yr old African American female with past medical history of HTN, SLE, ESRD on hemodialysis for two months presented to the hospital with hypertensive urgency after missing 2 sessions of hemodialysis, she was intubated for respiratory failure. Hospital course was complicated with hemophilus bacteremia, DIC and septic shock. She also had loculated pleural effusions and underwent repeated CT scans during hospital stay for evaluation of pleural effusions. At time of admission CT scan chest showed no calcifications but subsequent CT scan done one week later showed acute calcification of the myocardium, pericardium and pleura which further progressed during the hospital course. CT scan findings are given in the figures below. Her calcium phosphate product remained high in range of 80-120during time of evolving metastatic calcification.

Fig 1 CT scan on admission

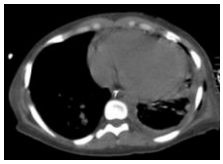
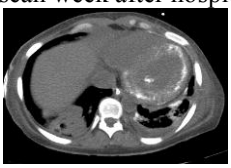


Fig 2 CT scan week after hospitalization



Abrupt development of metastatic calcification of the myocardium in ESRD patients is not reported in the literature. This case teaches clinicians to monitor calcium phosphorus daily and keep product to <55 in critically ill dialysis patient to avoid this devastating complication.

HYPOCITRATURIA IN MAGNESIUM AMMONIUM PHOSPHATE (STRUVITE) STONE FORMERS

Cindy Pynadath, Grace Snyder-Garza, Xiaobo Liu, Phillip Hall, Surafel Gebreselassie. Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH

Kidney stone occurrences are increasing in the United States with a lifetime prevalence of 10% in men and 5% in women. Calcium stones predominate, followed by magnesium ammonium phosphate (struvite) stones and uric acid stones. The purpose of this study was to evaluate metabolic abnormalities in struvite stone formers. Our retrospective analysis included 1466 adult subjects seen in the Cleveland Clinic between January 2006 and December 2010 who had kidney stone analysis and corresponding 24 hour urine analysis including urine volume, creatinine, citrate, calcium, sodium, oxalate, uric acid and pH. Of the cohort, 54 were excluded because of insufficient data. Ninety-one percent of our patients were Caucasians, 58% were males, and the mean age was 53.6 years. Similar to other reports, calcium oxalate and calcium phosphate predominated (71.7%) followed by calcium and uric acid mixed stones (17.9%), pure uric acid stones (6.4%), struvite (3.8%) and cysteine stones (0.35%). Struvite stones were more common in females ($p<0.001$), and were associated with urinary tract infection ($p<.001$). A two sample T test to compare metabolic abnormalities between struvite and non-struvite stone formers found no statistically significant difference between the two groups in BMI, serum bicarbonate, serum calcium, serum uric acid, and serum PTH. As expected, urine pH was significantly higher in the struvite group ($p< 0.001$). There was no statistically significant difference between the two groups for urine volume, calcium, sodium, oxalate but 24 hour urine citrate was lower in the struvite group ($p <0.001$). Urine citrate level was also significantly lower with struvite stones ($p<0.001$) compared with calcium stones. Forty percent of struvite stone formers had urinary citrate level <320 mg/day as well as significantly lower urine sodium, urine oxalate and urine uric acid but higher urine pH. In conclusion our study shows that hypocitraturia is prevalent in struvite stone formers. Our cohort had a small number of struvite stone formers (3.8%), making definite conclusions difficult. Further study is needed to evaluate if hypocitraturia is a risk factor for struvite stone formation.

ADDITION OF CHOLECALCIFEROL TO CALCITRIOL TO TREAT FRAILTY IN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

Wilner Samson, Farmington, CT; Sharad Sathyan, Farmington , CT; Richard Feinn, Farmington, CT; Anne Kenny, Farmington, CT.

Vitamin D insufficiency (VDI) is associated with frailty and cognitive impairment in the general population. End stage renal disease (ESRD) patients have high prevalence of VDI and frailty. The purpose of this pilot study was to determine whether treatment of VDI in ESRD lead to improved physical and or cognitive function. After a one month run-in period, subjects with 25 hydroxy vitamin D (25VD) < 30 ng/ml were treated with 3000 IU of cholecalciferol (VD) per day for 2 months in addition to baseline calcitriol treatment. Initial and post-treatment measurements included 6 minute walk, handgrip strength, and Short Physical Performance Battery (SPPB). Health questionnaires included cognitive screen, activities and instrumental activities of daily living SF-36 and Geriatric Depression scale. Thirty subjects (mean age 64 $\pm$ 16 years; 18 men/ 12women; 57% Caucasian) had mean 25VD levels 20.4$\pm$5.4; 25/30 (83.3%) had 25VD < 30 (mean value 19.5$\pm$4.4). 25VD increased significantly to 30.3$\pm$6.2 after treatment. VD treatment did not change iPTH, Ca or PO4 levels. General health assessments remained unchanged. VD therapy was not associated with change in physical or cognitive scores.

In conclusion, our data confirms that VDI is widely prevalent in the ESRD population. Two months of VD effectively raised 25VD. It did not result in improvement in general health, physical and or cognitive scores. In light of recent trends that favor VDI treatment, further study will be required to establish the benefit of VD in ESRD patients.

25(OH) VITAMIN D DEFICIENCY AND CHRONIC KIDNEY DISEASE IN OUR LARGE URBAN UNDERSERVED POPULATION IN SOUTHERN CALIFORNIA

Andrea C Sanchez, Maggie Chen, David Endres, Sandra Ri, Linda S Chan, Elaine M Kaptein
University of Southern California, Los Angeles, California, USA

Vitamin D deficiency (<20 ng/mL) or insufficiency (20-29 ng/mL) was present in 75% of 3278 primarily (78%) Hispanic patients in the year 2010 at LAC+USC. The purpose of the study was to examine the association of chronic kidney disease (CKD) with 25(OH) levels, and response to treatment with Ergocalciferol.

Data from 3278 patients during 2010 were used to assess the relationships of 25(OH)D levels to CKD as reflected by eGFR (CKD-EPI), serum albumin (SAlb) and urine protein/creatinine ratios (UrPr/Cr). Using a subset of 400 patients with 5 or more 25(OH)D levels over 0.5-4.6 years we compared these CKD parameters between patients who attained and maintained 25(OH)D levels $\geq$30 ng/mL (reached goal) with those who failed to attain 25(OH)D levels $\geq$30 ng/mL (failed to reach goal).

Among the 3278 patients, serum 25(OH)D levels <20 ng/mL occurred in 53% (25/47) with CKD stage 5 vs 30% (601/2037) with CKD stages 2-4 ($p=0.0008$); in 78% (210/269) with SAlb <3.5 vs 34% (639/1873) with SAlb >3.5 g/dL ($p<0.0001$); and in 75% (103/138) with UrPrCr > 3 vs 39% (135/347) with UrPr/Cr <3 g/g ($p<0.0001$).

Among the 400 patients with $\geq$5 values, 26% reached goal and 66% failed to reach goal. Comparing those who failed to reach goal to those who reached goal, UrPr/Cr was >3 g/g in 52% (11/21) and 27% (13/48) ($p=0.056$), and SAlb <3.5 g/dL in 21% (9/42) and 2% (2/97), respectively ($p=0.0004$), while eGFRs were not statistically different. Most patients who reached goal received 50,000 IU of Ergocalciferol per week, while those who failed had inconsistent medication refills.

In conclusion, 25(OH) D deficiency may relate to increased 25(OH) vitamin D losses in urine, and decreased serum 25(OH) D binding in CKD patients with nephrotic range proteinuria. Failure to attain and maintain serum 25(OH) D levels $\geq$ 30 ng/mL is probably multifactorial relating to increased urine 25(OH) D losses, decreased serum 25(OH) D binding as well as insufficient Ergocalciferol therapy.

CKD PATIENTS MAY REQUIRE HIGHER SERUM TOTAL 25D LEVELS TO NORMALIZE ELEVATED iPTH

A Sharma, F Al-Saghir, G Block, P Crawford, D Ries, J Sedor, G Fadda, H Paez, M Noursalehi, J Melnick, K Martin and the CTAP101 Study Group, Cytochroma Inc., Markham, Ontario, Canada.

In the general population, plasma levels of intact parathyroid hormone (iPTH) are inversely related to serum levels of 25-hydroxyvitamin D (25D) and reflect vitamin D adequacy. In cross-sectional studies, the 25D levels at which iPTH begins to rise vary from 12 to 40 ng/mL. The Institute of Medicine recently suggested 20 ng/mL as the lower limit of the normal range for 25D. This limit, however, may be significantly higher in the population with compromised kidney function.

We examined the relationship between iPTH and 25D in patients with stage 3 &4 CKD in a double-blinded study of CTAP101 Capsules, a modified-release formulation of calcifediol. A total of 78 subjects, age 18-80, were randomized to receive CTAP101 (30, 60 or 90µg/day) or matching placebo for 6 weeks. Baseline measurements (mean±SD) were eGFR of 39.4±9.9, iPTH of 136±52 pg/mL, 25D of 22.4±5.2 ng/mL, serum calcium (Ca) of 9.3±0.4 mg/dL and serum phosphorus (P) of 3.7±0.6 mg/dL. Weekly assessments were made for Ca, P, 25D and iPTH.

A log-linear regression model fitted to post treatment iPTH and associated 25D values for those subjects in the active groups demonstrated that a 25D level of 84 ng/mL associated with the upper limit of normal (72 pg/mL) for iPTH. Although some patients exhibited increases in 25D exceeding 100 ng/mL, no significant changes in Ca or P were observed.

These data demonstrate that 25D levels higher than 20 ng/mL would be required to achieve normalization of iPTH in stage 3 & 4 CKD patients with vitamin D insufficiency and SHPT. Further, this study supports that CTAP101 Capsules can efficiently raise 25D levels as high as 100 ng/mL without triggering safety signals in CKD patients. Longer and larger studies should be performed to confirm these findings.

CTAP101 CAPSULES SIGNIFICANTLY INCREASES SERUM 25D AND LOWERS PLASMA iPTH LEVELS IN STAGE 3 AND 4 CKD PATIENTS

S Sprague, F Al-Saghir, A Sharma, P Crawford, S Zeig, S Lee, R Hootkins, D Bushinsky, R Green, S Tabash, J Melnick, and the CTAP101 Study Group, Cytochroma Inc., Markham, Ontario, Canada.

Current guidelines recommend treatment of low serum total 25-hydroxyvitamin D (25D) concentrations in CKD patients with secondary hyperparathyroidism (SHPT). Vitamin D_2 or D_3 therapy has limited efficacy in raising 25D to ≥30 ng/mL and controlling elevated intact parathyroid hormone (iPTH). Active vitamin D hormone replacement therapies effectively lower iPTH but increase the incidence of hypercalcemia and exacerbate vitamin D insufficiency due to CYP24 induction.

This double-blind, placebo-controlled study examined the efficacy and safety of CTAP101 Capsules, a modified-release formulation of calcifediol, for treating SHPT in CKD patients (eGFR 25-70 mL/min) with vitamin D insufficiency (25D 10 to < 30 ng/mL). Subjects (n=78) were randomized to receive 30, 60 or 90 μg/day of CTAP101 or matching placebo for 6 weeks. iPTH and 25D were assessed weekly.

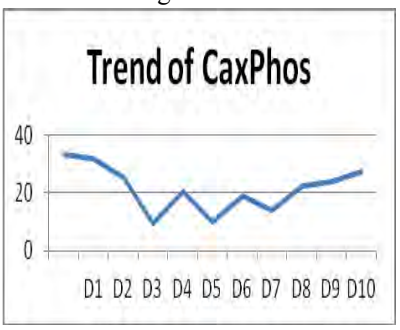
Baseline iPTH and 25D levels were comparable across the 4 treatment groups with means ranging from 115 to 150 pg/mL and 20 to 23 ng/mL, respectively. Following 6 weeks of treatment, 25D levels rose to ≥30 ng/mL in 98% of CTAP101 subjects reaching mean±SE values of 37.3±2.0, 66.9±4.4 and 84.8±5.5 ng/mL in the 3 dose groups compared to 18.5±1.0 ng/mL in the placebo group ($p<0.001$). iPTH decreased by ≥30% from baseline in 74% of CTAP101 subjects with reductions of 20±6, 33±5 and 39±4% in the 3 dose groups, respectively, compared to a 17±8 % increase for placebo ($p<0.005$). Changes in serum calcium (mg/dL) in the 3 dose groups were 0.12±0.07, 0.14±0.07 and 0.08±0.07 compared to -0.02±0.04 for placebo (NS); changes in serum phosphorus (mg/dL) were 0.24±0.12, 0.30±0.10 and 0.20±0.08 compared to 0.08±0.05 for placebo (NS). Adverse events were comparable across treatment groups.

These results demonstrate that CTAP101 Capsules reliably raises 25D and lowers iPTH without adverse effects on serum calcium or phosphorus in CKD patients with SHPT and vitamin D insufficiency.

CALCIPHYLAXIS IN A PATIENT WITH ACUTE RENAL FAILURE(ARF) ON CONTINUOUS RENAL REPLACEMENT THERAPY(CRRT)

Teena Tandon, Muhammad Mujtaba, Division of Nephrology, IUSM

Calciphylaxis is a rare disorder occurring in pts with ESRD who are on HD or have recently received a kidney transplant and is associated with high mortality. We report an unusual case of calciphylaxis occurring in the setting of ARF while on CRRT in a patient with liver transplant. A 59 year old Caucasian male with recent liver transplant for NASH cirrhosis and normal kidney function was admitted with septic shock and ARF requiring CRRT. On arrival his skin was normal. On day 4 bluish bleb with redness on his thigh was noticed that was initially thought to be cellulitis but it did not respond to antibiotics. Biopsy of the lesion showed calcification of the wall of small to medium sized blood vessels in dermis and subcutaneous fat (calciphylaxis).The calcium phosphate product was less than 55 at all time points with low PTH and Vit D levels, workup for auto-immune and hypercoaguable state was negative. We continued CRRT and started sodium thiosulfate along with bisphosphonate. This case illustrates the need to consider calciphylaxis in the differential for skin lesions in patients with ARF. This case is interesting as calciphylaxis occurred even though he was on CRRT. It also shows the dilemma of treatment as the definite therapy is unknown. More studies are needed to understand the mechanism of this condition which will aid us to develop better treatment regimens..



SPEP	Neg
ANA , RF	Neg
Hypercoagulable workup	Neg
1,25dihydroxy vit D	11
25 OH vit D	23

A RARE CASE OF CONCURRENT HEREDITARY HYPOPHOSPHATEMIA AND GLOMERULONEPHRITIS

Margaret Yu, Bessie Young, Rudy Rodriguez, Jonathan Himmelfarb, Bryan Kestenbaum; University of Washington, Veterans Affairs Puget Sound Health Care System, Kidney Research Institute; Seattle, WA, USA.

Renal phosphate handling is incompletely characterized. Important phosphate regulatory proteins have been identified from rare familial cases of hypophosphatemia. We report an unusual case of concurrent hereditary renal phosphate wasting and glomerulonephritis.

A 39 y/o man presented with muscle cramps, paresthesias, and weakness. Serum phosphate was 0.8 mg/dL. Other labs showed serum calcium 9.5 mg/dL, PTH 28 pg/mL, 25(OH) vitamin D 23.4 ng/mL, 1,25(OH)2 vitamin D 43 pg/mL, and 24 hour urine phosphate 2.3 g; he did not have glucosuria or metabolic acidosis. Malignancy evaluation was negative including bone scan, CT, MRI, and octreotide scan. Symptoms and hypophosphatemia improved with phosphate and vitamin D supplementation. He subsequently underwent a kidney biopsy for proteinuria and was diagnosed with thin basement membrane disease. Family history revealed multiple family members with hematuria and at least one sibling with hypophosphatemia in addition to hematuria.

In conclusion, this is a case of an unusual phenotype of isolated renal phosphate wasting and thin basement membrane disease, two heritable conditions that have never been described in conjunction before. The genetic variant underlying this phenotype may be due to a previously undescribed gene mutation or even a new phosphate regulatory protein.

RACIAL DIFFERENCES IN CHRONIC KIDNEY DISEASE (CKD) IN MEDICARE BENEFICIARIES: DIAGNOSIS AND HEALTHCARE COSTS

Robert Bailey[1], Amanda Forys[2], Lianna Weissblum[2], Huai-Chi Shih[2], Rachel Feldman[2], [1]Janssen Services, LLC, Horsham, PA, [2]The Moran Company, Arlington, VA

Previous studies have described a higher prevalence of CKD in minority populations. This retrospective, observational study describes healthcare patterns by race in Medicare Beneficiaries (MB) with CKD. ICD-9 Codes were used to identify CKD in the Medicare 5% Standard Analytic Files (2006-2009). MBs with < 4 quarters of eligibility were excluded. MBs with CKD were stratified by race (White, Black, Other). Comparisons were made on the stage of first CKD diagnosis and annual Medicare Payments. Significant racial differences ($p<0.05$) were observed in the stage of diagnosis and associated annual Medicare payments.

1st Diagnosis	Stage 3		Stage 4		Stage 5	
N=33,337	%	Cost, $	%	Cost, $	%	Cost, $
White	88	27,758	11	39,074	2	61,578
Black	85	30,830	13	42,040	3	48,034
Other	83	26,531	14	33,860	3	59,501

These observations of racial disparities in the stage of CKD diagnosis and associated healthcare costs may help inform health care policy-makers to achieve a reduction in healthcare disparities, a core element of health care reform. Further study is warranted to understand the potential impact of interventions to improve identification of CKD and treatment of associated complications.

RACIAL DIFFERENCES IN CHRONIC KIDNEY DISEASE (CKD) IN MEDICARE BENEFICIARIES, Robert Bailey[1], Amanda Forys[2], Lianna Weissblum[2], Huai-Chi Shih[2], Rachel Feldman[2], [1]Janssen Services, LLC, Horsham, PA, [2]The Moran Company, Arlington, VA

Previous studies have described a higher prevalence of CKD in minority populations. This retrospective, observational study describes demographics and comorbidities by race in Medicare Beneficiaries (MB) with CKD. ICD-9 Codes were used to identify CKD and comorbidities in the Medicare 5% Standard Analytic Files (2006-2009). MBs with CKD were stratified by race (White, Black, Other). Demographics and comorbidities were then compared between racial groups. Significant differences ($p<0.001$) in demographics and comorbidities were observed (presented below) for the 78,586 MBs with CKD.

N=78,586	White (65,376)	Black (9,198)	Other (4,012)
Mean age, years	76	71	74
Female, %	50	55	51
Urban , %	75	82	87
State Medicare Premium Support,%	15	40	62
Anemia (%)	55	46	50
Diabetes (%)	44	56	58
Hypertension (%)	36	45	43

These observed racial differences in demographics and comorbidities may help inform health care policy-makers to address healthcare disparities, a core element of health care reform.

USE OF FONDPARINUX IN SEVERE RENAL IMPAIRMENT AND HEMODIALYSIS

Marisa Battistella, Grace Ho, Kori Leblanc, Jin Huh, Jenny Ng, Rita Selby, Robert Richardson, Bill Brien, Michelle Hladunewich
University Health Network, Sunnybrook Health Sciences Centre, University of Toronto

Fondaparinux is a selective factor-Xa inhibitor that may be used in patients intolerant to heparin products (heparin induced thrombocytopenia or anaphylaxis). It is not recommended in patients with severe renal impairment and hemodialysis due to risk of accumulation. Therefore, there are currently no published guidelines to aid dosing and monitoring of its use in this population.

We conducted a prospective, observational, dual-centred study to develop guidelines on the use of fondaparinux in patients with renal impairment (CrCl <30mL/min) and hemodialysis; and to assess the laboratory and clinical effectiveness of these guidelines at two academic institutions.

Guidelines for the dosing of fondaparinux in both severe renal impairment (CrCl <30mL/min) and hemodialysis were developed based on drug characteristics, published literature, our own experience with fondaparinux in this population. Modifications were made based on expert review and were provided to practitioners as a tool to guide dosing and monitoring. Peak and/or trough anti-Xa levels were used to assess efficacy and accumulation. Clinical outcomes such as bleeding and circuit clotting were also documented.

Five patients were enrolled in the study; three patients were on conventional hemodialysis, one on nocturnal hemodialysis and one on slow long efficiency dialysis. Fondaparinux was used for circuit patency (2.5mg pre-dialysis) in 4 patients and for DVT prophylaxis in one patient. Observed anti-Xa levels ranged from 0.28 to 0.57. Circuit patency was maintained for all patients with no evidence of bleeding.

The developed guidelines support the safe and effective use of fondaparinux 2.5mg pre-hemodialysis for circuit patency. Evaluation in a larger cohort would further validate our findings and establish the role of Fondaparinox in broader clinical practice.

USE OF TALKING CONTROL SUPPORT THERAPY IN CHRONIC HEMODIALYSIS PATIENTS RESULTS IN HIGHER PATIENT SATISFACTION SURVEY RESPONSE

Judith Beto, Katherine Schury, Mary Nicholas, Nora Moravcik, Bessie Baldovino, Vinod Bansal

Loyola University Health Systems Dialysis, Maywood, Il, USA

Hemodialysis patients struggle with non-compliance that may be secondary to depression. Talking control (TC) is a cognitive behavior technique described as most comparable to a befriending relationship that has studied in depressed older populations in the primary care setting. The purpose of this study was to evaluate the effect of TC in a chronic hemodialysis population. Methods: TC consisted of general conversations about lifestyle without the specific intent of education change. Patients were randomly approached to participate (49 out of 129 = 38% of total unit patients). Two waves of TC (5-20 min/week for 10-12 weeks) were completed over 12 months in groups of 31 and 18 patients. Records were kept of total TC time, laboratory value changes, number of hemodialysis sessions completed, and TC activities. Primary outcome was annual patient satisfaction survey score pre- and post-TC. Data was analyzed by descriptive statistics, percent survey score difference, and qualitative patient comment summary. Results showed the mean unit patient satisfaction survey rose from 85% to 93%. 82% met or exceeded mean laboratory goals during the TC compared to 66% pre-TC. Greatest effect was seen for albumin and phosphorus control. Higher TC time resulted in qualitative survey comments relating to “feeling of belonging” and/or higher score on staff involvement in their care compared to pre-TC. TC may be an effective, low-cost support technique that can involve all members of the interdisciplinary team.

RECURRENT PORTAL-SYSTEMIC ENCEPHALOPATHY RELATED TO HEMODIALYSIS

Keerti Bhanushali, Ambarish Athavale, George Dunea, Peter Hart
John H Stroger Jr. Hospital of Cook County, Chicago, Illinois.

Hepatic encephalopathy is usually observed in patients with severe hepatocellular dysfunction or portal-systemic shunts. We describe here a rare case of recurrent hepatic encephalopathy in a compensated cirrhotic patient with portal-systemic shunt related to hemodialysis (HD).

A 65 year-old man with Child's A alcoholic cirrhosis developed ESRD secondary to diabetic nephropathy. Two weeks after starting dialysis, he lost consciousness following a session of dialysis. Neurologic examination revealed no focal deficits. Serum electrolytes and liver enzymes were normal but serum ammonia level (µmol/L) was markedly elevated to 252 versus baseline 76 (normal range <53). Brain CT scan was negative. Patient improved after treatment with lactulose. Loss of consciousness recurred often after HD and on reviewing the patient's records, intra-dialysis hypotension frequently preceded encephalopathy. Hyperammonemia during HD was confirmed- pre, mid and post-dialysis levels were 116, 141 and 151 µmol/L respectively Intra-dialysis hypotension concurrent with high post-dialysis ammonia levels, raised concern for a portal - systemic shunt and abdominal CT angiogram confirmed a large spleno-renal shunt.

Portal systemic encephalopathy related to hemodialysis has been rarely reported. The postulated mechanism is that during ultrafiltration and intra-dialysis hypotension, ammonia-rich portal venous blood flows into the systemic circulation through a large shunt causing encephalopathy. Treatment options include extended or nocturnal dialysis, ultrafiltration profiling, sodium modeling or shunt ligation. The patient is currently being dialyzed for 4 hrs thrice weekly with ultrafiltration profiling and had no further episodes of hepatic encephalopathy.

Portal – systemic shunt should be recognized as an important cause of hepatic encephalopathy in patients undergoing hemodialysis.

VIDEO EDUCATION INCREASES PATIENT KNOWLEDGE ABOUT PHOSPHORUS CONTROL AND IS A PREFERRED FORM OF EDUCATION

Shaun Boyd[1], T. Christopher Bond[1], Tonya Zimmerman[1], Kathy Parker[1], Darlene Griffin[1], Duane Dunn[1]
(1) DaVita Inc., Denver, CO, USA

Nephrology care teams have attempted to achieve optimal phosphorus levels in patients through many methods of patient education and clinical interventions. We assessed the acceptance of a video education program designed to inform hemodialysis patients about controlling their serum phosphorus levels and other dialysis-related topics.

The video education program was conducted in 20 centers in 1 division of a large dialysis provider's network. Patients completed questionnaires about their knowledge of phosphorus control and preferences regarding types of education (handout, video, one-on-one counseling, and group presentations) before and after the initiative. The video program consisted of 6 videos shown at 1-week intervals and covering the following topics: understanding kidney function and kidney disease treatment options, mineral and bone disorders, benefits of fistula use over catheter use, success stories (highlights of patients leading successful and happy lives while on dialysis), and 2 videos on cooking and making dialysis-friendly meals.

The 771 patients who completed both the pre- and post-test scored significantly better ($p<0.05$) on 5 of 7 knowledge components after the 6-part program than they had beforehand. In general, patients had a very positive response to video education, with 44% of patients ranking it higher than they had beforehand and only 23% ranking it lower. The percentage of patients who said video education was their most preferred method rose from 22% to 40%. Of the 936 patients who took the post-program test, 86% said the program improved their overall understanding of dialysis and 83% said they would like to see more video education in the future. The percentage of centers that ranked video education as the most preferred format overall rose from 20% to 65%.

The 6-week video education program improved patient knowledge of dialysis and was a well-accepted method of patient education.

PSYCHOLOGICAL STATUS AND END-OF-LIFE DECISION MAKING CONFIDENCE IN SURROGATES OF DIALYSIS PATIENTS Bridgman, J.C., Ward, S.E., Lin, F-C., Hanson, L.C., Hamilton, J., Hladik, G., Fine, J.P., Sun, S., Miles, M., & Song, M.K., UNC-Chapel Hill, NC, UW-Madison, WI, USA

The psychological status of surrogate decision makers and assessment of their own decision making abilities *before* engaging in end-of-life decision making has received little attention. The purpose of this descriptive study of 120 surrogates of dialysis patients was to examine relationships among surrogates' psychological variables, end-of-life decision making confidence, and sociodemographic characteristics using baseline data from a randomized controlled trial. Surrogates completed the Hospital Anxiety and Depression Scale, Post-Traumatic Symptoms Scale (PTSS)-10 and the 5-item End-of-Life Decision-Making Confidence Scale. The majority of the sample was African American (65.8%), female (69.2%), and living with patients (62.5%). Although mean scores of anxiety, depression, and PTSS for the sample were within normal ranges, 35% (n=42), 11.7% (n=14), and 5.8% (n=7) showed abnormal scores on the anxiety, depression, and PTSS, respectively. Surrogate's decision-making confidence was high (M=17.70 out of 20). Surrogates' sex, years of education, total annual income, and overall rating of relationship quality with patients were significantly associated with psychological status ($r = .20$-$.35$, $p<.05$). Decision making confidence was associated only with the quality of relationship with the patient ($r=.33$, $p<.001$).

In this sample, we found no significant relationship between surrogates' psychological status and decision-making confidence. Surrogates' decision-making confidence may reflect their perceived relationship quality with patients. The lack of relationships between the psychological status and decision making confidence in this sample warrants future studies.

HOW UNDERGRADUATE AND GRADUATE SOCIAL WORK STUDENTS CAN HELP LOCAL KIDNEY DISEASE COMMUNITIES: RECOMMENDATIONS FOR NEPHROLOGY PROFESSIONALS

Teri Browne, Olivia Jones, Felix Weston, Valerie Stiling, Lesley Jacobs, Sonya Davis-Kennedy, Cassandra Avant Williams, Cassidy Shaver, Jennifer Worthington
University of South Carolina, Columbia, SC, USA

This research describes a project that trains 5 undergraduate and 3 graduate social work students in kidney disease and health disparities research. Working on this research project has strengthened the students' scholarly pursuits by helping them understand a myriad of barriers to community health (and kidney disease outcomes specifically) that are discussed in their classes. Possible roles and activities for students, and partnerships between academics and nephrology professionals, are discussed. These activities include research on kidney disease disparities, and learning about kidney disease to enhance the students' knowledge and appreciation of the public health crisis of kidney disease. In addition, these students have participated in a myriad of activities with the local National Kidney Foundation office, benefiting dialysis professionals, patients, the NKF, and the students. Suggestions for how dialysis professionals can take advantage of opportunities related to working with local universities and scholars are provided- this is a necessary step as few academics (particularly in social work) focus on kidney disease.

HEPATITIS C PREVALENCE AND RISK FACTORS IN INCIDENT DIALYSIS PATIENTS IN 2 DECADES

Kimberly R. Bryan, Bryan T. Green, Richard S.Teplick, R.Michael Culpepper, Division of Nephrology, University of South Alabama, Mobile, AL, USA

Hepatitis C infection (hepatitis C anti-body, HCVAb+), has a higher prevalence in the total hemodialysis (HD) population than in the general population. We surveyed incident HD patients in 2 decades; HD1, starting treatment in the 24 months of 1998-1999 and HD2, the 24 months of 2009-2010, for HCVAb status (86% known HD1; 100%, HD2) and for known risk factors associated with HCVAb(+). Consenting patients with known HCVAb status took a self-reporting survey of risk factors (96% participation HD1; 86%, HD2). Data were analyzed by chi-square comparisons between HCV(+) and (-) groups.

HD1: 61% male 27% HCVAb(+) n=51.

Significant factors (+) vs (-) pts: Income $\leq$ \$10,000/yr or any drug use ($p<.05$), male marijuana use 7x risk vs non-users ($p<.01$), and daily alcohol use vs no alcohol ($p=.05$). Non-significant factors (+) vs (-) pts: < High school education (24% vs 31%), $\geq$ 1 blood transfusion pre-ESRD (57% vs 38%) and age, ethnicity, gender, marital status, number of sexual partners.

HD2: 60% male 16% HCVAb(+) n=55.

Significant factors (+) vs (-) pts: Income $\leq$ \$10,000/yr,($p< .05$), surgery >5y before start of HD ($p=.003$), age 50-60 yr old ($p=.02$), and sexual partners >10 ($p<.05$). Non-significant factors (+) vs (-) pts: gender, marital status, ethnicity, educational attainment, and drug or alcohol use.

Trends for risk factors (age, drug use, sexual partners) were concordant between the 2 groups; small numbers precluded overall statistical significance. Importantly, low socio-economic status associated strongly with HCVAb(+) and, in the 2nd survey, surgery with hospital exposure was a very strong risk factor. A larger population survey is needed to clarify HCV risk.

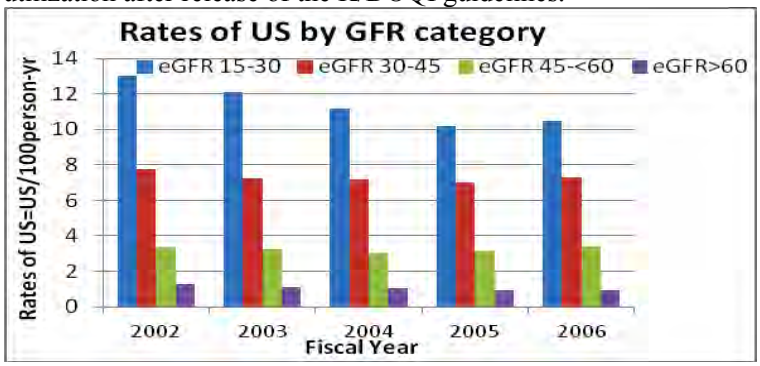
TRENDS IN RENAL ULTRASOUND IMAGING IN CKD PATIENTS PRE AND POST KDOQI GUIDELINES IN THE NATIONAL VETERANS HEALTH AFFAIRS (VA) SYSTEM.

Nadia Chaudhri and Stephen Seliger, Baltimore VAMC, Baltimore, Maryland.

K/DOQI CKD Guidelines from 2002 recommend imaging studies in the initial evaluation of pts with CKD.

We performed an observational longitudinal study of active outpatients with incident CKD, defined as eGFR<60, from 2002-2006 in the national VA system to determine the utilization of renal ultrasound(US) imaging (N=127,155). Imaging rates were estimated by year and eGFR category; logistic regression was used to identify factors associated with renal imaging.

Adjusting for demographics, co-morbidity, and eGFR, greater utilization of renal US was related to nephrology care(OR:15.2), Black race(OR:1.5), Diabetes(OR:1.3) prior stroke(OR:1.51), and peripheral arterial disease(OR:1.6), but not CAD(OR:1.1). Overall, frequency of renal US was low (12%), with greater utilization in pts with lower initial eGFR. There was no meaningful change in utilization after release of the K/DOQI guidelines.



In summary, renal imaging for outpatients with incident CKD is uncommon in the national VA system, especially among those without nephrology care, with no increase in utilization in response to K/DOQI guidelines.

PILOT STUDY FOR THE VALIDATION OF THE MODIFICATION OF DIET IN RENAL DISEASE FORMULA IN A CANADIAN ASIAN POPULATION

Maryum Chaudhry, Charmaine E. Lok. Toronto General Hospital and the University of Toronto, Toronto, Ontario, Canada

Use of the Modification of Diet in Renal Disease (MDRD) formula is common in estimating GFR (eGFR). However, it was derived from a predominately Caucasian, non-diabetic, non-elderly CKD population limiting its generalization. Large discordances are often observed between clinical symptoms and MDRD eGFR in CKD populations leading to confusion in management plans. This study aimed to validate the 24-hour urine collection for creatinine (Cr) clearance, MDRD and Cockcroft-Gault (CG) equations with the Renal DTPA(diethylene triamine pentaacetic acid)/Blood GFR in an Asian CKD population.

In this prospective cohort validation study, Asian participants in Toronto with CKD were involved (n=24) and underwent 3 tests: 1) Renal DTPA/Blood GFR; 2) Blood test; 3) 24-hour urine collection. eGFR values obtained by the MDRD and CG equations, and urine Cr clearance were correlated against GFR obtained by the Renal DTPA/Blood GFR to determine degree of agreement.

The Pearson coefficients between the Renal DTPA/Blood GFR and the laboratory diagnostic tests were: urine Cr clearance-0.88, CG-0.90, and MDRD-0.88 ($p<0.0001$). The Pearson coefficients in the Asian population were: urine Cr clearance-0.92, CG-0.93, and MDRD-0.93 ($p<0.0001$). One Asian patient had a Renal DTPA/Blood GFR of 24.7 ml/min, but the MDRD's eGFR was 10.3 ml/min. In another Asian patient with a Renal DTPA/Blood GFR of 49.4 ml/min, the MDRD's eGFR was 63.2 ml/min. Patients with larger BMIs had greater discrepancies between eGFR values and Renal DTPA/Blood GFR.

Our study shows that an excellent correlation exists between the Renal DTPA/Blood GFR and the 3 laboratory diagnostic tests. However, our study is limited in sample size and further study sampling a diverse population is required. Despite this, we have shown that the correlation between the diagnostic tests and the Renal DTPA/Blood GFR is not perfect. Our study shows that the MDRD formula alone cannot be used soley to make clinical decisions, especially in a non-Caucasian population.

IRON-BASED PHOSPHATE BINDER PA21: EFFECTIVE AND WELL TOLERATED IN CKD HEMODIALYSIS PATIENTS

Michel Chonchol[1], Rudolf P. Wüthrich, Viatcheslav Rakov, Sylvain Gaillard, James A. Tumlin. [1]University of Colorado, CO, USA.

Elevated serum phosphorus is associated with complications in CKD hemodialysis patients. A challenge in managing hyperphosphatemia is having limited effective and well tolerated treatments.

A randomized, active-controlled, multicenter, open-label, dose-ranging, phase II study investigated PA21, a novel polynuclear iron (III)-oxyhydroxide phosphate binder, vs sevelamer HCl, in CKD hemodialysis patients. The primary endpoint was change in serum phosphorus level. Safety and tolerability were also assessed. A total of 152 patients received a fixed-dose regimen of either PA21 (1.25, 5.0, 7.5, 10.0 or 12.5 g/day) or sevelamer (4.8 g/day) for 6 weeks.

Demographics were similar across all treatment groups. PA21 (5.0, 7.5, 10.0 or 12.5 g/day) reduced serum phosphorus levels in a dose-dependent manner. The 5.0 and 7.5 g/day PA21 groups had similar efficacy to sevelamer (mean change from baseline: –1.64 and –1.26 mg/dl, respectively, vs –1.47 mg/dl for sevelamer), while the 10.0 and 12.5 g/day groups had greater efficacy (mean change from baseline: –1.86 and –1.87 mg/dl). All PA21 doses were well tolerated. Except for hypophosphatemia (serum phosphorus <3.5 mg/dl), no dose-dependent association between PA21 and AEs was observed. Hypophosphatemia was greater in the highest PA21 dose groups (30.8% with 10.0 g/day; 30.4% with 12.5 g/day,) vs lower dose groups (15.4% with 5.0 g/day; 8.0% with 7.5 g/day) and sevelamer (7.7%). The overall incidence of gastrointestinal (GI) adverse events (AEs) was similar for PA21 (23.0%) and sevelamer (23.1%). The most common GI AE associated with PA21 was discolored feces (11.9% vs 0% with sevelamer). When discolored feces – an accepted consequence of iron-based oral products – were excluded, the GI AE profile for PA21 was more favorable than for sevelamer. There was no dose-dependent association of PA21 with GI AEs. The most common non-GI AE associated with sevelamer was hypotension (11.5% vs 0.8% with PA21).

These data indicate that PA21 is an effective and well tolerated phosphate binder, and a potential alternative to current hyperphosphatemia treatments for CKD hemodialysis patients.

OPTIMISING DRUG THERAPY WITH PHARMACIST-CONDUCTED MEDICATION REVIEW IN HEMODIALYSIS PATIENTS: A COLLABORATIVE APPROACH

Chow Mee Yin Melissa[a], Chen Li Li[a], Khee Giat Yeng[a], Ong Wan Chee[a], Ng Sock Mui[a], Chang Wei Terk[a], Choong Lina[b]
[a]Department of Pharmacy, Singapore General Hospital
[b]Department of Renal Medicine, Singapore General Hospital

Introduction: Patients with end-stage renal disease on hemodialysis are at high risk of drug-related problems (DRPs). They usually have multiple co-morbidities which require a cocktail of medications. One strategy is to include a clinical pharmacist in the renal multidisciplinary team to optimize pharmacotherapy and improve patient's care. The objectives of this study were to determine the prevalence of DRPs and pharmacists' interventions in hemodialysis patients.

Methods: A retrospective observational study was conducted at Medication Management Clinic by pharmacists from March to November 2011 in Singapore General Hospital. The study population were hemodialysis patients referred by renal physicians for a comprehensive medication review prior to their clinic appointment. The pharmacist collected relevant information using direct interview and medical record review process. A written report with recommendations was submitted to the doctor to aid clinical decision making. Data were analysed using descriptive statistics on patients' demographic, types of DRPs and interventions made.

Results: Twenty nine (75%) renal patients visited the pharmacist for a medication review. A total of 388 medications were reviewed and 93 DRPs identified. The top 3 DRPs were non-adherence (33.5%), untreated indication (15.1%) and drug without indication (8.6%). Seven types of interventions by pharmacists were identified mainly were, educational (35.2%), addition of drug (22%), discontinuation of drug (14.7%).

Conclusion: At least 3 DRPs were identified per patient reviewed by pharmacists. DRPs in hemodialysis patients have been associated with poor health related outcomes. A collaborated medication management approach between the pharmacist and physician will help to address drug related issues and improve patient care.

EXPOLORING REASONS FOR POOR ACHIEVEMENT OF THE UREA REDUCTION RATIO (URR) METRIC FOR THE QUALITY INCENTIVE PROGRAM (QIP)

George N. Coritsidis[1], Anjali Acharya[1], Gregory A. Maglinte[2], Chun-Lan Chang[3], Jerrold Hill[3], Nathan Thompson[1], David J. Harrison[2]
[1]NYC Health and Hospitals Corporation, New York, NY; [2]Amgen, Thousand Oaks, CA; [3]IMS Health, Plymouth Meeting, PA

CMS uses URR as one metric to assess quality of dialysis care. We explored factors associated with poor achievement by dialysis facilities of the QIP URR metric based on 2008 national performance (≥96% of patients with mean URR≥65%), focusing initially on facility size.

We analyzed electronic medical records from 5,257 hemodialysis patients in 50 hospital-based dialysis clinics (HBDCs) and 30 independent dialysis organizations (IDOs) using CMS methodology for QIP from Jan to Dec 2010. The proportion of facilities meeting the URR metric was assessed. Using currently available data for HBDCs, initial analysis by facility size was conducted.

Across the 80 facilities in 2010, patients were mostly male (57%), had mean age 60 years, mean Hb 11.3 g/dL, mean annual URR 73.4%, and the proportion of patients with URR≥65% was 93.4 %. Only 46.0% of HBDCs and 30% of IDOs met the URR metric. Compared to HBDCs with 51-75, 76-100, or >100 patients, HBDCs with 10-25 or 26-50 patients had more patients with URR≥65% and a greater percentage met the URR metric (Table).

This initial analysis indicated an inverse relationship between facility size and URR. Further analyses of HBDCs and IDOs will include race, BMI, and dialysis access (available Jan 2012). Understanding the impact of these parameters on URR is essential to achieving QIP and providing quality care to patients.

	All HBDCs	HBDC Facility Size (# of pts)				
	All pts	10-25	26-50	51-75	76-100	100+
# of Pts	3,231	154	713	425	818	1,121
Mean Annual URR (SD)	73.7% (5.8)	73.6% (4.4)	73.5% (5.2)	72.7% (5.9)	73.0% (5.9)	74.7% (6.0)
% of Pts w/ Mean Annual URR ≥65%	93.8%	97.4%	95.8%	91.8%	91.3%	94.6%
# of HBDCs	50	9	18	7	9	7
% of HBDCs Achieving URR Metric	46.0%	66.7%	61.1%	28.6%	11.1%	42.9%

RESPONSE RATES TO THE KDQOL IN CHRONIC DIALYSIS PATIENTS.

Karen Crampton, Hannah Cayton, Andrea DeKam, Erica Perry, Jami Roberts, Ann Snyder-Manson, Jonathan Segal
University of Michigan Health System, Ann Arbor, MI

The Kidney Disease Quality of Life (KDQOL) survey is often administered to patients receiving chronic dialysis, although little is known about response rates in the community and reasons why patients decline the survey when administered outside of a clinical trial. We examined differences between dialysis patients who completed the KDQOL (responders) and those that did not (non-responders) as part of a quality assurance project. Four social workers from two chronic dialysis facilities offered the survey to patients as part of their routine care over a 12 month period. Data was analyzed with PASW v18.

Of the 133 patients offered the KDQOL, only 56.4% completed the survey. There was no difference in response rate by sex, age, race, or Medicaid status. Home dialysis patients were more likely to complete the KDQOL (OR 17.6, 95% CI 4.0-77, $p<0.0001$). Non-responders tended to have been receiving dialysis longer with a mean of 58.7 months, compared to responders at 41.8 months ($p=0.054$). Of the non-responders, 34.5% had previously completed a KDQOL survey in the facility. There was significant variability in response rate between the in-center hemodialysis social workers ranging from 21.8% to 61.5% (Chi-Square 10.7, df 2, $p=0.005$).

In summary, the KDQOL was more likely to be completed by home dialysis patients, and those that had been receiving dialysis for a shorter period of time. However, the approach used by the survey administrator impacts response rates and is a modifiable factor. Additional study is needed to determine why patients who previously completed the KDQOL refused to complete follow up surveys.

BODY COMPOSITION AND DIABETIC METABOLIC DERANGEMENTS IN CHRONIC HEMODIALYSIS PATIENTS

Serpil M. Deger[2], Lora A. Ryzhkova[3], Edward D Siew[1,2], Cindy A Booker[2], Mary B Sundell[2], T. Alp Ikizler[1,2], Adriana M Hung[1,2]
[1]Veterans Administration, Nashville TN, [2]Vanderbilt University Nashville, TN, [3]University of Oklahoma, Oklahoma City, OK

In contrast to the general population, data in the chronic hemodialysis (CHD) population suggests obesity may confer a survival benefit. Metabolic derangements such as diabetes mellitus (DM) may impact this" reverse epidemiology" in CHD patients. The aim of this study was to determine variations in lean body mass (LBM) across different BMI categories and by diabetic status among 104 CHD patients whom had body composition assessed by DEXA at dry weight. Mean age was 47±12, 42% were females and 36% had DM. Nearly half of these patients (n=50) were obese (BMI>30) and obese patients were 2.84 (95% CI1.09-7.51) times more likely to have DM. Patients with higher percentages of body fat also tended to have more LBM (p=0.002; figure 1), although the ratio of LBM to fat mass generally decreased with increasing BMI. Additionally, the ratio LBM to fat mass was significantly lower in diabetic patients (p=0.004; figure 2) consistent with presence of sarcopenic obesity in CHD patients with DM.

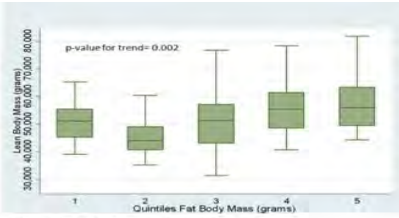


Figure 1. LBM by quintiles of FM

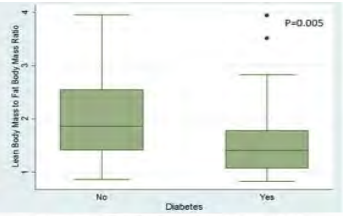


Figure 2. LBM/FM ratio by DM

These data indicate that increasing fat mass is associated with preservation of LBM, which may explain why obese CHD patients have better survival. Notably, this relationship is altered in diabetic patients, indicating a higher prevalence of sarcopenic obesity in this high-risk group. Information obtained from this study will be useful to physicians in determining optimal recommendations for weight management in ESRD patients.

INSULIN RESISTANCE AND PROTEIN METABOLISM IN CHRONIC HEMODIALYSIS PATIENTS

Serpil M Deger[2], Mary B Sundell[2], Edward D Siew[1,2], Phyllis Egbert[2], Charles D Ellis[2], Feng, Sha[2], T. Alp Ikizler[1,2], Adriana M Hung[1,2]
[1] Nashville VA (TVHS) TN, [2]Vanderbilt University Nashville, TN.

The degree of loss of lean body mass (sarcopenia) is associated with increased morbidity and mortality in chronic hemodialysis patients (CHD). Insulin resistance (IR) has been proposed to play a critical role in development of sarcopenia. The aim of this observational study was to evaluate the relationship between the degree of IR measured by hyperinsulinemic euglycemic clamp (HECG) and the change in plasma amino acid (AA) concentrations in response to the high-dose insulin administered during the clamp study (2 mU/kg/min). Twelve African-American CHD patients were studied up to 3 times each for a total of 29 HEGC studies. Plasma AA concentrations were collected continuously during the study and measured by high-performance liquid chromatography. In response to the high-dose insulin, all plasma individual AA concentrations declined significantly from baseline to the end of the clamp study (2 hours) ($p<0.001$). There was also a significant correlation between the percent change in Leucine concentration and the extent of IR measured by glucose disposal rate (GDR) ($p<0.008$). Similarly, mixed model analysis showed a significant association between the percent change in Leucine concentration and GDR ($p=0.025$). Other indirect IR indices (HOMA, HOMA corrected by adiponectin), did not show any significant association with AAs changes. Our results suggest that IR of carbohydrate metabolism is associated with a smaller decline in Leucine concentrations, suggesting a similar resistance to protein anabolism. This could represent a potential mechanism for sarcopenia in obese CHD patients. Insulin sensitizing therapies may represent an intriguing treatment strategy to decrease the loss of LBM observed in CHD patients with any degree of insulin resistance.

Correlations between decrease in AA concentration and GDR		
	r (spearman)	**P values**
Leucine	0.720	<0.008
Branched chain AAs	0.538	0.071
Total AAs	0.105	0.746

PATIENT CENTERED ADVANCE CARE PLANNING IN DIALYSIS: PHASE ONE

Shiloh D. Erdley, Ion D. Bucaloiu, Evan R. Norfolk, Martha Kitchen, Vonda Hetherington, Danville PA,

Due to the high mortality rates and significant symptom burden of dialysis patients, attention to advance care planning (ACP) has grown in the nephrology community. The optimal system for addressing ACP in dialysis units is not known. We report a quality initiative project utilizing a multidisciplinary ACP team, aiming to systematically and timely address ACP in the outpatient dialysis unit setting.

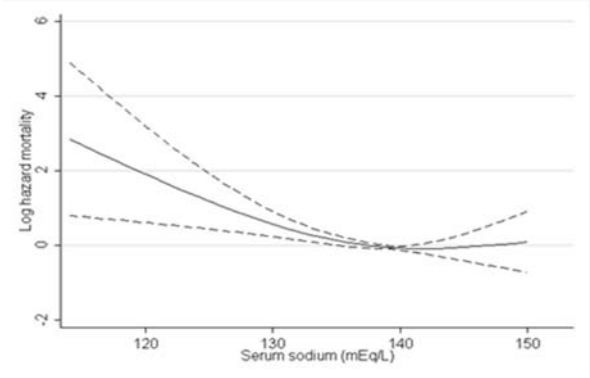
A team consisting of a nephrologist, renal social worker, unit registered nurse team leader and a renal dietitian, identified patients with advanced illness (defined as probability of survival at 18 months less than 80%) using an online prognostic calculator (http://touchcalc.com/calculators/sq). Patients were asked whether they had advanced directives (AD) and were provided with education regarding ACP. When AD was not available or not completed, patients were reminded to do so. During routine monthly interdisciplinary team meetings, members of the team reminded primary nephrologists to ask themselves whether they would be surprised if any of their patients would die in the next 6 months, and based on the answer, made recommendations regarding potential need for a referral to palliative medicine. AD completion, referrals to palliative medicine, number of hospitalizations prior to death, and referrals to hospice were noted.

AD completion rates in our unit increased from 21/67(31.3%) at baseline to 34/70 (48.5%) at 1 year. Of 67 prevalent patients 16 (23.8%) died during this time. 87.5% (14 of 16 deceased) were identified to have less than 80% predicted 18 months survival, a median (s.d.) of 97.5 (87.2) days prior to demise. In this group, AD completion increased from 5/14 (37.7%) to 11/14 (71.4%) at 1 year.

ASSOCIATION OF SERUM SODIUM LEVELS WITH MORTALITY IN NON-DIALYSIS DEPENDENT CHRONIC KIDNEY DISEASE

Vince Faridani[1,4], Jun L Lu[2], Kamyar Kalantar-Zadeh[3], Csaba P Kovesdy[1,4], [1]Virginia Tech Carilion School of Medicine, Roanoke, VA. [2]Salem Research Institute, Salem VA. [3]Harbor-UCLA, Torrance, CA. [4]Salem VA Medical Center, Salem VA.

The outcomes associated with hyponatremia in patients with non-dialysis dependent CKD (NDD-CKD) are unclear. We examined the association between serum sodium and all-cause mortality in 1,236 males (age 68 ± 11) with CKD stage 1-5 (eGFR 37 ± 17). Associations of time-varying outpatient serum sodium with mortality were examined in Cox models with adjustment for socio-demographics, comorbidities, labs and medication use. Nonlinear associations were explored by using cubic splines. Lower serum sodium was linearly associated with increased mortality (figure 1). A 10 mEq/L lower serum sodium was associated with a multivariable adjusted hazard ratio of all cause mortality (95% CI) of 1.60 (1.11-2.29), p=0.01. Hyponatremia is associated with increased mortality in patients with moderate and advanced NDD-CKD. Interventional trials are needed to determine if correction of hyponatremia can result in improved outcomes in this population.



ALIGNMENT OF DIALYSATE SODIUM TO SERUM SODIUM IN DIALYSIS PATIENTS WITH SERUM SODIUM <137 MMOL/L

Linda H Ficociello[1], Len Usvyat[2], Nancy Ginsberg[2], Sandi Moore[1], Lisa Pacelli[2], Patrice Taylor[2], Olga Sergeyeva[1], Terry Sullivan[2], Claudy Mullon[1], Jose Diaz-Buxo[1], Paul Balter[2], Peter Kotanko[2], Paul Zabetakis[2]. [1]Fresenius Medical Care NA, Waltham, MA. [2]Renal Research Institute, NY, NY.

In an effort to avoid sodium loading in hemodialysis (HD) patients (pts) with serum sodium (sNa) levels less than clinic-standard dialysate sodium (dNa) of 137 mmol/L, a sodium alignment protocol was initiated in 6 RRI clinics. To the best of our knowledge, this is the first report of a large-scale sodium alignment project. For pts with 4 months average sNa<dNa, the dNa was aligned to equal the 4 month mean sNa. Patient 4 month sNa means have been shown to best predict next sNa. 91 pts were aligned between 4/2010 and 8/2011. To assess the impact of alignment on change in clinical outcomes, we randomly matched aligned pts to 91 non-aligned pts based on month of alignment and sNa level. Changes in clinical characteristics were compared for 4 months before and after alignment by paired t-test. Aligned pts had no change in sNa (-0.1mmol/L, p=0.6), decrease in systolic (-3.0mmHg, p=0.005) and diastolic (-1.1mmHg, p=0.05) blood pressures (BP), decrease in pre-HD weight (-1.0kg, p=0.003), small decrease in inter-dialytic weight gain (IDWG) (-0.10 kg, p= 0.09) and a decrease in total saline volume given during HD (-20ml, p= 0.02). Non-aligned pts had increase in sNa (1.7mmol/L, p< 0.001), no change in systolic (-0.1 mmHg, p=0.96) and diastolic (0.3 mmHg, p= 0.69) BP, decrease in pre-HD weight (-1.0kg, p=0.003), no change in IDWG (-0.03kg, p=0.70) and a non-significant increase in total saline volume given during HD (17ml, p=0.62). Pre-HD weight decreased similarly in both groups. Non-alignment was associated with increases in sNa. Alignment of dNa to sNa was associated with stable sNa, improvement in BP, and less saline administration during HD.

REDUCTION OF BLOOD PRESSURE, POST-DIALYSIS WEIGHT, AND ESTIMATED DRY WEIGHT IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS DURING A BLOOD VOLUME MONITORING QUALITY IMPROVEMENT PROJECT.

Linda H Ficociello[1], Len A Usvyat[2], Michael Black[1], Patrice B Taylor[2], Heather J Ansede[2], Antoinette M Ordish[2], Paul Balter[2], Paul M. Zabetakis[2], Claudy Mullon[1] and Jose A. Diaz-Buxo[1]. [1]Fresenius Medical Care-NA, Waltham, MA, [2]Renal Research Institute (RRI), New York, NY.

As part of an on-going quality improvement project on fluid management, blood volume changes were monitored over 5 months using Crit-Line® Blood Volume Monitors (CLM) in 1 RRI clinic. Changes in systolic blood pressure pre dialysis (preSBP) and post (postSBP) dialysis, post dialysis weight (postWT) and estimated dry weight (EDW) were observed. For this analysis, we classified patients with average preSBP≥140mmHg in the month before initiation of the project as "Baseline Hypertensive" (BL-HYP) and patients with preSBP<140 as "Baseline Normotensive" (BL-NOR). Mean preSBP, postSBP, postWt, and EDW at baseline (BL) and month 5 are presented in Table 1.

	BL-HYP (n=29)		BL-NOR (n=14)	
	BL	Month 5	BL	Month 5
PreSBP	164.1 mmHg	153.2 mmHg**	126.4 mmHg	124.1 mmHg
PostSBP	151.7 mmHg	141.5 mmHg**	122.9 mmHg	116.9 mmHg
PostWt	79.6 kg	78.4 kg*	82.7 kg	83.1 kg
EDW	79.9 kg	78.2 kg*	82.7 kg	82.8 kg

** $p < 0.05$, ** $p < 0.05$ from paired t-test comparing BL and Month 5.*

Patients with baseline hypertension had a statistically significant drop in preSBP (-11mmHg) and postSBP (-10mmHg), postWt (-1.2kg), and EDW (-1.8kg). Patients who were normotensive showed a trend toward improvement in postSBP (-6mmHg). Patients with hypertension (67% of patients in this clinic) may benefit from blood volume monitoring initiatives to improve blood pressure and fluid management.

DISEASE MANAGEMENT PROGRAM REDUCES OVERALL MEDICAL COSTS IN END-STAGE RENAL DISEASE PATIENTS

Eric Franco[1]; Edward Jhu[2]; Jess Parks[1]; Allen R. Nissenson[1]; Stephen McMurray[1]
(1)DaVita Inc, Denver, CO, USA; (2) Milliman, Seattle, WA, USA

The CMS End Stage Renal Disease (ESRD) Demonstration Project (Demo) was a Medicare disease management pilot program designed to improve outcomes and lower costs among ESRD patients. Since the Demo was set up to pay for services similar to Medicare Fee-For-Service (FFS), DaVita VillageHealth's 2008-2010 Demo costs were compared to the Medicare 5% sample to evaluate the Demo's effectiveness.

The Medicare 5% sample is a longitudinal dataset representative of the Medicare FFS population. At the time of the analysis 2010 FFS data was not available. Therefore, 2010 Demo data was compared to 2009 FFS data with costs trended to 2010. In all years of the study, FFS costs were risk-adjusted to reflect the CMS-HCC risk profile of the Demo participants and the prevalence of members dually eligible for Medicaid. Costs were calculated based on allowable charges.

Overall, Demo medical costs per member per year (PMPY) were 5% lower than FFS in 2008, 10% lower in 2009 and an estimated 11% lower in 2010. Inpatient costs PMPY were lower than Medicare FFS (by 7% in 2008 and 18% in 2009). Demo participants achieved CMS Quality Incentive Program (QIP) targets, hitting 9 of 11 QIP targets in the 1st half of 2008 and hitting all 11 targets from the 2nd half of 2008 through the 2nd half of 2010.

Demo participants experienced lower overall costs compared to their FFS counterparts while meeting QIP targets. A significant portion of the savings can be attributed to fewer hospitalizations due to the Demo's focus on preventative care.

SIMPLIFIED QUESTIONNAIRE VERSUS SF-36 FORM FOR IMPROVING QUALITY OF LIFE (QOL) IN OCTOGENARIANS AND NONAGENARIANS ON HEMODIALYSIS.

Manish Gera, Kumar Gaurav, Raj Jeevan. Internal Medicine Nephrology Inc. Terre Haute, IN, USA.

The elderly constitute the fastest-growing segment of the ESRD population. The numbers of octogenarians and nonagenarians starting dialysis have more than doubled in the last decade, corresponding to an average annual increase in dialysis initiation of 9.8%. There is paucity of literature focusing exclusively on patients $\geq$ 80 years and on their symptoms. This may involve other systems like HEENT, musculo-skeletal or nervous system. Also, majority of these patients may find it hard to respond to extensive questionnaires like SF36 form. Delayed identification of involved organ systems due to relative non-communicability in this population limits timely referral affecting QOL

We did a cross sectional study to look at the factors affecting QOL in patients older than 80 years, in order to provide comprehensive care to this population. 200 patients from 3 outpatient dialysis units in were screened. Patients had to be on dialysis for at least 3 month. Patient with underlying dementia were excluded. Twenty-one patients (10%) met criteria. A simple questionnaire was devised to look at factors that could affect QOL. This included vision, dizziness, headache, gait, joint pain, back pain, appetite, breathing and tiredness. Patient's responses recorded. Relief of symptoms was integrated in care plan for optimal health care delivery.

1. We propose, a simplified questionnaire may be a better option to determine symptoms and identify organ systems affecting QOL in patients $\geq$ 80 years. **2.** Symptoms related to back pain; joint pain and gait predominated in affecting QOL rather than fluid related issues, contrary to general belief. **3.** Identification of symptoms leads to prompt referral and improves QOL **4.** Patients indicated that dialysis per se did not affect QOL in our study.

IMPROVING CHRONIC KIDNEY DISEASE CARE IN COMMUNITY HEALTH CENTERS: RESULTS OF A PILOT PROJECT

Karen Goldstein, Eileen Newman, Michael Briggs, Andrew Narva, National Kidney Disease Education Program, Bethesda, MD

Chronic kidney disease (CKD) is a serious and growing public health problem in the United States. The National Kidney Disease Education Program (NKDEP) focuses on addressing CKD in the primary care setting among populations at most risk. Since community health centers (CHCs) are a critical primary care setting for people at high risk for CKD, NKDEP initiated a pilot project to test effective strategies for improving CKD detection and care in those settings.

The project involved six centers in the Northeast that worked collaboratively with NKDEP to design, implement, and monitor performance improvements related to CKD. Participation involved monthly data reporting, monthly conference calls, and in-person meetings once or twice a year. Centers implemented a range of clinical interventions and collected data on 12 performance measures to assess progress in meeting four agreed-upon objectives.

Though implementation varied by center, common themes emerged. Key lessons learned related to data collection include: changing data systems for quality improvement initiatives presents time and resource challenges; data collection for the project required too many data points; and variation of sample sizes across centers and inaccurate data samples limited the ability to conduct quantitative analysis. Effective and sustainable interventions include: create CKD specific templates in electronic health record; develop algorithm for CKD labs and annual screening for diabetics; and conduct patient education using self-management strategies.

Clear recommendations emerged for health centers interested in integrating CKD into diabetes care. With data collection, health centers should decide on a limited number of simple data points, and use standing orders and lab integration. Since providing CKD education is new for many centers, equip staff with the knowledge and tools for implementation and engage allied health professionals. QI programs interested in working with health centers should identify centers with stable electronic data systems, experience with QI programs, and enough staff/time to dedicate to initial implementation.

EFFECT OF AGGRESIVELY DRIVEN INTRAVENOUS IRON THERAPY ON INFECTIOUS COMPLICATIONS IN END STAGE RENAL DISEASE PATIENTS ON MAINTENANCE HEMODIALYSIS.

Isha Gupta[1], Anip Bansal[1], Gagangeet Sandhu[1], Rushi Nayak[1], Shriharsha Kalahalli[1], Eduardo Zouain[1], Rohit Chitale[2], Ira Meisels[1], Germaine Chan[1]. 1 Department of Medicine, St. Luke's - Roosevelt Hospital Center, Columbia University College of Physicians & Surgeons, New York, NY, 2 Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

The objective of this study was to assess the long term impact of the modified anemia management protocol with higher cumulative use of iron on the incidence of clinically important infectious events in end stage renal disease (ESRD) patients on maintenance hemodialysis (HD) at our center. This was a retrospective study of patients on maintenance hemodialysis from a single, urban dialysis center. The medical charts of all the patients who had been on dialysis at any time between June 2009 and May 2011 were screened. Based on the results of the DRIVE and DRIVE-II studies, the iron protocol at our dialysis center was modified in June 2010 to aim for transferrin saturation (TSAT)>30% unless serum ferritin levels were >1200ng/ml. The following outcome variables were studied and compared-number of hospitalizations for infectious causes, number of culture positive bacteremias, number of pneumonias, number of soft tissue infections and number of osteomyelitises. The means of the study laboratory variables were compared using the paired t-test. All statistical tests were conducted at α=0.05 significance level. A total of 234 ESRD patients on HD patients were screened for study eligibility. A total of 140 patients (60%) met entry criteria. There was a statistically significant increase in the mean TSAT and mean serum ferritin with the new anemia management protocol with a significant decrease in the mean epoetin dose requirement. There was no statistically significant increase in the incidence of the studied infectious complications. In our cohort of ESRD patients on HD, the use of aggressive IV iron supplementation led to significant increase in the TSAT and serum ferritin but did not cause an increased incidence of clinically significant infectious events.

ASSOCIATION BETWEEN CYSTATIN C AND FRAILTY STATUS IN OLDER MEN

Allyson Hart[1], Misti Paudel[1], Brent Taylor[1], Areef Ishani[1], Eric Orwoll[2], Kristine Ensrud[1]. Minneapolis VAMC and University of MN[1], Minneapolis, MN; OHSU[2], Portland, OR.

Declining renal function and frailty are common with aging, but the association between these conditions is uncertain. To determine whether mild to moderate reductions in renal function are associated with greater frailty status in older men, we measured serum cystatin C (cys C) and creatinine (Cr) and ascertained frailty status in a random sample of 1602 community-dwelling men age ≥ 65 yrs participating in the MrOS study. Cys C, Cr, and Cr-based estimated GFR (eGFR) were expressed in quartiles. Frailty status (comprised of shrinking, weakness, exhaustion, slowness and low physical activity) was analyzed as an ordinal outcome of robust, intermediate stage, and frail based on the number of frailty components present (0, 1-2, or ≥ 3 respectively) using a multinomial logistic regression model to simultaneously evaluate the odds of being classified as intermediate vs. robust and frail vs. robust. Outcomes were adjusted for age, race, clinical site and BMI. The mean age of the cohort was 73.8 yrs; 8.4% were frail and 46.4% were intermediate stage. Higher cys C was associated with higher odds of being classified as intermediate or frail vs. robust:

Odds Ratio (95% Confidence Interval)

Cys C[a]	Intermed vs robust[b]	Frail vs. robust[b]
Quartile 1	1.0 (ref)	1.0 (ref)
Quartile 2	1.22 (0.91-1.65)	1.93 (0.96-3.87)
Quartile 3	1.10 (0.81-1.51)	1.47 (0.72-2.99)
Quartile 4	2.16 (1.54-3.04)	5.31 (2.72-10.38)

[a]Cutpoints 0.80, 0.90, and1.03 mg/L. [b]p-value for trend <0.001

In contrast, neither higher serum Cr (p trend > 0.76) nor lower Cr-based eGFR (p trend > 0.47) was associated with higher odds of frailty.

In conclusion, higher cys C was associated with increased odds of frailty status in this cohort of older men whereas Cr based measures were not. This difference may be due to lower specificity of Cr based measures compared to cys C in older adults with modest reductions in kidney function, or because cys C is associated with frailty by a mechanism that is unrelated to kidney function.

ADAPTING DBT FOR MEDICALLY NON-ADHERENT YOUTH WITH CHRONIC KIDNEY DISEASE

Becky Hashim, Erin Lauinger
Children's Hospital at Montefiore Medical Center, Bronx, NY.

Non-adherence is common in adolescents with CKD and is linked to high incidences of transplant graft rejection as well as other serious physical and psychological consequences. Non-adherence in adolescents with CKD at a pre-transplant stage has received limited study. The purpose of this pilot study was to adapt an innovative therapeutic approach to enhance adherence in pre-transplant adolescents with CKD 14-21 years of age who were placed on behavioral hold by their transplant team. A six-week individualized Dialectical Behavior Therapy (DBT) intervention targeted emotional avoidance, illness acceptance, and self management skills. Six adolescent patients participated in the treatment, all of which were listed as active post-treatment and presented with the following results:

Self-Report	Pre-Treatment	Post-Treatment	Percent Improvement
	Mean (s.d.)	Mean (s.d.)	
Quality of Life	114.8(14.3)	128.6(2.3)	12%
Depression	12.8(4.9)	1.6(1.1)	87.5%
Illness Acceptance	37.2(9.3)	45.3(10.0)	21.8%

Transplant Team Report	Pre-Treatment	Post-Treatment	Percent Improvement
	Mean(s.d.)	Mean(s.d.)	
Non-adherence	5.8(0.8)	2.4(0.9)	58.6%
Overall improvement		3(2)	

Note: non-adherence range from 1 (normal) to 7 (extremely non-adherent); health condition range from 1 (very much improved) to 7 (very much worse)

In conclusion, we believe that our approach is a promising one. It warrants replication and further investigation in order to evaluate its effectiveness for adolescents with CKD and other chronic health conditions.

EVALUATION OF A RENAL TEAM LEARNING MODULE ON WORKING WITH YOUNG ADULTS (YA) WITH CHRONIC KIDNEY FAILURE (CKF).

Julia Herzog[1], Erica Perry[1, 2], Hannah Cayton[2], Brett Plattner[2], Lisa Twining[3], Susan Rees[4] and Kai Zheng[2].
[1]NKFM, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI; [3]University of Toledo Medical Center, Toledo, OH; [4]Alliance for Paired Donation, Inc., Maumee, OH

In a recent Michigan multi-center study, it was shown that renal teams did not differentiate between their YA population and the rest of their older dialysis population. Given YA high rates of non-adherence, morbidity and mortality, several programs joined forces to equip renal teams to improve YA outcomes.

Pre- and post- surveys were developed to measure knowledge and confidence level of renal professionals in their work with this population to be administered via an educational power point presentation. The effectiveness of the teaching module, delivered to 70 renal staff, was evaluated at a state symposium in Michigan. The Michigan Department of Community Health IRB approved this initiative. Sixty-six participants completed the pre- and post-survey.

Knowledge increased post presentation, particularly regarding cognitive development in the YA. This teaching module positively influenced the confidence level regarding working with YA of several sub-groups. The decreased confidence of techs may reflect discomfort with the new information. These results indicate that there is a need for increased knowledge and confidence among renal professionals who work with YA with CKF. Future plans include presenting this module to a wider audience of renal staff. Seven attendees committed to offer this educational module as an in-service for their clinic personnel.

Attendees	N	Likert Scores	P Value	Confidence Δ in Working w/ YA
All	66	3.68 to 3.8	0.073	marginally significant
RN	26	3.65 to 3.88	<0.05	significant
RD	9	3.77 to 3.89	0.3	no change
SW	20	3.65 to 3.9	<0.05	significant
Tech	10	3.9 to 3.4	<0.05	Significant

OUTCOMES OF IMPLEMENTATION OF A FLUID MANAGEMENT PROGRAM IN 2 DIALYSIS CLINICS

Carolyn Hupp, R. Michael Culpepper, Div of Nephrology, University of South Alabama, Mobile, AL, USA

High rates of ultrafiltration (UF) at outpatient hemodialysis have been associated with increased cardiovascular and all cause mortality. Rates of 10-13 ml/Kg body wt/hr have been shown to be safe. Conversely, interdialytic wt gain of >3.5% ideal body wt (IDWG) appears detrimental to good patient outcomes.

We instituted a fluid management program in 2 dialysis units consisting of 1) prohibition of sodium profiling during treatment, 2.) maximum UF rate of 13 ml/Kg/hr on first dialysis of week and 10ml/Kg/hr for remaining treatment, 3) staff and patient education and feedback on limitation of salt intake and wt gains.

Percent IDWG was tracked for the 3 months prior to implementation (PRE), months 2-4 after (POST1), and months 8-10 after (POST2). Patients who failed to complete all 3 periods of observation were excluded. Patient characeristics at the 2 units (A & B) include

Unit A: Ave age 55 yr, 69% Male 16% Diabetic
Unit B: Ave age 50 yr, 52% Male 17% Diabetic

Outcome analysis was performed with SSP 2.75 software.

Unit	IDWG(%)	PRE	POST1	POST2
A	n=53	3.7+/-1.1	3.1+/-0.6 *	2.9+/-0.8*/#
B	n=65	3.3+/-1.0	2.8+/-0.8*	3.0+/-0.8#/+

*p<.002 vs PRE #p>.10 vs POST1 +p>.05 vs PRE

At Unit A 42% of pts had IDWG > 4% PRE and 9% at POST2

At Unit B 25% of pts had IDWG >4% PRE and 15% at POST2

With intense education of patients and staff, high IDWG can be reduced to fit a dialysis prescription of limited UF rates (Unit A). Even with more modest starting IDWG (Unit B), gains can be made but the educational effort needs to be ongoing with individual patient feedback to assure success.

HEALTH LITERACY AND MEDICATION RECONCILIATION IN VETERANS ON CHRONIC HEMODIALYSIS Divya Jain, Elisa Gordon, Subhash Popli, Brian Bartle, Michael Fischer, Hines VA Hospital, Chicago, IL, USA.

Adults with end-stage kidney disease (ESKD) generally require treatment with numerous prescribed medications for appropriate disease management. However, it is unknown if adults with ESKD requiring chronic hemodialysis (HD) can accurately recall the name and purpose of their medications. Further, little is known as to whether health literacy (HL) is related to medication reconciliation in ESKD.

We conducted a cross-sectional study involving semi-structured interviews with Veterans with ESKD requiring chronic HD at a VA outpatient dialysis unit in 2011. Participants were asked to recall the name and purpose of their medications, and medication reconciliation was obtained by comparing the recalled medications with those in the electronic health record (EHR), which was considered the gold standard. HL was assessed by the Short Form Test of Functional Health Literacy Assessment (S-TOFHLA), and inadequate HL was defined by a score < 54. Bivariate analyses were used to assess the association between medication reconciliation and HL.

Among a cohort of 17 HD patients, the median (interquartile range) number of prescribed medications (excluding PRNs and topicals) is 9 (8-11). Few patients (18%) could recall (even if inaccurately) the names of all their medications, 59% named at least one medication, and 23% could not name any of their medications. Patients correctly identified the purpose of most (71%) of the medications they recalled. The concordance of recalled medications with those found in the EHR was 37%. A fourth (24%) of all patients had inadequate HL. HL was significantly associated with medication reconciliation ($p=0.014$, $t=2.84$); concordance of recalled medications with those in the EHR was lower in patients with inadequate HL compared to those with adequate HL (12% vs. 45%).

These findings suggest that many adults with ESKD requiring chronic HD are unable to accurately recall prescribed medications, and low HL is associated with poor medication reconciliation.

PROBIOTICS FOR UREMIA: EXTENSIVE REVIEW OF THE LITERATURE.

Koyal Jain, Andre A. Kaplan.
University of Connecticut Health Care Center, Farmington, CT

Probiotics are live microorganisms which when administered in adequate amounts confer a health benefit to the host. Given the emerging data, we wanted to evaluate the benefits and safety of probiotics in chronic kidney disease (CKD) patients.

We performed an extensive pubmed search using keywords: “probiotics”, “urea”, ”uremia”, “CKD”, “kidney”, “prebiotics”, “chronic kidney disease” and “safety” revealing over 6000 articles. Though over 600 articles came up with word combinations, only relevant CKD articles were included in the review.

Dietary protein is broken down into amino acids and converted to ammonia (NH3) and urea by enterocytes. The NH3 exchanges with circulation such that the amount entering the lumen equals amount absorbed. The theory is that certain bacteria (probiotics) added to the intestinal flora could utilize the NH3 and urea. This would aid urea removal from blood. Animal studies on rats, post-nephrectomy mini-pigs, cats and dogs showed that these bacteria can enhance urea clearance through the gut. One such study conducted on 36, 5/6th nephrectomized rats and 6 non-nephrectomized control rats demonstrated a significant reduction in blood urea nitrogen (BUN) by 37% and creatinine by 40%. There has been only one randomized prospective study in 46 CKD III and IV patients over 4 countries (in 5 centers). Reduction in BUN levels in 29 patients (63%) and improvement of quality of life were statistically significant.
The absolute reduction in BUN varied from 6.4 (US) to 26.3 (Argentina) mg/dL. Creatinine change was not significant. Though case reports of bacteremia and endocarditis exist with probiotics containing lactobacillus, the incidence is less than 1 case/million people.

In conclusion, data regarding use of probiotics in CKD patients appear promising. These probiotics have been designated as “presumed safe” and do not require FDA approval. They are currently available without prescription. More data is needed regarding dosing, types of probiotics and overall benefit.

CHEST X-RAYS ARE NOT RELIABLE FOR DIAGNOSING PNEUMONIA IN HEMODIALYSIS PATIENTS

Eric Judd, Mustafa Ahmed, James Harms, Nina Terry, Sushilkumar Sonavane, Michael Allon
University of Alabama at Birmingham, Birmingham, AL, USA

Both pneumonia (PNA) and pulmonary edema occur commonly in hemodialysis patients. Chest x-rays (CXRs) are used routinely in clinical practice to assist with the differential diagnosis, but their reliability has not been evaluated in this patient population. This study assessed the reliability of the CXR in diagnosing PNA in hemodialysis patients.

We identified retrospectively 122 hemodialysis patients admitted with the diagnosis of PNA from the emergency department of a large university hospital during a one-year period. After excluding 54 patients (37 with missing dialysis records, 15 requiring continuous renal replacement therapy, and 2 without initial chest x-rays), the remaining 68 patients were analyzed. Two experienced radiologists who were blinded to the patients' clinical course and subsequent imaging studies independently interpreted the admission CXRs for the presence of PNA or pulmonary edema. Two internal medicine-trained physicians independently determined the presence of PNA and pulmonary edema after reviewing the entire hospitalization record. We assessed the level of agreement among the observers.

Table 1: Observer Agreement

	PNA	Pulmonary Edema
Radiologists	40/68 (58.8%)	38/68 (55.9%)
Clinicians	41/68 (60.3%)	52/68 (76.5%)
All Observers	12/68 (17.6%)	22/68 (32.2%)

In conclusion, there is substantial disagreement between experienced radiologists on the CXR diagnosis of PNA and pulmonary edema in hemodialysis patients, perhaps reflecting uncertainty about the etiology of the pulmonary infiltrate in this population. Clinicians more frequently agreed on the diagnosis of pulmonary edema than of PNA suggesting that PNA is more difficult to diagnosis clinically. The admission diagnosis of PNA in hemodialysis patients may frequently be incorrect.

SHOULD GRANDMA START DIALYSIS? HEMODIALYSIS OUTCOMES IN COMMUNITY DWELLING OLDER ADULTS

Atipon Kangwanpornsiri, Michelle Malabanan, Scott E. Liebman, Rebeca D. Monk. University of Rochester, Rochester, NY

Previous studies have demonstrated poor outcomes in elderly dialysis patients. The aim of this study was to assess survival and quality of life in predominantly community-dwelling elderly hemodialysis patients.

Methods: We performed a cross-sectional chart review involving 80 prevalent hemodialysis patients from two rural, hospital-owned dialysis units in Upstate New York. Patients were divided into two groups: Elderly (N= 30: aged > 80 years) and Younger (N = 50: aged < 70 years). Kidney Disease Quality of Life (KDQOL) scores and survival were compared using paired T-tests. Data on certain comorbidities, mortality, and residence (home vs. nursing home) were obtained. The study was approved by the hospital ethics review board.

Results: Elderly patients (Mean age 86.1 years) were noted to have a mean time on HD of 4.5 years compared to 3.9 years in the younger patients (Mean age 55.4 years). KDQOL scores were also statistically similar in both groups of patients.

Conclusion: Elderly and younger patients had similar survival and quality of life with surprising longevity in our elderly cohort. The majority of our older patients are functionally independent and living at home. Whether our results can be reproduced in other communities needs further investigation.

THE IMPACT OF CHRONIC KIDNEY DISEASE ON *CLOSTRIDIUM DIFFICILE* INFECTION-ASSOCIATED OUTCOMES

Mira Keddis, Sahil Khanna, Larry Baddour, Darrell Pardi, Qi Qian
Division of Nephrology, Gastroenterology and Infectious Diseases, Mayo Clinic, Rochester, Minnesota, USA

Clostridium difficile infection (CDI) causes significant morbidity and mortality in patients with chronic kidney disease (CKD). Whether patients with CKD are predisposed to worse CDI-associated outcomes as compared to patients without CKD has not been well defined. The objective of this study was to evaluate CDI-associated morbidity and mortality in a cohort of hospitalized patients with CDI with and without CKD using the National Hospital Discharge Survey (NHDS) database. Methods: We analyzed the NHDS database from 2005 to 2009 for primary diagnoses of CDI and CKD using ICD-9 diagnoses and procedure codes. Clinical variables for patients with CKD and CDI were abstracted and analyzed using SAS version 9.2 and JMP version 9.0.1. Results: 1,185,477 adult patients were hospitalized from 2005-2009, and 59,715 (5%) had a CKD diagnosis. CDI occurred in 8993 (0.8%) patients without CKD compared to 918 (1.5%) patients with a CKD diagnosis ($p<0.0001$). CDI patients with CKD were of similar age (median, 75 years for both $p=0.07$) as those without CKD, but were predominantly male (52% vs. 39%, $p<0.0001$). In univariate analysis, as compared to CDI patients without CKD, CDI patients with CKD had a similar length of stay (median 7 days) and similar in-hospital mortality (8.5% vs. 7.5%, OR 1.14 [95% CI 0.89, 1.46], $p=0.29$). However, after adjusting for age, peripheral vascular disease, congestive heart failure, diabetes mellitus, and hypertension, CKD was independently associated with increased CDI-associated mortality (OR 1.37 [95% 1.05, 1.76], $p=0.018$]. CDI patients with CKD were also more likely to be dismissed to a care facility as compared to CDI patients without CKD (50.6% vs. 45.2%, OR 1.24 [95% 1.07, 1.44, $p=0.006$). There was no statistical difference in the likelihood of requiring colectomy between the two groups. Conclusions: CDI is associated with increased in-hospital mortality and risk of dismissal to a care facility in CKD patients as compared to non-CKD patients after adjusting for common comorbid conditions.

GENETIC VARIAION IN *APOL1* GENE IS ASSOCIATED WITH CHRONIC KIDNEY DISEASE (CKD) IN NIGERIANS.

[1]Holly Kramer, [1]Bamidele O. Tayo, [2]Babatunde Salako, [3]Omri Gottesman, [2]Adesola Ogunniyi, [3]Erwin P. Bottinger, [1]Richard S. Cooper. [1]Loyola Medical Center, Maywood, IL; [2]University of Ibadan, Ibadan, Nigeria; [3]Mount Sinai School of Medicine, New York, NY.

APOL1 and *MYH9* genetic variants show very strong associations with non-diabetic kidney disease in African Americans. This study examined the association between variants in the *APOL1*/*MYH9* region and non-diabetic CKD phenotypes among Nigerians. Cases included individuals aged 16-70 years with non-diabetic CKD in absence of sickle cell disease, HIV, or hepatitis B. Cases were age matched with 79 healthy controls without CKD or hypertension who participated in the Genetics of Hypertension in Blacks Study. Genotyping of *APOL1* and *MYH9* single nucleotide polymorphisms (SNPs) was completed at Mount Sinai School of Medicine. Overall, 95 of the 98 cases had end-stage kidney disease. Table 1 shows the associations between *APOL1* and *MYH9* SNPs and non-diabetic CKD under a recessive model. No *MYH9* SNP showed a statistically significant association with CKD under recessive model. Conclusions, APOL1 SNPs are significantly associated with non-diabetic kidney disease among Nigerians.

SNP	Gene	MAF	Model	OR	P Value
rs73885319	*APOL1*	35.51	Recessive	3.882	0.0137
rs60910145	*APOL1*	40.86	Recessive	3.215	0.006
rs71785313	*APOL1*	11.58	Recessive	0.533	0.6663
rs11912763	*MYH9*	33.33	Recessive	1.627	0.369

CHANGE IN SF-36 SUMMARY SCORES & DIALYSIS SURVIVAL

Eduardo Lacson, Jr., Nien-Chen Li, Shu-Fang Lin, Sandie Guerra-Dean, Michael Lazarus, Raymond Hakim, Franklin Maddux.
Fresenius Medical Care, North America, Waltham, MA, USA.

We previously reported (CJASN, 2010) the association between SF-36 physical and mental summary scores (PCS & MCS) with mortality risk in 44,395 chronic dialysis patients. Since A ≥ 5-point change in PCS or MCS has been shown to be clinically meaningful, we investigated in a subset of 10,996 patients who had a second survey performed ~6 months later, whether a ≥ 5-point change in PCS or MCS will impact one year survival (from the date of 2nd survey) despite adjustment for the respective baseline score.

For PCS, 5,525 (50%) patients had no change (i.e. were within ± 5 from baseline) while 2,735 (25%) decreased and 2,736 (25%) increased their scores by ≥ 5 points. For MCS, 5,155 (47%) patients had no change, 2,858 (26%) decreased and 2,983 (27%) increased scores, respectively. Hazard ratios (HR) of death for PCS increase was 0.77 and for PCS decrease 1.42 (both $p<0.0001$) compared to no change (control), even after adjusting for baseline PCS. With further case mix adjustment for age, gender, race, diabetes, dialysis modality, and vintage, HR=0.82 ($p=0.002$) for PCS increase and HR=1.33 ($p<0.0001$) for PCS decrease, respectively. For MCS, HR=1.48 for a decrease in score, becoming HR=1.46 with additional case-mix adjustment (both $p<0.0001$). An increase in MCS trended towards improved survival but results were not statistically significant.

Results from this analysis indicate improved survival associated with a ≥ 5 point increase in PCS while there was increased relative risk of death associated with a ≥ 5 point decline in either PCS or MCS. Prospective cohort studies are needed to determine if these findings can be replicated.

CHRONIC PAIN MANAGEMENT PROGRAM IN A DIALYSIS UNIT – NEPHROLOGIST & PHARMACIST COLLABORATION

Emmelia Lau, Bharat Nathoo, Grace Leung, Henry Chen
York Central Hospital, Richmond Hill, Ontario, Canada

Chronic pain is common in dialysis patients. Management of pain can be challenging as these individuals take numerous medications. A structured pain management program was initiated in a 393 patient hemodialysis clinic to optimize pain relief, reduce interactions, side effects, and minimize abuse. This program and outcomes are described.

Upon referral from the physician, the pharmacist assesses pain based on a questionnaire with a numerical pain scale rating. An opioid agreement outlining conditions that must be adhered to is signed by the patient. At prescription renewals, follow-up pain assessments are performed, recommendations made, and followed-up with the community pharmacy. The WHO 3-step analgesic ladder is used as a guide for therapy. An electronic government prescription claims database is regularly screened for double-doctoring.

A total of 22 patients have been enrolled since program inception. There are 12 active and 10 inactive (died, hospitalized) patients. A pilot follow-up survey was conducted in 10 active patients, 2 years after program implementation. The average patient age was 66.8 years, 50% male, and 60% were diabetic. Oxycodone, hydromorphone and fentanyl were commonly used. Pain control improved in 20% of patients, 40% indicated no change and 40% stated worsening. QOL measures generally showed no change (45%), while 19% indicated improvement. No change in QOL is an achievement as patients' pain usually deteriorates over time. We suspect 7/22 patients have potentially abused or diverted opioids. In these cases, we have implemented strict tablet allowances and ceased prescribing in 3. Sixty percent of patients indicated they were satisfied to very satisfied with the pain management program. Overall, the dialysis unit has a greater understanding of patients' pain needs and pattern of opioid usage.

LONGITUDINAL EVALUATION OF PAIN MANAGEMENT IN HEMODIALYSIS PATIENTS

Marianna Leung, Beverly Jung, Fong Huynh, Tinnie Chung, Stan Marchuk, Mercedeh Kiaii, Clifford Chan Yan, Ronald Werb, Alexandra Romann, Monica Beaulieu
St. Paul's Hospital, Providence Health Care, Vancouver, BC, Canada

Pain is commonly experienced by patients with end stage renal disease but is often under-recognized and under-treated. Effective pain management improves patient's quality of life and is an integral component of patient care. To systematically address pain management, pain assessment tools and management algorithms based on the WHO analgesic ladder were developed and regular pain rounds were implemented at an urban tertiary care in-centre hemodialysis unit in May 2010. The purpose of this study is to compare the prevalence, severity and management of pain in hemodialysis patients at baseline and 1 year. Patients reporting pain were interviewed using Short-Form Brief Pain Inventory (SF-BPI) and Short Form McGill Pain Questionnaire (SF-MPQ). Patients' electronic healthcare records were reviewed.

At baseline and 1 year, 33.5% vs 38.9% of patients reported to having pain, respectively. On the SF-BPI, the mean average pain scores were 4.31 ± 2.54 vs 4.17 ± 2.38, respectively. At 1 year, fewer patients reported severe pain, 26% vs 19%, or not receiving any treatment, 29.6% vs 16.7%. More patients received analgesics at 1 year; 35.2% vs 44% received opioids while 55.6% vs 85% received acetaminophen. On the SF-MPQ, the most common descriptor used by the patients was tiring-aching in both cohorts.

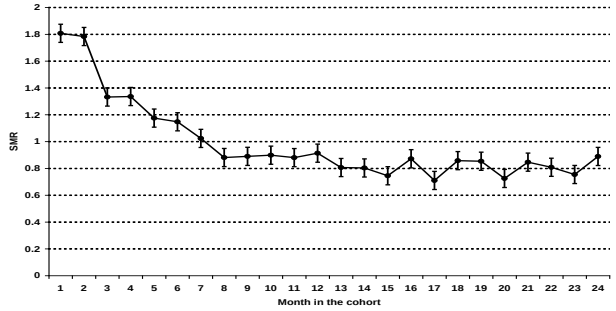
The prevalence and severity of pain were similar 1 year later although fewer patients reported severe pain. A significant proportion of patients continued to report pain despite increased use of analgesics. Practitioners caring for hemodialysis patients should continue to strive to optimize pain management and improve patient's quality of life.

PATTERNS AND PREDICTORS OF MORTALITY IN THE MONTHS AFTER INITIATION OF DIALYSIS IN INCIDENT HEMODIALYSIS PATIENTS

Lilia R Lukowsky, Leeka Kheifets, Onyebuchi A Arah, Allen R Nissenson, Kamyar Kalantar-Zadeh

Harold Simmons Center, Harbor-UCLA, Torrance, CA, Dept Epidemiology, UCLA, DaVita, CA; Salem VA MC, Salem, VA

Mortality among patients is much higher during few months. We examined mortality pattern during the first 24-months in a cohort of 18,707 incident MHD patients, who had started the first week of MHD in a DaVita clinic between 7/1/2001 and 6/30/2006, and calculated the standardized mortality ratio (SMR) using as the reference group another 57,456 incident MHD patients who enrolled in DaVita clinic over the same period within <3 month of dialysis start. The 18,707 incident MHD patients had a mean age of 63±15 years and included 45% women, 24% African Americans and 14% Hispanics. The SMR were the highest during the first several months, but decreased after 6 to 8 months and remained relatively stable during Year 2. The highest SMR was in the first month [1.87 (1.81 -1.94)], followed by Months 2, 3 and 4 with SMRs of 1.85 (1.78 -1.91), 1.40 (1.33-1.47), and 1.40 (1.33-1.47) respectively. The SMRs for months 12 and 24 were similar: 0.98 (0.9-1.05) and 0.96 (0.89-1.03), respectively.



Among incident MHD patients, mortality is up to 80% higher in the first few months, but it declines over the subsequent 6 to 8 months to reach a relatively steady state by the end of the first year. Interventions (such as RightStart and IMPACT) can improve survival during the first several months of dialysis therapy.

TRANSLATION AND CULTURAL ADAPTATION OF THE SCREENING FOR OCCULT RENAL DISEASE (SCORED) QUESTIONNAIRE TO BRAZILIAN PORTUGUESE.

Edson Magacho, Elaine Paula, Shalliny Silveira, Shirlei Araújo, Tassia Costa, Márcio Pinto, Natália Fernandes, Luiz Carlos Ferreira Andrade, Marcus Gomes Bastos. Universidade Federal de Juiz de Fora, Juiz de Fora, Minas Gerais, Brazil.

Screening Chronic Kidney Disease (CKD) allows early interventions which may alter the natural course of the disease, including cardiovascular morbidity and mortality. Screening for Occult Renal Disease (SCORED) is questionnaire with nine questions with different weights, and predicts a 20% chance for CKD if a individual score $\geq$4 points. The aim of this study was to translate into and adapt the questionnaire SCORED to Brazilian Portuguese. It was a cross-sectional study with 187 participants. The validation of the questionnaire consisted of 4 phases: Translation from English into Brazilian Portuguese, back-translation into English, application to a population sample and proof-reading and completion. The translations and review were made by professional experts in Portuguese and English. Except for demographics, laboratory (blood and urine) and clinical data were done at the baseline and at least 3 months later in all participants. CKD was defines and staged as proposed by the National Kidney Foundation. Glomerular filtration rate (GFR) was estimated by the equation Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI). The mean age of the participants was 49 ± 12.4 years, 57% were women, 71.5% were white, 61% had education above high school, and 62,6% had income up to three minimum wages. Arterial hypertension and diabetes were diagnosed in 38.5% and 12.3%, respectively. The participants mostly presented overweight (body mass index= 27.4±5.7) and ankle brachial index >0.9 (80.2%). The diagnosis of CKD was confirmed by glomerular hematuria in 37%, GFR <60 mL/min/1.73 m^2 in 9.1% and albuminuria in 6.4%. The SCORED questionnaire showed a sensitivity of 43%, a specificity of 67%, a positive predictive value of 53%, and negative predictive value of 58% for detecting CKD. In conclusion, the SCORED questionnaire is a simple and useful tool that has a good performance in identifying Brazilian individuals with CKD.

THE EFFECTS OF PROBIOTICS AND DOSE ESCALATION IN PATIENTS WITH ESRD

Varun Malhotra, Bonita Falkner, Stephanie Deloach
Thomas Jefferson University, Philadelphia, PA, USA

Probiotics are defined as "live microorganisms which when administered in adequate amounts confer a health benefit on the host." Recent studies suggest benefit in uremic and renal disease patients, with oral administration of a probiotic formulation comprised of selected microbial strains via intraintestinal extraction of toxic solutes. Our study aims to explore the tolerability of probiotics in ESRD patients, its effects on renal parameters and quality of life over time.

A 6-month prospective dose escalation study was conducted in ESRD patients seen in the outpatient setting. Patients were given Kibow probiotics (Kibow Biotech, Newtown Square, PA, USA) enteric-coated gel capsule containing a mix of *L. acidophilus* KB27, *B. longum* KB31, and *S. thermophilus* KB19, for a total of 30 billion CFU, in escalating doses for 4 months. Monthly blood tests for serum chemistries and patient responses on questionnaires assessing their quality of life (QOL) using the Medical Outcomes Study Short Form 36 General Health Survey (SF-36) were recorded. Primary outcomes of this study included QOL score changes and changes in renal function parameters (blood urea nitrogen (BUN), Creatinine). Changes in study measurements are reported as mean +/_ standard deviation (SD).

The average QOL score at baseline was 66.4 (SD 19.4), the average increase in scores for the study subjects being 13.7 at the end of the 4th month from baseline. Changes in renal function parameters were seen as well. The average BUN at baseline was 45.2 mg/dL (SD 15.7 mg/dl) and the average change in BUN at 4 months was -6.75 mg/dL. The average serum creatinine at baseline was 10 mg/dL (SD 2.5 mg/dl), and did not have a clinically significant change by the end of the 4th month. Two out of the 7 patients discontinued the drug due to diarrhea.

The use of probiotics in ESRD patients has shown improvement in the QOL scores and in renal parameters in terms of BUN clearance. The only side effect observed is diarrhea. Most subjects were able to tolerate a dose of 90 billion CFU three times daily. Further analysis among larger samples and longer follow up is recommended to determine benefits of probiotic therapy in ESRD patients.

FRAILTY IN CHRONIC KIDNEY DISEASE: PREVALENCE AND ASSOCIATED RISK FACTORS

Henrique Novais Mansur, Marcus Gomes Bastos. Federal University of Juiz de Fora, MG, Brazil

Frailty is a state of high vulnerability and adverse health outcomes in the elderly. In chronic kidney disease (CKD), frailty is also predictive of poor outcomes, but, interestingly, it is not exclusive of aged patients. In this study we assessed the prevalence of frailty and its associated risk factors in patients with CKD not yet on dialysis. Sixty one patients with CKD stages 3 to 5 were assessed for frailty defined by the presence of ≥3 of the following abnormalities: muscle weakness by physical domain and weakness by the vital domain of the SF-36 assessment the Quality of Life; exhaustion; physical inactivity, if the patient answered "never" or "almost never" when asked about physical activity; and unintentional weight loss more than 4.5 kg in the last year. The patients were categorized as not frail, pre-frail and frail. Besides the clinical and laboratory data, the following variables were assessed: Flow mediated vasodilatation (as a marker of endothelial dysfunction), bone densitometry, 6 minutes walking test, and grip strength (hand grip). Frailty was diagnosed in 36.1% of the patients, and pre-frailty in 44.3%. Among the patients with CKD and frailty, 50% were not elderly. Exhaustion and physical inactivity were more frequent among the frail patients compared to the pre-frail ones. The following variables were significantly associated with frailty in CKD patients: Exhaustion (r= 0.53; p= 0.000); Weakness (r= 0.77; p= 0,000); Physical inactivity (r= -0.60; p= 0,000); Parathyroid hormone (r= 0.25; p= 0,04); Intravenous iron administration (r= -0.26; p= 0,04); and Flow mediated vasodilation (r= -0.33; p= 0,009). In conclusion, frailty was diagnosed in 36% of our patients, half of whom were not elderly. The high prevalence and early occurrence of frailty in CKD might be due to shared mechanisms to both syndromes.

LACK OF KNOWLEDGE REGARDING WOMEN'S HEALTH ISSUES IN KIDNEY PATIENTS – RESULTS OF A NATIONAL SURVEY OF KIDNEY DISEASE PROFESSIONALS. Mitton E[1], Yoshiuchi E[2], Markell MS[1]; SUNY Downstate Medical Center[1], Brooklyn, NY and NKF Serving Greater NY[2]. Women's Health (WH) is an issue that has not been extensively addressed in the patient with chronic kidney disease (CKD). A survey document was sent to approximately 6500 NKF professional members, non-members & key opinion leaders in the NKF database via email that addressed confidence in knowledge regarding WH topics. 238 people responded (4%): 196 (85.2%) were women; 14% were MD's, 99% nephrologists; 59% held a social work degree; 24% were RNs or NPs; 164 (69%) worked in a dialysis unit, 74 (31%) worked in Academic or Hospital setting. The majority of respondents reported over 50% of their patients were women (60.5%) and felt that WH issues were important (120, 52%) or very important (48, 20.6%). The majority (70%) felt confident or somewhat confident in their knowledge about issues relating to cardiovascular disease, cancer screening, psychiatric and psychosocial issues. The majority (60-78%) felt somewhat or not at all confident regarding gynecologic issues including reproduction, sexuality, hormone replacement therapy, contraception, ovarian failure, and gender disparities. Barriers to addressing WH issues included lack of time, lack of privacy, lack of scientific evidence and lack of education on the part of both physicians and patients. We conclude, in this self-selected population there is a perceived lack of knowledge regarding unique women's health issues, barriers preventing adequate WH counseling and substantial interest in learning about these topics. We recommend that a national educational program regarding women's health and kidney disease be created, and that funding for research in these areas be increased.

ASSOCIATIONS BETWEEN ACCESS TO CARE AND AWARENESS OF CHRONIC KIDNEY DISEASE

A Shah,[1] LF Fried,[2] S Chen,[3] Y Qiu,[3] S Li,[3] KL Cavanaugh,[4] KC Norris,[5] AT Whaley-Connell,[6] PA McCullough,[7] and R Mehrotra.[1]
[1]Los Angeles Biomedical Rsrch Instit at Harbor-UCLA, Torrance, CA; [2] VA Pittsburgh Healthcare System, Pittsburgh, PA, [3]Chronic Disease Rsrch Grp, Minneapolis Medical Rsrch Fdtn, Minneapolis, MN, [4] Dept of Med, Vanderbilt U, Nashville, TN; [5] CR Drew U of Med and Science, Los Angeles, CA;[6] U of MO-Columbia Sch of Med and Harry S. Truman VA Hospital, Columbia, MO; and [7]St. John Providence Health System, Providence Park Heart Instit, Novi, MI. **Background:** Most individuals with CKD in the United States are unaware of their condition, creating challenges in implementing early interventions to delay disease progression. Whether characteristics expected to enhance health care access are associated with increased CKD awareness has not been studied adequately. **Method:** Data from patients in the National Kidney Foundation's Kidney Early Evaluation Program (KEEP), 2000-2010, with presumed CKD (eGFR<60 mL/min/1.73 m^2 or albumin-creatinine ratio >30 mg/g) were analyzed. Associations of CKD awareness with measures of access to care (health insurance coverage, type of health insurance, prescription drug coverage, and self-reported level of difficulty obtaining care) were examined using logistic regression. **Results:** Of 29,144 patients with CKD, 6,751 (23%) reported CKD awareness. No significant association was found between availability of health insurance or prescription drug coverage and CKD awareness; results did not vary by diabetic status or in analyses restricted to patients with eGFR <60 mL/min/1.73 m^2. Patients reporting extreme or some difficulty obtaining medical care were more likely than those reporting no difficulty to be aware of CKD (adjusted OR, 1.25; 95% CI, 1.05-1.50). **Conclusions:** Most KEEP patients with CKD are unaware of the condition, results that are not modified by the availability of health insurance or prescription drug coverage. The mechanisms underlying the association of perceived difficulty in access to care with greater CKD awareness require further study.

SERUM ALKALINE PHOSPHATASE (ALKP) PREDICTS LONG-TERM SURVIVAL IN HEMODIALYSIS (HD) PATIENTS (PTS)

Neal Mittman, Brinda Desiraju, Oluwatoyin Akinrinade, Jyotiprakas Chattopadhyay, Morrell M. Avram. Avram Division of Nephrology, S.U.N.Y. Downstate Medical Center UHB at Long Island College Hospital, Brooklyn, New York

Serum levels reflecting mineral and bone metabolism, including calcium, phosphorus, parathyroid hormone, and AlkP (as a categorical variable) have been associated with cardiovascular outcomes in dialysis pts, possibly related to vascular calcification. We investigated the clinical correlates of AlkP in 64 HD pts followed up to more than seven years. Demographic, clinical and biochemical data were collected on enrollment. Mean and median AlkP were 122±123U/L (SD) and 88.5, respectively. Thirty-nine percent of the pts had elevated levels (greater than 104 U/L). AlkP was directly correlated with corrected calcium ($r=0.31$, $p=0.018$), parathyroid hormone ($r=0.60$, $p=0.003$), and months on dialysis at enrollment ($r=0.25$, $p=0.05$). Results of Cox's multivariate regression analysis for mortality risk are shown below:

Variable	Relative Risk	P-value
Age (years)	1.056	0.15
Gender (male vs. female)	0.38	0.43
Race (others vs. AA)	1.34	0.76
Diabetes (yes vs. no)	1.66	0.64
Months on dialysis at enrollment	0.993	0.35
Albumin (g/dL)	0.038	0.032
Creatinine (mg/dL)	1.294	0.26
Corrected calcium (mg/dL)	0.78	0.72
Phosphorus (mg/dL)	0.59	0.22
Urea reduction ratio (URR) (%)	0.92	0.33
Alkaline phosphatase (U/L)	1.005	0.043

After multivariable adjustment including calcium and phosphorus, only AlkP, as a continuous variable, and serum albumin remained independent predictors of mortality risk (RR: 1.005, $p=0.002$). Therefore, per unit increase in AlkP, there was a 0.5% increased risk of mortality. In conclusion, serum AlkP was independently associated with long-term mortality in our HD pts, and may be a useful therapeutic target in clinical practice.

Effect of Biosynthetic Dialyzer Membrane on Platelet Count

Rabih Nasr, Chadi Saifan, Suzanne El-Sayegh. Nephrology Division, Staten Island University Hospital, Staten Island, NY

Background: To date there has been no studies that addressed the biocompatibility and the preference of one membrane over another. One factor associated with the poor outcomes with HD patients is the exposure to a foreign membrane. Older membranes were very bioincompatible and increased complement activation, caused leukocytosis by activating circulating factors which caused sequestration of leukocytes (WBC) in the lungs, and activated platelets. Recently, newer membranes have been developed which were designed to be more biocompatible. We investigated what effect these membranes had on platelet levels.

Methods**:** 99 maintenance hemodialysis patients with no known systemic or hematologic diseases affecting their platelets had blood drawn immediately prior to, ninety minutes into, and immediately following their first hemodialysis session of the week. All patients were dialyzed using a Fresenius Medical Care Optiflux polysulfone membrane F160, F180 or F200 (polysulfone synthetic dialyzer membranes, 1.6 m2, 1.8 m2, and 2.0 m2 surface area respectively, electron beam sterilized). Platelet counts were measured from each sample by analysis on a CBC analyzer (Sysmex XT-4000i)

Results**:** The average age of the patients was 62.7 years; 36 were females and 63 were males. The mean platelet count pre, mid and post dialysis was 193 (SD 74.86), 191 (SD 74.67), and 197 (SD 79.34) TH/mm3, showing no statistical difference.

Conclusions: Newer membranes have no significant effect on platelet count. This suggests that they are, in fact, more biocompatible than their predecessors and may explain their association with increased survival.

THE EFFECTS OF A SKILLED PHYSICAL THERAPY (PT) INTERVENTION ON FUNCTIONAL OUTCOME MEASURES IN PATIENTS WITH ESRD ON HEMODIALYSIS: RESULTS OF THE PROHEALTH & FITNESS RENAL REHABILITATION PROGRAM

james nussbaum, ralph garcia – prohealth & fitness pt ot ny, ny u.s.

Patients with ESRD often present with many physical, physiological, and psychological limitations, in addition to the cardiac, fluid dynamic, and biochemical challenges, which can all have a negative impact on independent function and overall quality of life (QOL). The literature has overwhelmingly demonstrated a multitude of positive effects of exercise-based interventions in patients with ESRD. The NKF's KDOQI Clinical Practice Guidelines for Cardiovascular Disease in Dialysis Patients states in Guideline 14, "…nephrologists and dialysis staff should evaluate and re-evaluate patients' physical function and physical activity programs every 6 months." KDOQI also recommends referring patients to PT or cardiac rehabilitation for prevalent musculoskeletal, cardiovascular, and motivational challenges that limit patients' ability to follow activity guidelines independently. Despite the needs of this patient population, the documented program efficacy, and clear national guidelines, referral to skilled PT is not common. The purpose of this study was to examine the effects of a skilled renal rehabilitation program (RRP) provided by PTs on functional outcome measures in patients with ESRD on HD. 106 subjects participated in this non randomized quasi-experimental study. The experimental group (n=52) participated in the RRP 2-3x/week for 12 weeks which included therapeutic exercise and activities, neuromuscular re-education, and manual techniques. The control group (n=54) received standard HD care. The Mann-Whitney U Test was used to determine initial group equivalence (pretest) and differences between groups (posttest). Level of significance was set at .05. Although patients were not randomized, pretest scores between groups ranged from p=.163-.870. Significant differences between groups were found for the 6 Minute Walk Test (p=.000), Grip Strength (p=.001), Normal Gait Speed (p=.03) and Fast Gait Speed (p=.002). The results of this study demonstrate the potential for significant improvement in functional outcomes after a skilled RRP provided by PTs. Future studies should focus on multi-center participation, utilizing larger, randomly assigned groups.

COORDINATED INTERDISCIPLINARY PATIENT EDUCATION CALENDAR

Nanette Francis and Jessica Phipps, Fresenius Medical Care, So. Plainfield, NJ, US

Patient education is an ongoing and integral part of the dialysis professionals' role in helping patients towards optimal outcomes through adherence to their treatment regime. This model demonstrates an educational plan used by Nursing, Dietary and Social Work where there is one monthly topic with focused contributions from each discipline. Uniquely the social work contribution is presented from a biopsychosocial model to successfully move the patient from knowing to doing. We focus on variables that influence engagement in healthy behaviors and adherence to medical regimens. Below is the 2012 calendar.

Jan	Coping with Dialysis	July	Access and Quality of Life
Feb	Treatment Options and Adherence	Aug	Exercise
Mar	Knowing your Healthcare Team Self Advocacy	Sept	Health Management at Home and Care Giver Support
April	Medical Complications Associated with Kidney Disease	Oct	Winter Preparation
May	Travel	Nov	Holiday Preparation
June	Fluid Management	Dec	Setting and Maintaining Your Goals

The development of a cross discipline plan allows the team to approach education utilizing multi-media including interactive lobby demonstrations, audio and visual media, hand-outs and bulletin board posting,. These tools and team approach serves to increase participation and decrease communication barriers for pts with different learning needs.

CKD AMONG PATIENTS ENROLLED IN THE HOUSTON WEST NILE VIRUS COHORT

Amber Podoll, Melissa Nolan, Anne Hause, Katherine McCrary, Kevin Finkel, Kristy Murray
University of Texas Health Science Center, Houston, TX USA

West Nile Virus (WNV) infection first appeared in the US during an outbreak in New York City in 1999 and has since become endemic. Long- term effects of acute infection are largely unknown. Animals infected with WNV develop chronic infection with histopathological changes in the kidney up to 8-months post-infection. We have followed a cohort of patients with a history of WNV infection since 2002. In this cohort, 8% of patients had a history of CKD prior to their acute infection, and 9% of patients developed acute renal failure during the acute phase of infection. The purpose of this study was to assess the long-term effects of WNV infection including the development of CKD among patients over time.

In this cohort of 147 patients we investigated the prevalence of CKD using the MDRD formula and assessed various risk factors and biomarkers, including NGAL and MCP-1. Based on the MDRD formula, 20% of patients had CKD. By urinary dipstick, 26% of patients had proteinuria and 23% had hematuria. Using univariate analysis, significant risk factors for CKD were: 1. History of WNV Neuroinvasive disease (meningitis and/or encephalitis); 2. Age > 65; 3. Diabetes; and 4. Hypertension. However, multivariate analysis showed that only age and presence of diabetes were associated with CKD. Chi-Square analysis showed that anemia, azotemia, hyperkalemia, and elevated plasma NGAL levels were also significantly associated with the presence of CKD.

We show that CKD and urinary abnormalities are common among patients in the Houston WNV Cohort. Physicians should monitor renal function in their patients who have a history of WNV infection.

INCORPORATING SUPPORTIVE CARE WITHIN CHRONIC DISEASE MANAGEMENT: THE RENAL END-OF-LIFE INITIATIVE AT PROVIDENCE HEALTH CARE

Wallace Robinson, Marianna Leung. St. Paul's Hospital, Providence Healthcare, Vancouver, BC, Canada.

The majority of Canadians will die from complications associated with a chronic illness such as kidney, heart or lung disease. Prognosis in these diseases is difficult to predict and is most usually characterized by a gradual progressive deterioration interrupted by acute episodes. The uncertain timing of a certain death results in unrealistic expectations for patients and families, an avoidance of advance care planning and the delayed or overlooked provision of supportive care within the continuum of chronic disease management.

The purpose of the Renal End-Of-Life (REOL) initiative is to address this challenge by developing a coordinated approach to end of life care for our renal dialysis patients who face a 20-25% annual mortality rate. When the REOL initiative began formal implementation in September 2010, it was and still is to our knowledge the only renal unit in Canada to address this gap through such a comprehensive approach.

Implementation of the REOL initiative has been articulated as the first priority in the program's strategic plan, indicating the combined commitment of administrative/physician leadership and front line staff, and consists of 4 foci: improved pain/symptom management, advance care planning, bereavement support and palliative care nursing training for the inpatient renal nursing team.

The REOL presentation/storyboard will describe the process of developing and embedding procedures and the journey to success: a downward trend at one year in pain/symptom measurement as indicated by the routine use of the Edmonton Symptom Assessment System questionnaire followed by the proactive management of patients with high symptom burden; a more than 40% increase in documented advance care planning; a standardized approach to bereavement follow-up; and an increase in knowledge of and comfort with palliative principles in renal nursing. The outcomes collaboratively describe that a shift in the culture of end of life care within chronic disease management is possible.

CHARACTERISTICS OF PATIENTS MOST LIKELY TO HAVE A MISSED DIALYSIS SESSION

Jaime Rubin[1], T. Christopher Bond[1], Steven Wang[1], Alex Yang[2]
[1]DaVita Clinical Research, Minneapolis, MN, USA;[2]Affymax, Palo Alto, CA, USA

Missing dialysis sessions can have a detrimental effect on clinical outcomes (Anderson et al 2009; Kobrin et al 1991). We sought to identify patients who frequently and systematically missed dialysis sessions, and an analysis to determine predictive characteristics of these patients was conducted.

We conducted a retrospective analysis of missed session data between 1/1/2010 and 12/31/2010 from adult ($\geq$ 18 yrs old) hemodialysis patients at a large dialysis organization who had 6 months or more of data. A frequent misser was defined as a patient who missed $\geq$ 2 sessions per month in at least 1/3 of the months. Stepwise logistic regression was employed to determine variables predictive of frequent missers and included demographics, ESRD-related data, comorbidities, lab values, and mean hospitalized days, as well as relevant interactions between these variables. Frequent missers were compared to non-frequent missers to assess the predictability of the final logistic model.

An analysis of the frequent missers (n=8,421) compared to non-frequent missers (n=64,712) showed that patients had a greater predicted probability of being a frequent misser if they were younger (mean age 56.4 yrs) and incident or with a lower overall vintage. The predicted probability also increased significantly for those dialyzing with a central venous catheter. Black patients were more likely to be frequent missers and Hispanics were less likely to be frequent missers. The percentage of Whites and others remained fairly stable over the range of probabilities.

We have identified characteristics of patients likely to miss dialysis sessions, and this may enable the development of focused interventions to improve attendance and, therefore, patient outcomes.

QUADRICEPS AND PATELLAR TENDON RUPTURE IN ESRD PATIENTS WITH SEVERE HYPERPARATHYROIDISM

Peter Bryan Schrier, Prasanth Krish, Hitesh H. Shah. Division of Kidney Diseases and Hypertension, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, USA

Spontaneous rupture of the knee extensor tendons has been rarely reported in patients with end-stage renal disease (ESRD). We report a series of five patients with ESRD on hemodialysis with severe hyperparathyroidism who developed quadriceps and/or patellar tendon rupture after minor trauma. Four of the five patients had bilateral knee tendon ruptures. Below are the lab data obtained just before the tendon ruptures. (For tendon rupture site: Q=quadriceps, P=Patellar, *=intact)

Patient #	1	2	3	4	5
Age at rupture / Gender	39 M	24 F	59 M	27 M	64 M
Age of onset of CKD	11	13	53	5	17
Years on Dialysis	4	4.5	5	2	2.5
Intact PTH (pg/ml)	2865	2963	1751	1572	1018
Calcium (mg/dl)	9.9	9.2	9.3	9.6	10.4
Phosphorus (mg/dl)	8.6	7.8	6.4	6.9	5.5
Calcium X Phosphorus	85	72	60	66	57.2
Rupture site: right/left	Q/Q	*/Q	P/Q	P/P	P/Q

The patients were relatively young with a mean age of 43 years. The mean intact parathyroid hormone level was 2034 pg/ml. The mean serum phosphorus was 7mg/dl and the mean calcium-phosphorus product was 68. All of the patients were nonadherent to both phosphate binders and cinacalcet. None of the patients were on steroids, fluoroquinolones, or growth hormone at the time of the rupture. The mean number of years on dialysis was 3.6 and mean duration of kidney disease at the time of rupture was 21 years. Four of the five patients developed chronic kidney disease (CKD) before the age of 18.

In conclusion, we present a series of five cases of knee extensor tendon rupture in young patients with ESRD on hemodialysis. We believe that severe hyperparathyroidism, hyperphosphatemia, high calcium-phosphorus product and long duration of CKD contributed to the tendon ruptures in our patients.

BASELINE CHARACTERISTICS OF PATIENTS ENROLLED IN THE PHASE III EPPIC (EVALUATING PREVENTION OF PROGRESSION IN CHRONIC KIDNEY DISEASE) STUDIES

Gerald Schulman[1], Guiseppe Remuzzi[2], Tomas Berl[3], Gerald Beck[4], Eberhard Ritz[5]

[1]Vanderbilt Univ School of Medicine, Nashville, TN, US; [2]Mario Negri Institute for Pharmacological Research, Bergamo, Italy; [3]Univ of Colorado Health Sciences Center, Denver, CO, US; [4]Cleveland Clinic, Cleveland, OH, US; [5]Univ of Heidelberg, Heidelberg, Germany

AST-120 (spherical carbon adsorbent) is an orally administered adsorbent approved in Japan to prolong time to initiation of dialysis and improve uremic symptoms. The EPPIC studies evaluated the efficacy of AST-120 vs placebo when added to standard therapy in patients (pts) with chronic kidney disease (CKD). The primary endpoint was time to first occurrence of initiation of dialysis, kidney transplant, or doubling of serum creatinine (sCr). Baseline characteristics of pts enrolled in the 2 randomized, placebo-controlled studies are presented here. In total, 2036 pts with diabetic or non-diabetic nephropathy were enrolled. Across both studies, ~40% of pts had diabetic nephropathy and ~66% were classified with stage 4 CKD. Overall, pts enrolled in EPPIC-1 and -2 demonstrated baseline characteristics consistent with moderate to severe CKD.

	EPPIC-1 (N=1021)	**EPPIC-2 (N=1015)**
Diabetic nephropathy, n (%)	430 (42.1)	393 (38.7)
Type I diabetes	81 (7.9)	60 (5.9)
Type II diabetes	349 (34.2)	333 (32.8)
Non-diabetic nephropathy, n (%)	591 (57.9)	622 (61.3)
Glomerulonephritis	272 (26.6)	273 (26.9)
Nephrosclerosis	154 (15.1)	191 (18.8)
CKD stage 3a, n (%)	7 (0.7)	8 (0.8)
CKD stage 3b, n (%)	177 (17.3)	142 (14.0)
CKD stage 4, n (%)	664 (65.0)	679 (66.9)
CKD stage 5, n (%)	173(16.9)	186 (18.3)
Baseline sCr ≤3 mg/dL, n (%)	524 (51.3)	523 (51.5)
Baseline sCr >3 mg/dL, n (%)	497 (48.7)	492 (48.5)

IMPROVEMENT OF THE REMOVAL OF MEDIUM-SIZED MOLECULES IN PRE-DILUTINAL HEMODIAFILTRATION BY USE OF A VERY HIGH PERMEABILITYDIALYSER, XEVONTA: STUDY ON 16 PATIENTS

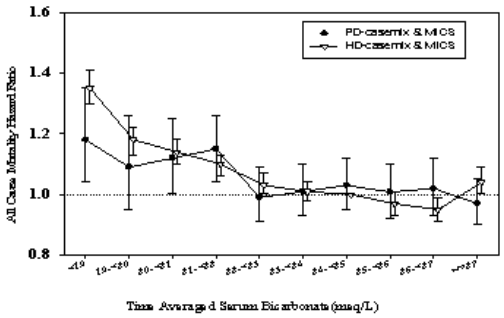
P Seniuta, T Baranger, F Bergé, V Drouillat, C Frangié, E Rosier; Hémodialyse, PBNA, Bordeaux,

The removal of uremic toxins of a medium molecular weight (MW) is one of the main objectives in order to obtain an optimized removal in hemodialyzed patients. The appearance of a new very high permeability dialyzer which presents ultrafiltration coefficients (UCF) greater than 100, led to us testing it on 16 of our patients. This made it possible to measure its removal qualities, its albumin losses as well as its tolerance and its functionality, in on-line pre-dilution hemodiafiltration. 16 elderly patients, 8 men and 8 women, average age 75.5, were dialyzed with on-line pre-dilutional HDF, 240 min per session, for a duration of 6 months on the Xevonta 20 dialyzer, (polysulfone, 2.0 m2) , UCF of 110). The extraction coefficients of urea, creatinine, phosphorous, beta2-microglobulin, myoglobin, prolactin and Retinol Binding Protein (RBP) were recorded at D0, D+3 months and D +6 months.The nutritional and inflammatory parameters which were protein, pre-albumin, albumin and CRP were recorded for the same period. The extraction coefficients were not statistically different, for small compounds: urea, creatinine and phosphorous. The removal of molecules of mean MW was improved, for a mean MW of 11800 Kd (Beta 2M, $p < 0.05$) to become significative for the molecules of mean MW greater than 17800 Kd (Microglobulin, $p<0.000001$) until 21000 Kd (Prolactin, $p<0.00001$), it is reduced for the high MW, 230000 Kd (RBP, $p< 0.01$). Concerning the nutritional parameters, only the loss of albumin is statistically significant ($p<0.001$) to 4 grams, without any reduction of pre-albumin. The superiority of the Xevonta could come from its own structure. The decrease of the diameter of its membrane, associated with the decrease of its thickness leads to an increase in the convection and an improvement of the transfer kinetics. Our study, demonstrates the interest in the use of a very high permeability membrane, used in pre-dilutional HDF, in order to improve the removal of uremic toxins of a mean MW. This is without technical or clinical constraints and with an expected benefit over the long term to be confirmed by a larger study.

SERUM BICARBONATE AND SURVIVAL IN PERITONEAL DIALYSIS (PD): COMPARISON WITH HEMODIALYSIS (HD)

Tania Sharma[1], Kamyar Kalantar-Zadeh[1], Miklos Z Molnar[1], Allen Nissenson[2], Mahesh Krishnan[2], Rajnish Mehrotra[1]
Harbor-UCLA Med. Cntr, Torrance, CA, and DaVita, El Segundo, CA

Correction of metabolic acidosis is one of the goals of effective dialysis. The KDOQI guidelines recommend serum bicarbonate > 22 meq/L irrespective of dialysis modality. Since the measured bicarbonate reflects the steady state in PD patients and the lowest inter-dialytic value in HD patients, we compared the survival predictability of serum bicarbonate 10,400 PD and 110,951 HD patients treated in DaVita facilities from 7/2001-6/2006 with follow-up through 6/2007. PD patients were substantially less likely to have lower serum bicarbonate (adjusted odds, < 20meq/L, 0.40 (0.37-0.43); < 22meq/L, 0.34 (0.33-0.36); <24meq/L, 0.29 (0.28-0.30)). Unlike a reverse J-shaped relationship in HD, a higher all-cause and cardiovascular mortality was seen only with time-averaged serum bicarbonate <19meq/L in PD patients. In the entire study population using HD patients with bicarbonate of 24-<25 meq/L as reference, a higher risk for all-cause mortality was observed for most patient sub-groups with serum bicarbonate < 22 meq/L irrespective of dialysis modality (Figure). In conclusion, the measured bicarbonate is significantly higher in patients treated with PD suggesting that the therapy provides a more stable correction of metabolic acidosis than intermittent HD. In both HD and PD-treated patients, serum bicarbonate < 22 meq/L is associated with lower death risk. These data provide support for KDOQI guidelines to achieve serum bicarbonate levels > 22 meq/L for all end-stage renal disease irrespective of dialysis modality.



USE OF HEPARIN-FREE MAINTENANCE HEMODIALYSIS AND ITS CLINICAL CORRELATES IN THE UNITED STATES

Jenny I. Shen, Aya A. Mitani, Wolfgang C. Winkelmayer
Stanford University School of Medicine, Palo Alto, CA., U.S.A.

Heparin facilitates hemodialysis (HD) as it prevents clotting of blood in the extracorporeal circuit. However, heparin also has a number of side effects, chiefly an increased risk of bleeding. Despite these safety issues, there are no standards for heparin administration during HD. We defined the use of heparin-free HD and identified clinical correlates of it in older patients initiating HD with a large national dialysis provider.

Patients >67 years of age at initiation of HD in 2007-08 whose primary payer was Medicare (Part A&B) were eligible; we arbitrarily chose the HD treatment closest to day 90 after initiation (index date) assuming that any heparin regimen would be stable at that point. Using data from both the U.S. Renal Data System and the electronic medical records of the dialysis provider, we assessed potential determinants of heparin-free maintenance HD on or during the year prior to this index date: demographics, comorbidities, laboratory measurements, vital signs, and dialysis characteristics. We used multiple logistic regression to examine associations between heparin-free HD and these covariates.

Of 10,965 older patients who initiated HD in 2007-2008 and received care at a participating facility at day 90, 723 (6.8%) dialyzed heparin-free. In multivariable analyses, a history of arrhythmia, gastrointestinal bleeding, and warfarin use were associated with higher odds of heparin-free HD; diabetes mellitus was associated with lower odds (table). Lower weight, hemoglobin level, platelet count (all P-values for trend <0.001), and shorter duration of HD session (P for trend =0.05) were all associated with higher odds of undergoing heparin-free HD. None of the demographic factors were associated with heparin-free HD.

Comorbidity	**Odds Ratio (95% CI)**
Arrhythmia	1.22 (1.02 - 1.47)
Diabetes Mellitus	0.85 (0.72 - 1.00)
Gastrointestinal Bleeding	1.47 (1.17 - 1.85)
Warfarin Use	1.94 (1.41 - 2.67)

Use of heparin-free maintenance HD correlated with conditions that are markers for an increased risk of bleeding. Our findings also showed patterns of weight-based and time-dependent dosage of heparin.

CRIT-LINE MONITOR USE IN INCIDENT HEMODIALYSIS PATIENTS IMPROVES DRY WEIGHT AND ADEQUACY, WHILE REDUCING EPOETIN ALFA DOSE: A PROPENSITY SCORE MATCHED STUDY

Scott Sibbel[1], Linda H. Ficociello[2], Michael Black[2], Mayuri Thakuria[2], Claudy Mullon[2], Jose Diaz-Buxo[2], Thomas Alfieri[1]
1. DaVita Clinical Research, Minneapolis, MN
2. Fresenius Medical Care, Waltham, MA

The Crit-Line monitor (CLM) is an optical instrument used to continuously measure a patient's hematocrit, blood volume, and oxygen saturation during hemodialysis. This study examined the effect of CLM use on incident patient outcomes, including dry weight change, adequacy (Kt/V), hemoglobin (Hb), and epoetin alfa (EPO) dose.

A retrospective analysis was conducted of incident patients' medical records. Patient outcomes were assessed according to whether or not CLM was used at the clinic. To be considered CLM users, clinics had to report using CLM within the first week of patients starting dialysis for at least 3 times/patient, and to modify treatment (Ex, ultra-filtration rate) based on blood volume change. CLM patient outcomes were compared to propensity score matched (PSM) patients not treated at CLM clinics.

Facility surveys identified 8 CLM clinics with 210 CLM patients and 609 PSM controls. At 7, 14, 30, 90, and 120 days from first dialysis, change in dry weight was greater for the CLM patients (-2.39, -3.28, -3.58, -4.08, -4.00 kg, respectively) vs PSM controls (-1.21, -1.81, -2.74, -3.46, -3.60 kg, respectively) (P=0.21, 0.09, 0.37, 0.59, 0.74). Similarly, an improvement trend was seen in Kt/V for CLM patients (1.34, 1.39, 1.51, 1.64, 1.78, 1.79 respectively) vs PSM controls (1.30, 1.37, 1.45, 1.55, 1.68, 1.72 respectively) (P=0.27, 0.78, 0.10, 0.03, 0.01, 0.26) at 7, 14, 30, 90, 120, and 180 days. There were no statistical differences in Hb between groups at any time. However, CLM patients received significantly reduced EPO doses than PSM controls at 7, 14, 30 (All Ps=0.0001 or less) and 90 days (P=0.03).

These results suggest that for incident hemodialysis patients, blood volume monitoring can reduce dry weight and EPO use. CLM measures used to safely dialyze patients to their ideal dry weights may also reduce unnecessary EPO dosing by minimizing hemodilution.

HOSPITALIZATION OF CHRONIC DIALYSIS PATIENTS AT CHILDREN'S HOSPITALS, 2006-2010

Tamar Springel, Benjamin Laskin, Susan Furth, The Children's Hospital of Philadelphia, Philadelphia, PA.

Changes in Medicare's ESRD reimbursement may incentivize providers to increase admissions and lengths of stay (LOS) for dialysis pts. To establish baseline information prior to the prospective payment system (2011),we evaluated average hospitalization rates, LOS, and charges per admission at 41 children's hospitals from 2006-2010.

We queried the Pediatric Hospital Information System (PHIS) data for all admissions with both a procedure code for dialysis and an ICD-9 code for CKD5 or 5-D. For subjects admitted at least once during a given year, we calculated mean admissions per pt per year and compared years using Student's t-test. We used multivariable linear regression and generalized estimating equations to assess changes in LOS and charges over time.

3430 admissions (range 601-786 per year; 45% HD, 55% PD) were identified among 1505 pts (52% male, mean age 10.9±6.0 yrs, 33% African American). Overall, the mean number of admissions was 2.6 per pt per year (range 1-27). The average LOS for all admissions was 5.7±10.0 days (range 1-277). The average charges per admission (2010 US$) were $38,520±87,702 (range $1043-3,338,194). Although LOS did not change from 2006-2010, compared to 2006, charges were significantly higher in 2009 and 2010 after adjusting for dialysis modality, age, race, primary payer, admitting diagnosis, LOS, and inflation.

We report baseline hospitalization data for children receiving chronic dialysis admitted to PHIS hospitals from 2006-2010. This information may help inform policy in the future and may help assess the impact of the Medicare prospective payment system on children.

Year	2006	2007	2008	2009	2010
Total admits	601	697	650	786	696
Mean admits/pt	3.4	2.5*	2.3*	2.5*	2.4*
Mean charge/admit	32300	32737	37834	45392†	42173†
Mean LOS days/admit	5.5	5.5	5.8	6.0	5.5

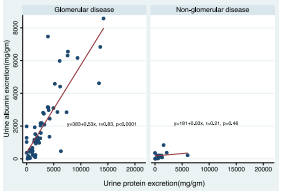
*$p<0.01$ and †$p<0.001$ compared to 2006

RELATIONSHIP OF URINE ALBUMIN TO URINE TOTAL PROTEIN IN PATIENTS WITH GLOMERULAR AND NON-GLOMERULAR DISEASES

Jennifer Tan, Nasir Malik, Mamoon Rasheed, Leroy Herbert, Herman Anderson, Jen-Tse Cheng. Harlem Hospital Center, New York, NY, USA

Assessment of urine protein excretion is standard in pts suspected of kidney disease. In the general population, the ratio of urine albumin excretion(UAE) to urine total protein excretion(UPE) increases with increasing degree of proteinuria. We tried to see if this same relationship exists according to the type of renal disease diagnosed by renal biopsy. We reviewed medical records of all pts. who underwent renal biopsy with 24h urine measurements for albumin, total protein and creatinine done within 6months prior to the biopsy. Pts were divided into co-horts of glomerular (121) and non-glomerular diseases (23). Data was analyzed using STATA12. Table shows baseline characteristics of the cohorts. As expected, pts with glomerular disease had lower serum albumin(2.8±1.0 vs. 3.4± 3.6 gm/dl, *p=0.03*) and higher UAE(1947± 2055 vs. 201±203 mg/gm, *p=0.001*) and UPE(3121±3669 vs. 1099± 1357mg/gm, *p=0.02*). Ratio of albuminuria to proteinuria was higher for pts with glomerular diseases(0.34±0. 39) than with non-glomerular diseases (0.18±0.16), but not statistically significant (*p=0.11*). UAE correlated with UPE in glomerular(y=355.3 + 0.53x, r=0.82, *p<0.001*) but not in non-glomerular diseases (y=180.8+0.03x, r=0.21, *p=0.46*). Degree of proteinuria and eGFR by CKD-EPI failed to correlate with the ratio of UAE to UPE in both cohorts.

Variable	Glomerular KD	Non-glomerular KD	*p value*
Male(%)	59	58	*0.95*
Age(yrs)	45.8±12.6	40.4±19.0	*0.11*
Black/Hispanic(%)	61/23	84/11	*0.91*
DM(%)	17	21	*0.66*
HTN(%)	57	52	*0.74*
S.albumin(gm/dl)	2.8±1.0	3.4±0.62	*0.03*
S.creatinine(mg/dl)	3.4±3.6	3.7±3.7	*0.74*
eGFR(ml/min/1.73m^2)	43.5±34.0	46.1±39.9	*0.77*

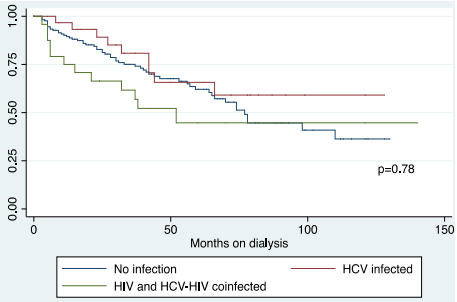


In conclusion, we confirmed correlation between UAE and UPE exists only for glomerular diseases. The ratio of UAE to UPE tends to be higher in glomerular diseases compared to non-glomerular diseases

SURVIVAL OF HCV AND HIV INFECTED HEMODIALYSIS PATIENTS IN AN INNER CITY DIALYSIS CENTER

Jennifer Tan, Mamoon Rasheed, Leroy Herbert, Herman Anderson, Jen- Tse Cheng. Harlem Hospital Center, New York, NY, USA

	No infection	HCV infected	HIV infected	*p value*
Male (%)	52	63	71	*0.155*
Black/Hispanic(%)	85/15	90/10	78/22	*0.910*
Age (years)	55.1±15.2	57.9±11.3	46.2±12.0	*0.072*
BMI(kg/m^2)	28.1±16.9	23.6±6.8	22.5±4.6	*<0.001*
DM (%)	38.7	50.0	26.3	*0.271*
HTN (%)	90.5	92.3	79.0	*0.268*
CAD (%)	48	44	30	*0.21*
Seen by a nephrologist	40.3	19.1	33.3	*0.165*
Creatinine (mg/dl)	11.9±5.7	11.1±4.7	11.3±4.0	*0.109*
Albumin (g/dl)	3.1±0.69	3.0±0.73	2.7±0.71	*0.740*
Hemoglobin (g/dl)	9.1±2.5	9.5±4.2	9.0±1.9	*<0.001*
Follow up (mos)	39.5±31.5	47.2±34.2	42.5±37.0	*0.511*



While it is generally known that HCV and HIV infection confer a higher risk for mortality among dialysis patients, few studies have shown that this might not be true among the black dialysis population. We compared the survival of our dialysis patients composed mainly of blacks (85%) over a 10-year period from January 2000 to October 2011. We reviewed medical records of 227 patients who received hemodialysis (HD) in our unit for at least 3 mos. We used STATAv12 for data analysis. 18% and 11%of the total cohort were infected with HCV and HIV respectively, while 3% had both. There was no statistical difference in the baseline characteristics of HCV, HIV, and uninfected cohorts at initiation of HD, except for BMI and hemoglobin (Table). Kaplan-Meier curves for survival with all-cause mortality as end point showed no difference among the groups (*p=0.78*). Median survival for uninfected patients was 77months, >120 months for HCV patients, and 55 months for HIV patients. In conclusion, black patients with HCV and HIV, in today's ART era, have similar mortality risk as the uninfected patients receiving standard dialysis care. We need a larger population to confirm our findings.

SERUM ANION GAP AS ANOTHER MARKER OF MALNUTRITION IN MAINTENANCE HEMODIALYSIS PATIENTS

Kawin Tangdhanakanond, Sayed Kazi, Daranee Chewaproug, Eric J. Bloom, and Rasib Raja
Department of Nephrology, Albert Einstein Medical Center, Philadelphia, PA, USA

Poor dietary protein intake is a possible cause of lower serum anion gap (SAG). There is also some evidence showing the association between higher SAG and higher levels of inflammatory markers in healthy individuals. Malnutrition-Inflammation Complex Syndrome (MICS) is generally associated with poor dialysis outcomes including increased mortality. However, there is limited evidence regarding the association between SAG and MICS in hemodialysis patients.

We conducted a retrospective analysis on 94 hemodialysis patients at an outpatient hemodialysis unit. All patients received maintenance hemodialysis 3 times per week. Demographic and laboratory data including various markers of inflammation and nutritional status were analyzed and compared between 2 stratified groups based on the predialysis SAG: the higher SAG group (SAG >14 mEq/L, n=51) and the lower SAG group (SAG ≤14 mEq/L, n=43)

Lower mean predialysis BUN (mg/dL) (49.84 ± 12.75, 62.43 ± 14.72, p<.001), and lower mean normalized protein nitrogen appearance or nPNA (0.85 ± 0.22, 1.01 ± 0.25, p=.002) were shown in the lower SAG group. Compared with the higher SAG group, the lower SAG group also had lower mean serum creatinine (mg/dL) (8.57 ± 2.37, 11.71 ± 2.91, p<.001), lower mean serum albumin (g/dL) (3.63 ± 0.34, 3.83 ± 0.39, p=.011), and lower mean serum prealbumin (mg/dL) (22.65 ± 7.88, 26.59 ± 7.63, p=.036). However, other markers of nutritional status and inflammation including ferritin, lipid profiles, and C-reactive protein level were not statistically different between the 2 groups. Urea reduction ratio and Kt/V were also similar between the 2 groups.

Our study suggested that lower serum anion gap in hemodialysis patients might be associated with poorer overall nutritional status, possibly due to decreased dietary intake. A large prospective study looking at the possible causal relationship and hard clinical endpoints is warranted for further investigation.

CHRONIC KIDNEY DISEASE SURVEILLANCE FOR THE UNITED STATES: A U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION INITATIVE

Anca Tilea, Elizabeth Hedgeman, Seena Nair, Meda Pavkov, Sharon Saydah, Neil Powe and Rajiv Saran for the CDC CKD Surveillance System. University of Michigan, Ann Arbor, MI; University of California, San Francisco, CA; Centers for Disease Control and Prevention, Baltimore, MD

Chronic kidney disease (CKD) affects 10-15% of the population within the US, and in many cases, its progression to ESRD and complications are preventable, but these consequences continue to lead to early death, disability, and poor quality of life. The Centers for Disease Control and Prevention (CDC), as a major part of its larger CKD Initiative, funded two teams to jointly develop and implement a CKD surveillance system. Using a comprehensive process, we have developed and prioritized CKD broad topics and specific measures (Table 1), systematically evaluated data sources (for representativeness, acceptability, data availability, data quality, defined denominator, feasibility, sensitivity and positive predictive value, flexibility, stability, and timeliness) and have conducted pilot testing. A national web-based CKD surveillance system will be launched via a CDC-CKD Surveillance System website that will be available at **www.cdc.gov/ckd**, by early 2012.We anticipate that this surveillance system will provide an important foundation for widespread efforts toward primary prevention, earlier detection, and implementation of optimal disease management strategies, with resultant increased awareness of CKD, decreased rates of CKD progression, lowered mortality, and reduced resource utilization.

Topic	Sample Measure*	Data Source	Estimate
Burden of CKD	Prevalence of CKD	NHANES 1999-2010	13.5%
Awareness of CKD	Awareness among persons with stage 3 CKD	NHANES 1999-2010	7.5%
Risk Factors for CKD	Prevalence of self- reported diabetes mellitus	NHANES 1999-2010	7.8%
Health Consequences in CKD Patients	Percentage of patients moving from stage 3 to 4 in 1 year	VA 2005-2005	1.6%
CKD Processes & Quality of Care	Percentage of patients with serum creatinine tested	VA 2010	77.7%
Healthcare System Capacity for CKD	eGFR reporting by clinical laboratories	College of American Pathologists 2010	80%

*Only one example of a measure is provided here. Several priority measures are in fact reported on under each topic area on the surveillance website.

PREEMPTIVE TRANSPLANT KNOWLEDGE AND DECISION-MAKING: IMPACT OF A COMMUNITY CKD EDUCATION CLASS

Amy Waterman, Julie Brown, Beth Witten, Valerie Goodnight, Carmen Mallery, Emily Schenk, Christina Goalby, Lisa Frazier, Leanne Peace, Shelley Hyland
Washington University School of Medicine, St. Louis, Missouri
Missouri Kidney Program, Columbia, Missouri

Patients who can get a preemptive living donor transplant (PLDT) avoid medical complications related to dialysis and have the highest graft success and lowest patient mortality rates. Limited research is available to understand how PLDT education affects patients' transplant coping, knowledge, and behavior. The Missouri Kidney Program's community Patient Education Program (PEP) educates patients not yet in kidney failure about their transplant and dialysis options. From September, 2008 to May, 2010, we surveyed 352 patients (78% White; 93% not on dialysis) before and after 36 PEP classes to assess changes in their transplant knowledge, pro-transplant attitudes, confidence, and interest in PLDT. Fifteen months later, we assessed their pursuit and receipt of PLDTs using SRTR data. Pre-class, only 15% of patients had spoken to a transplant coordinator, 8% had been evaluated for a transplant and 4% reported they were on the transplant waiting list. Post-class, patients had greater preemptive transplant knowledge (51% vs. 84% correct, $p<.001$), greater perceived benefits to transplant (5.5 vs. 5.0, $p<.001$), reduced fears about transplant (9.9 vs. 10.6, $p<.001$), and greater transplant confidence (7.2 vs. 6.4, $p<.001$). Post-class, 54% planned to be evaluated for a transplant. Fifteen months later, 78 patients (22%) were either actively pursuing or had received a deceased or living donor transplant (12 PLDTs, 3.4% of attendees). A community education program can educate and motivate patients who are not yet in kidney failure to make informed transplant decisions and consider the option of PLDT.

DAILY ACTIVITY ENERGY EXPENDITURE IS NOT ASSOCIATED WITH ESTIMATED ENERGY REQUIREMENTS IN MEN AND WOMEN WITH STAGE 3-5 CHRONIC KIDNEY DISEASE

Sarah L. West[1,2], Sarah D. Kosa[2], Jane Paterson[2], Charmaine E. Lok[1,2]
University of Toronto[1], Toronto General Hospital[2]; Toronto, Ontario, Canada.

Chronic kidney disease (CKD) is associated with a decrease in functional ability, fatigue, muscle cramps, weakness and low energy. Only one study has characterized daily activity levels in patients with stage 3-5 CKD and reported that activity level is negatively associated with worsening kidney function. To date, no studies have assessed the association of estimated energy requirements (EER) and daily activity energy expenditure in stage 3-5 CKD- this is the purpose of our study.

In patients age ≥18 years with stages 3-5 CKD (using NKF criteria by CG), we measured daily activity energy expenditure by triaxial accelerometry (kcal; StayHealthy, RT3), worn for 7 consecutive days on the hip, and categorized activity as either sedentary, light, or moderate/vigorous. A renal dietician calculated the EER for each subject using current practice guidelines. Statistical analyses were performed using SAS.

Overall, 76 subjects completed accelerometry assessments, 56 of which had a calculated EER. On average, subjects expended 411±266 kcal per day performing activities (i.e., kcal expended above resting energy expenditure). Subjects were primarily sedentary: 1134±116 minutes per day were spent sedentary, while only 298±118 and 7±9 minutes per day were spent completing light and moderate/vigorous activity, respectively. As well, we found a reduction in daily activity energy expenditure (kcal) by increasing stage of CKD ($F=20.47$, $p<0.001$). On average, subjects were estimated to require 1961±356 kcal/day. EER was poorly correlated with all accelerometry measures (r ranged from 0.09-0.33, $p>0.05$). Our findings suggest that we may need to better estimate energy requirements to match actual daily activity energy expenditure in patients with stage 3-5 CKD. Future studies should also investigate the association between measured energy intake and measured daily activity energy expenditure in patients with stage 3-5 CKD.

MUST NON-IONIC CONTRAST MEDIA BE REMOVED IMMEDIATELY AFTER A RADIOGRAPHIC PROCEDURE IN IN-PATIENTS WITH END-STAGE RENAL DISEASE?

Neshathari Wijeyakuhan, Wah Wah Htun, Aswini Mandhadi, Rajnish Khillan, Dena Zedan, George Fernaine, and John B. Pannone, Lutheran Medical Center, Brooklyn, NY, USA

Nephrotoxicity is a common side effect after radiology procedures involving intravascular (IV) contrast media. Many physicians believe that removing IV contrast immediately after a radiographic contrast study by hemodialysis (HD) will decrease the risk of Contrast-Induced Nephropathy (CIN). The goal of this study was to determine if immediate HD was required after an injection of IV, nonionic contrast media in End-Stage Renal Disease (ESRD) patients. By comparing the side effect profiles of two patient groups (Group 1, which received urgent HD soon after the study was completed, and Group 2, which received HD at their next scheduled dialysis session), we hypothesized there would be a statistical difference in side effects and/or complications between the two groups.

Hospital in-patients with ESRD, who were on chronic HD, and had cardiac catheterization were selected for this retrospective study. Statistical differences in outcomes were assessed between the two groups using T-Tests for continuous variables, and Chi Square tests for categorical variables. The clinical significance of absolute differences in outcomes was assessed.

Of the 59 patients included, 25 were in Group 1; 34, in Group 2. Those dialyzed on the same day vs. later did not differ in terms of serum osmolality after the procedure ($p = 0.36$). Among Group 1 patients, 1 developed pulmonary edema after the procedure, 2 had chest x-ray changes, and 2 were intubated, vs. no complications reported in Group 2. These differences were not statistically significant ($p > 0.17$).

Our pilot study did not find any significant differences between the two groups. Future research with a larger sample size and including other contrast-related procedures is indicated to continue testing the hypothesis that HD need not be urgently performed after IV contrast studies in patients with ESRD.

IMPLICATIONS OF BEING A METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) CARRIER FOR HOSPITALIZED CHRONIC HEMODIALYSIS PATIENTS

Lee Ying Yeoh, Grace Tan, Terina Seow
Khoo Teck Puat Hospital, Alexandrahealth, Singapore

The objective is to determine the characteristics of hospitalized chronic hemodialysis patients who are MRSA carriers and whether the carrier status has any implications on their stay.

This is a retrospective study of all chronic hemodialysis patients attending the Khoo Teck Puat Hospital, Singapore, between July 2010 and June 2011. Data was collected from electronic medical records.

There were 179 chronic hemodialysis patients with 324 admissions. During screening for MRSA carriage, 13.9% of admissions were tested positive. Comparisons were made between MRSA carriers and non-carriers for each admission. MRSA carriers were older (61.3±13.3 versus 59.6 ± 11.2 years), had lower hemoglobin (9.9 ±1.9 versus 10.5 ± 1.9 g/dl) and serum albumin levels (35.5 ±5.0 versus 37.9 ± 5.2 g/l), ($p<0.05$). There were also more non Chinese, female and diabetic MRSA carriers (20.7% vs. 8%; 18.6% vs. 10.3% and 16.3% vs. 3.3% respectively), $p<0.05$. Not surprisingly, recent hospitalization and antibiotic use within 3 months were associated with higher risk of MRSA carriage, OR 2.3 (95% CI: 2.3, 1.1-5.0) and 2.4 (95% CI: 1.2-4.7). MRSA carriers also have longer hospitalization stays (11.8 ± 14.9 versus 7.7 ± 8.0 days) but shorter dialysis vintage (2.7 ±1.7 versus 4.5 ± 4.1 years).

Hospitalized chronic hemodialysis patients who are MRSA carriers have more co-morbidities and poorer biochemical markers of health. They also stay longer during each admission.

NUTRITION AND HYDRATION STATUS IN PREDIALYSIS AND DIALYSIS PATIENTS BY MULTIFREQUENCY BIOIMPEDANCE SPECTROSCOPY

Somchai Yongsiri, Pakapan Dinchuthai, Suriya Prongnamjai, Rachneeporn Cheunsuwan, Jiranuch Thammakumpee, Siriporn Tangjaturonrasami, Pongphan Jantatero, Surang Nantapiras, Patcharin Nannar, Nattaphon Annanon
Burapha University Hospital, Chonburi, THAILAND

Background. Bioimpedance spectroscopy with body composition model is a validated method to assess hydration and nutritional status in dialysis patients. The aim of this study is to compare nutrition status, hydration status and quality of life between dialysis and predialysis-CKD5 patients.

Methods. Eighteen CKD5, 26 PD and 32 HD patients were included in this study. Multifrequency bioimpedance spectroscopy were measured by BCM-body composition monitor (Fresenius medical care) device, the device provided body composition and quantified hydration status. Quality of life was measured by WHO-QOL questionnaire. Scheffe's test was used for comparison, and $p<0.05$ was considered as statistically significant.

Results. There were no differences in Charlson's comobidity index, food intake, protein intake, BMI, blood pressure and quality of life between 3 groups. CKD5 patients had more lean tissue index (LTI 14.34$\pm$3.13 kg/m^2 p=0.023) and less fat tissue index (FTI 8.63$\pm$4.15 kg/m^2 p=0.327) compare to diaysis patients. LTI and FTI between PD (12.26$\pm$3.65, 10.79$\pm$5.84) and HD (11.48$\pm$3.48, 10.52$\pm$4.67) patients were not statistically different. PD patients had more over hydration when compare to HD patients (16.18$\pm$11.24 vs. 2.36$\pm$11.07 %OH/ECW $p<0.0001$) and ECW to ICW ratio was higher in PD patients (1.02$\pm$0.21 vs. 0.89$\pm$0.18 p=0.035).

Conclusion. Quality of life and Nutritional status were not difference between predialysis-CKD5, PD and HD patients. PD patients had more over hydration and ECW to ICW ratio as assessed by bioimpedance spectroscopy. Pre dialysis-CKD5 patients had more LTI than dialysis patients.

ACUTE KIDNEY INJURY FROM ABSCENCE OF RENAL FLOW SECONDARY TO ASCITES RECOGNIZED BY DOPPLER ULTRASONOGRAPHY

Ladan Zand, Qi Qian
Mayo Clinic, Rochester, Minnesota

Kidney perfusion can be compromised by reduced systemic blood pressure and/or elevated intra-abdominal pressure. Compromised kidney perfusion can be directly detected by Doppler ultrasonography. A timely detection and management can rescue kidney function and avoid permanent kidney damage.

A 57-year-old man was admitted to our institution for decompensated congestive heart failure and acute oligo-anuric kidney failure. His medical history included obesity (BMI 41), hypertension, diabetes, and right heart failure. Approximately six months prior, he developed hepatic congestion and fluid retention. His serum creatinine rose to 1.6mg/dL (from baseline 1.1mg/dL) four weeks prior. Upon admission, his blood pressure (BP) was 69/43mmHg, pulse 39/min, and respiration 17/min. His lung fields showed basilar crackles, his abdomen was protuberant with positive fluid-wave but non-tender, and there was pitting edema extending from feet to thighs bilaterally. He was started on dopamine drip (6-12ug/kg/min), titrating to a mean blood pressure >60mmHg. He had no urine output in over six hours following admission. His serum potassium was 6.0mmol/L and creatinine 2.2mg/dL. He had no urine response to 60mg of intravenous furosemide. Nephrology was urgently consulted. Given his hyperkalemia and volume overload, emergent dialysis was provided overnight and a Doppler kidney ultrasound was requested. The Doppler study showed a nearly absent renal blood flow bilaterally. Paracentesis was immediately performed; 5 liters of ascitic fluid was removed. Following the paracentesis, his kidney blood flow returned to normal, his urine output improved, as did his BP and serum metabolic profile. In the ensuing 72 hours, dopamine was weaned off, his urine output improved to 60-90mL/hour and his serum creatinine returned to his baseline.

This case illustrates that kidney ultrasonography with Doppler study can serve as an important adjunct to the diagnosis and treatment of acute kidney injury.

THE EFFECTS OF ULTRAFILTRAION VOLUME ON "RECOVERY TIME" IN CHRONIC HEMODIALYSIS PATIENTS.

Joseph G. Zhao, Nishell Jungra, Louis A. Carrera, Maria V. DeVita, Michael F. Michelis, Division of Nephrology, Lenox Hill Hospital. Upper-East Side Dialysis Center, NY, NY

Patients treated with chronic hemodialysis therapy often experience intense symptoms following each dialysis event. The time required for the abatement of symptoms following the procedure has been referred to as the "recovery time." The present study was undertaken to evaluate the effect of the ultrafiltration (UF) volume on the length of the recovery time. Recovery times were divided into four groups designated as follows: group 1(< 2 hours), group 2 (2-6 hours), group 3 (7-12 hours), group 4 (> 12 hours). Due to the variability in the body weight of patients studied, the ratio of UF volume to dry weight (DW) was used to characterize the relative amounts of fluid loss in comparison to the described recovery time.

The group consisted of sixty patients who underwent thrice weekly dialysis treatments. To evaluate the most severe symptomatology, data from the first treatment of the week was used. Fifty percent of the patients (n=30) fell into group 1, mean UF volume in this group was 2810 mL, the mean UF: DW ratio was 0.04. Thirty three percent of the patients (n=20) fell into group 2, the mean UF volume in this group was 3110 mL, the mean UF: DW ratio was 0.05. Five percent of the patients (n=3) fell into group 3, mean UF volume in this group was 2933mL, the mean UF: DW ratio was 0.04. Twelve percent of the patients (n=7) fell into group 4, the mean UF volume in this group was 3500ml, the mean UF: DW ratio was 0.05. P values for UF and UF: DW ratios were 0.34 and 0.42 respectively.

Although the least UF volume was associated with the lowest recovery time, there was no statistical difference when the UF volume to dry weight ratio was used. Because there were 10 patients in groups 3 and 4, they were combined for statistical purpose. The data suggest that the magnitude of volume removal does not significantly influence recovery time in chronic hemodialysis patients.

DEATH WITHIN 90 DAYS: COMPARISON OF MORTALITY RATE BETWEEN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

Sijie Zheng, Lue-Yen Tucker, David Law, Juan Ordonez
Kaiser Oakland Medical Center, Division of Research, Oakland, California

First year mortality rate in end stage renal disease (ESRD) patients was about 20% according to US Renal Data System. This calculation excluded the first 90 days after initiating of dialysis due to Medicare claims reporting method. The purpose of this retrospective cohort study was to compare early mortality rate between patients initiated with hemodialysis (HD) and peritoneal dialysis (PD) 1999-2008 in Kaiser Permanente Northern California (KPNC) integrated health care system.

After accessing 21342 ESRD patients' medical records in the KPNC electronic database, 9561 patients were found to start HD or PD in the study period. Patients younger than 18 years old at dialysis initiation, without KPNC membership, or started dialysis acutely during a hospitalization were excluded. The final cohort (N=8810) included 7758 (88.1%) initiated with HD and 1052 (11.9%) with PD. Demographic data, comorbidities, hospitalization, and mortality were extracted electronically. All analyses were performed using SAS version 9.13. Compared with HD group, PD group was younger, less obese, have lower hospitalization rate, less infection rate, less cardiovascular disease, and lower rate of diabetes. There were 514 (6. 6%) deaths in HD group and 18 (1.7%) deaths in PD group ($p<0.0001$). After controlling for age, race, comorbidities of interest, and hospitalization, HD patients had an estimated 80% higher all-cause mortality than PD ($p=0.016$). Mortality due to cardiovascular disease was also higher in HD group than PD group (HR=3.22, $p=0.02$).

In conclusion, the within 90 days mortality rate was higher in HD patients than PD patients, after adjust for age, race, comorbidities and hospitalization.

FISTULA FIRST: JOURNEY FROM LAST TO FIRST
A QUALITY IMPROVEMENT (QI) PROJECT

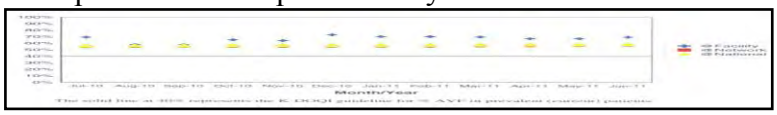
Kashif Chaudhry, D Abu-Hamdan, C Ohs, K Crossley, J Chacko. John D Dingell VAMC, Detroit, MI, USA.

In March 2005, the Fistula First initiative (FFI) was launched to increase the rate of AVF to 66% in US ESRD population. The superiority of Arterio-Venous Fistula (AVF) is well established, due to longevity of the access, very low risk of infection and sepsis, fewer hospitalizations and hence low morbidity, mortality and health care cost.

The challenges of achieving this goal at an inner city center like Detroit were met through a coordinated effort between nephrology, vascular surgery and nursing staff.

We are reporting a QI project, done at VAMC in Detroit. Our QI achieved an increase in AVF prevalence from < 40% to >70% and a decrease in venous catheters prevalence from 40% to < 15%. We are on target to reach 80% AVF access in our patient population and a decrease in catheter rate to 10% in 2011: far exceeding the national average. As a predictable result, the rate of infections and sepsis calculated as number of infections/HD procedures/1000 device days went down from 3.12 in 2009 to 1.44 in 2010 to 0.56 in 2011.

AVF prevalence comparison: July 2010-June2011



The co-ordinated efforts of the surgeon, the nephrologist, the support staff and patient education all played pivotal role not only in achieving the FFI target of 66% but exceeding it to 70% and higher.

LONG-TERM SURVIVAL OF AV GRAFTS COMPARABLE TO THAT OF NON-TRANSPOSED AND TRANSPOSED AV FISTULAE IN THE ARM

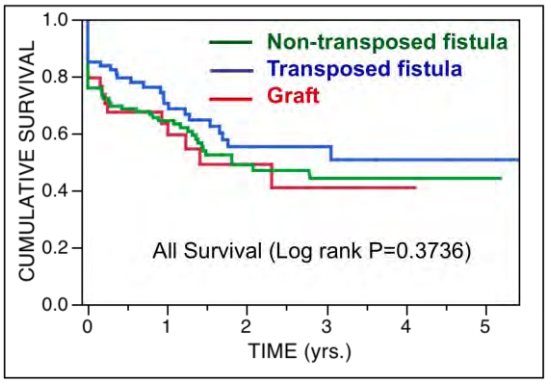
Peter Van, Renu Gupta and Neville R. Dossabhoy
Nephrology Section, LSUHSC and VA Medical Center, Shreveport, LA

The Fistula First Breakthrough Initiative has increased the placement of arteriovenous fistulae (AVF) for vascular access. The purpose of this study was to compare the overall survival of transposed brachial-basilic fistulae (TBBF), non-transposed (NT) AVF and AV Grafts (AVG) placed in the upper extremity (UE) in the era of Fistula First.

Our prospective, computerized clinical database was queried retrospectively to identify the outcomes of all upper extremity fistulae and grafts placed at our center over a 6-year period (2005-10). The primary end point was failure of the access. Kaplan-Meier curves were plotted for comparison of access survival.

268 UE accesses were placed: 93 were TBBF, 139 were NT AVF, and 36 were AVG. The figure shows that there was no difference in the Kaplan-Meier survival curves for the three groups (P=0.37).

In conclusion, overall survival was similar for TBBF, NT AVF and AV grafts in our study, even with primary failures excluded (P=0.45). This study confirms that both types of fistulae have a high primary failure rate. In the era of Fistula First, these findings question the wisdom of pushing fistula placement indiscriminately in all ESRD patients.



A Cause Analysis of Absence of Functional Arterio-Venous (AV) Access in a Prevalent Hemodialysis Patients Cohort.

Mireille El Ters, Andrew Rule, Bonnie Jensen, Scott Nyberg ,Sandra Taler , Amy Williams, Robert Albright, Marie C. Hogan, Mayo Clinic, Rochester, MN.

Failure to achieve a functional AV access remains a major problem in the ESRD population with negative implications on survival, outcome and cost of hemodialysis. We evaluated causes behind the lack of functional AV access in our prevalent hemodialysis population.

Included were 295 prevalent hemodialysis patients in Mayo Clinic Dialysis Network (as of Jan 31, 2011). Mean age was 68.6 y, 58% male, 56% diabetics and 88 % were caucasian. Of these, 168 (56.9%) had a functioning AV fistula (AVF), 12 (4.2%) a functioning AV graft and 115 (38.9%) a tunneled dialysis catheter (TDC). Of the 115 patients using TDCs, 54 (47%) had a prior failed AVF, 17 (14.8 %) had an immature AV fistula and 44 (38.2%) never underwent AV access placement. Of the 44 with no prior AV access, 15 (34%) refused AV access placement, 17 (38.6%) were not considered suitable candidates and 12 (27.2%) did not undergo evaluation for unknown reasons. Reviewing prior failed AVF cases, we observed a trend toward more radio-cephalic AVFs amongst the failed AVF group (n=11, 20.4%) than amongst the functional AVF group (n=23, 13.7%); this difference was not statistically significant (p=0.27, Fisher's test). Wrist cephalic vein and radial artery diameters tended to be smaller in the failed AVF group then in the patent AVF group, however this difference was not statistically significant in our limited subgroup (failed vs patent mean cephalic vein at wrist: 2.5 vs 2.8 mm (p=0.56); radial artery: 2.1 vs 2.7 mm,(p=0.1), Wilcoxon test).

In conclusion, amongst hemodialysis patients with TDC access, we identified failed AVF and patient refusal to undergo AVF placement as major factors leading to that outcome. In this study, most causes of absence of functioning AVF were recognizable and potentially remediable. Improved patient education about the importance and timing of AVF placement as well as interdisciplinary approach to vein preservation even after achieving a successful AV access are crucial to successful AV access long term.

INCREASING VASCULAR ACCESS KNOWLEDGE: RESULTS OF AN EDUCATIONAL WORKSHOP FOR NEPHROLOGY TRAINEES

Jamie Green, Danyal Hassan, and Hoda Kaldas
University of Pittsburgh and Partners in Nephrology and Endocrinology, Pittsburgh, Pennsylvania.

Hemodialysis vascular access is an important component of nephrology practice; however, few nephrology training programs provide formal education in this area. We sought to improve fellow knowledge of hemodialysis vascular access through a multimodality 2-day educational workshop that included a combination of: 1) didactic lectures covering core vascular access topics such as the Kidney Disease Outcomes Quality Initiative (KDOQI) Clinical Practice Guidelines for Vascular Access, objectives of the Fistula First Initiative, advantages and disadvantages of different types of vascular access, arterial and venous anatomy, and management of dysfunctional fistulae, 2) supervised instruction on vascular access examination techniques, and 3) direct observation of fistulogram procedures performed by an experienced interventional nephrologist. Participants were 1st and 2nd year nephrology fellows at the University of Pittsburgh and Allegheny General Hospital (N=14). We collected anonymous pre- and post-workshop surveys to evaluate the efficacy of the curriculum. The surveys included 37 general vascular access questions and 43 fistulogram questions utilizing a multiple-choice and fill in the blank format. We used paired t-tests to assess changes in fellow knowledge based on the workshop. Baseline knowledge was poor, with average scores of only 70% for general access knowledge and 36% for fistulogram knowledge. Mean knowledge scores increased significantly after the workshop to 84% for general access knowledge and 83% for fistulogram knowledge ($p<0.001$ for both content areas). This curriculum represents a successful model to increase vascular access knowledge for nephrology trainees.

EFFICACY AND SAFETY OF A 4% SODIUM CITRATE LOCKING SOLUTION IN CUFFED TUNNELED HEMODIALYSIS CATHETERS COMPARED WITH HEPARIN

Sucharitha Kankanala, Kathy Smith, David E. Henner, Berkshire Medical Center, Pittsfield MA, USA

Instilling sodium citrate as locking solution at end of hemodialysis (HD) in cuffed-tunneled dialysis catheter is as effective as heparin in preventing thrombosis, catheter malfunction and preventing infection without associated risk of heparin.

Heparin is associated with bleeding complications, Heparin- induced thrombocytopenia (HIT), and it interferes with reliability of PT/INR measurements in patients on Coumadin. Heparin has been associated with several recent recalls and quality issues identified in manufacturing plants. Sodium citrate is overall less expensive and has not been associated with same risks as heparin in several studies.

Study was a retrospective, non-randomized analysis over period of one year from May 2008 to May 2009 in our in-center outpatient hemodialysis population. A total of 63 patients with cuffed-tunneled catheters were studied. Sodium citrate was used in 37 patients and heparin was used in 26 patients. Sodium citrate was used in all patients on Coumadin and all patients with HIT, or at high risk of bleeding complications (ie on Plavix and aspirin, history of large GI bleed). In patients using sodium citrate there was a total of 24 instances requiring catheter change due to any reason (poor flow, thrombosis, or line related infection). In patients using heparin there were a total of 33 instances requiring catheter change for any reason. Student's t-test- Between two populations studied, p value was >.05 and not statistically significant.

4% Sodium citrate used as locking solution in hemodialysis catheters after dialysis was equally effective as heparin in terms of preventing catheter complications requiring catheter exchange or removal. 4% sodium citrate was well tolerated with no reported adverse outcomes in this study.

HEMODIALYSIS INFECTION PREVENTION WITH POLYSPORIN OINTMENT (PTO) VERSUS TAKING A WET SHOWER (HIPPO-TWO) PILOT STUDY DESIGN

Sarah Kosa, Charmaine Lok
Toronto General Hospital, Toronto, Ontario.

Strategies for reducing CVC-related infections (CVCRI) are critical for hemodialysis (HD) patients who depend on CVC for HD. A previous study demonstrated that application of PTO at the CVC entry site can significantly decrease CVCRI, hospitalizations and improve survival when compared with placebo. Preliminary data suggests equivalent infection rates for a novel "shower technique (ST)" compared with PTO application.

The proposed RCT will determine the feasibility of conducting a multi-centre comparison of PTO vs. ST in patients with healed CVC entry sites on multiple outcomes, including determining the bacteremia rate using the ST, the rate of recruitment at 5 academic and community based HD units, and evaluating the ability to collect required information for future health economics analysis. The population will be adult HD patients with incident and prevalent tunneled CVCs who meet entry criteria and are willing to use both the PTO and ST. Tests of CVC entry site healing will be conducted. If CVC entry site healing is deemed complete, patients will be randomized to PT or ST, and followed on a weekly basis. The primary results of this trial will be used to design and implement a definitive RCT comparing PT vs ST at the CVC entry site in HD patients dependent on a tunneled CVC. The goal is to determine a cost effective catheter care protocol that reduces CVC related infection and improve patient's quality of life.

ROO DEFENDER™ CATHETER COVER REDUCES CATHETER CARE EXPENSE AND NURSING TIME

M. LaFleur, P. LaFleur, R. Provenzano
St. John Hospital & Medical Center, Detroit, MI, USA

The prevalence of catheter use in hemodialysis (HD) patients is approximately 20%. Despite focused efforts by nephrologists to reduce these numbers, catheters continue to be used as a "bridge" access while Arterial Venous Fistulas mature, in patients either unwilling or unable to have a graft or fistula; and in "emergency" dialysis settings in patients otherwise unprepared for ESRD. The resultant direct and indirect costs as well as morbidity and mortality remain high. The Roo Catheter Cover is a disposable antimicrobial catheter cover that acts as a protective & comfortable barrier against environmental contamination and is designed to replace traditional gauze and tape coverings.

To determine the impact of use on nursing time we performed a time/motion study. Additionally we surveyed patients and staff on various aspects of its use.

A total of 33 patients were studied. An independent observer recorded staff time required to prepare the catheter to initiate and terminate dialysis in a blinded fashion (the staff was unaware he/she was being observed). Patient and staff survey scores [1-5(best)] were recorded. (Table)

Time (minutes)	Without Roo	With Roo	% change
Dialysis Initiation	6:32	5:26	17%
Dialysis Termination	3:07	3:22	-8%

Question	Ave. Pt.	Ave. Staff
Do you like the way Roo cover feels?	4.5	3.9
Do you feel the Roo cover is an improvement over previous dressings?	4.4	4.3
Do you consider the Roo cover safe?	4.4	4.5

The use of the Roo Defender™ Catheter Cover resulted in significant time saving when initiating dialysis with excellent patient & staff acceptance. Increased dialysis termination times may be related to staff learning curve as facility-specific storage of covers & distance from chairs were not controlled for.

A TALE OF TWO CATHETERS: AN UNUSUAL CASE OF INTRADIALYTIC HYPOTENSION

Bharvi P Oza-Gajera, Jorge Lamarche, Craig Courville, Alfredo Peguero, James Haley VA and University of South Florida, Tampa, FL, USA.

Peripherally inserted central catheters (PICC) are generally avoided in dialysis and pre-dialysis patients due to risks of venous stenosis; however in patients with acute injury, this practice is not as prevalent.

A 64 y/o M with CKDIII was found to have hemodialysis (HD) requiring acute tubular necrosis due to sepsis. As the patient already had a PICC in his left arm for access, a temporary dual-lumen HD catheter was placed in his right internal jugular vein. He underwent his first 6 treatments of HD with low-flux and high-flux dialysis filters without incident. The temporary catheter was exchanged for a tunneled with the distal tip in the right atrium and a subsequent HD treatment was successful.

The PICC was moved to the right arm due to swelling at the prior site with the tip in the SVC. Within 3 minutes of initiating his next treatment, the patient developed bradycardia, hypotension, diaphoresis and apnea. He immediately returned to baseline with cessation of HD. Cardiopulmonary, infectious, and allergic/anaphylactic workup was negative. His symptoms persisted within the same 3-minute initiation period despite pre-medication, trials of various filters including non-polysulfones, an ethylene oxide free environment, and a 2L NS rinse prior to HD.

Eventually it was thought that the patient may have a Bezold-Harisch-like reflex elicited mechanically from the two catheter tips in caval-cardiac tissue; therefore, his tunneled catheter was replaced for a catheter in the right groin and PICC removed. With this intervention, he tolerated further HD without untoward events.

Though rare, mechanical etiologies should remain in the differential diagnosis of early-intradialytic hypotension. In addition, extensive thought should be given to the placement of multiple catheters, especially in dialysis patients, as there remains a risk of increased morbidity and mortality – as evidenced by this case.

CHALLENGES IN OBTAINING PERIPHERAL BLOOD CULTURES ON HEMODIALYSIS PATIENTS DURING HEMODIALYSIS

F. Quittnat Pelletier[1,2], M. Joarder[1], C. E. Lok[1,2]
[1]Toronto General Hospital and [2]University of Toronto, Toronto, Ontario, Canada.

Background: The Infectious Diseases Society of America (IDSA) define a catheter related bloodstream infection (CRBSI) using blood cultures (BC) obtained from a peripheral vein and from the catheter hub that meet criteria of differential time to positivity. This is not current practice in most hemodialysis (HD) units worldwide. A major nephrology priority is to preserve peripheral veins for future AV fistula creation. Venipuncture, especially in HD patients who typically have difficult venous access, is relatively contraindicated.

Hypothesis: We hypothesized that obtaining peripheral vein BC will be challenging (yield <50%) and thereby limit the applicability of IDSA guidelines.

Methods: A BC set from the peripheral vein was drawn in addition to BC from the catheter hub and the HD bloodline when a CRBSI was suspected. Data was collected on the challenges of obtaining peripheral BC.

Results:To date, 70 patients who presented with signs and symptoms of CRBSI have been enrolled in this study. Peripheral vein BC were obtained in 74% of the suspected CRBSI. 84% of these did not pose a challenge for peripheral venous blood drawing. 16% had > 1 attempt before successful acquisition; 9% refused peripheral blood sample drawing, and in two cases (4.5%) the blood sample did not yield the appropriate amount for a BC set due to collapsing peripheral veins.

Conclusion: Three-quarter of HD patients had successful peripheral BC drawn. Of these, the majority of peripheral BC was obtained without any difficulty suggesting that poor venous access should not be a point of contention in the HD population.

IMPACT OF A CKD CLINIC ON ACCESS PLACEMENT IN INCIDENT HEMODIALYSIS PATIENTS. **Lumi Stutz, Julie Kirshenbaum, Paulynn Katsulis, Morgan Marcuccilli, and L. Tammy Ho, NorthShore University HealthSystem, Evanston, IL**

Although much research has been done to evaluate outcomes of pre-dialysis patients enrolled in nurse practitioner (NP) run CKD clinics, there is a lack of information regarding impact of vascular access at initiation of HD. In 2003 CMS announced the ESRD Clinical Performance Measures (CPM) goal of having a primary AVF as the access of choice in 50% of all new patients initiating dialysis.

The aim of this study was to determine whether participation in a NP run CKD clinic increased the rate of AVF use in incident HD patients.

A retrospective analysis was performed of a cohort of 105 patients who started HD between 2003 and 2011 at one of three HD centers (15 patients were excluded from data analysis due to insufficient available records). Data obtained included demographics and type of vascular access at initiation. Additionally, patients were stratified by those who had a visit with a nephrologist >3 months prior to initiating HD as well as patients who were part of a NP run CKD clinic within 1 year of starting HD.

Of the 90 patients studied, the overall incidence of starting dialysis with a permanent vascular access was 14% (13/90). Although only 36% (33/90) of patients were seen in a dedicate CKD clinic within the year prior to HD, the incidence of permanent access in this group was 31% (11/33), ($p <$***). Seventy percent of the patients studied had a visit a nephrologist >3 months prior to starting HD, the incidence of permanent access in this group was 20% 13/63) and not surprisingly the majority (77%) of these patients initiating dialysis with a permanent access had also been part of the CKD clinic. Last, the patients who had either no nephrology care or a visit within 90 days of starting dialysis (30% of the cohort), all started dialysis with a central venous catheter (CVC).

In conclusion, there is a benefit to referring patients for early nephrology care as well as participation in a dedicated CKD clinic in regards to improving the rate of permanent vascular access use in incident dialysis patients.

ROLE OF NURSE PRACTITIONER MONITORING ON VASCULAR ACCESS OUTCOMES. **Lumi Stutz, Julie Kirshenbaum, Nisha Patel, Jamie Sua and L. Tammy Ho, NorthShore University HealthSystem, Evanston, IL**

The ability to maintain functioning arteriovenous (AV) access in hemodialysis (HD) patients (pts) is a critical feature in minimizing morbidity and mortality. CMS recommends a 68% prevalence rate for functioning AV fistulas in HD pts. In 2010 DOPPS reported a 70% AVF rate in Europe and 56% rate in the USA. National rates for primary AVF patency ranges from 40-80% with about a 70% assisted primary patency rate at 2 years.

Our program, which encompasses 3 dialysis facilities, employs a nurse practitioner (NP) run Chronic Kidney Disease (CKD) Clinic which longitudinally follows patients from early CKD care through maintenance dialysis. The aim of this study was to determine whether a NP-run vascular access surveillance program within a comprehensive CKD Clinic program improved outcomes of prevalence and patency rates of AV access.

A retrospective analysis was performed in a cohort of 105 pts who started HD between 2003 and 2011 (15 pts were excluded from data analysis due to insufficient available records). Data obtained included demographics, type of vascular access, number of interventional radiology (IR) and surgical interventions. 90 pts were followed for 257 pt years. Prevalence of functioning AV access in this cohort was 77% (70/90). Of the remaining 20 pts dialyzing with a central venous catheter (CVC), 30% (6/20) had maturing access. 87% of AV access used were AVFs. Primary unassisted patency rate at 3,6,12 and 24 mos was 70, 49, 38 and 19% respectively. The primary assisted patency rates at 3,6, 12 and 24 mos was 89, 87, 83, and 80% respectively. The avg number of IR interventions per access was 2.4 and the avg number of surgical interventions per access was 0.4.

Compared with historical national avg, a NP run program significantly improved the prevalence of AVF and primary assisted patency at all time frames. Improved AVF use in HD is possible, but requires consistent surveillance and ongoing maintenance through IR and surgical interventions.

REDUCTION IN BLOODSTREAM INFECTION RATES IN OUTPATIENT HEMODIALYSIS CENTERS PARTICIPATING IN A CDC PREVENTION COLLABORATIVE

Sarah H. Yi, Alexander J. Kallen, John A. Jernigan, Priti R. Patel for the members of the CDC Dialysis BSI Prevention Collaborative
Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention (CDC), Atlanta, GA USA

Bloodstream infections (BSIs) cause substantial morbidity in hemodialysis patients. We sought to assess the impact of specific interventions on BSI and access-related BSI (ARB) rates in outpatient hemodialysis centers. In 2009, 21 outpatient hemodialysis centers joined a CDC-sponsored collaborative project to prevent BSIs. Centers reported monthly event and denominator data to CDC's National Healthcare Safety Network, received guidance from CDC, and implemented an evidenced-based intervention package that included: chlorhexidine use for catheter exit site care, application of antimicrobial ointment to exit sites, hand hygiene and vascular access care audits, and feedback of rates to staff. Up to twelve months of pre-intervention (1/2009 – 12/2009) and 15 months of post-intervention (1/2010 – 3/2011) data from 17 participating centers were analyzed. Segmented regression analysis was used to assess changes in BSI and ARB rates during the pre-intervention, intervention implementation, and post-intervention periods. Pooled BSI and ARB rates were 1.09 and 0.73 per 100 patient-months during the pre-intervention period, and 0.89 and 0.42 per 100 patient-months during the post-intervention period, respectively. Modeled rates decreased 31% ($p=.015$) for BSI and 53% ($p<.0001$) for ARB during intervention implementation. These decreases appeared to be maintained in the post-intervention period. Collaborative centers successfully decreased their BSI and ARB rates. These findings suggest that improved implementation of evidence-based practices can reduce BSIs in hemodialysis centers.

INCREASING MEAN BODY MASS INDEX AMONG INCIDENT CASES OF END-STAGE RENAL DISEASE, BY DIABETES STATUS, UNITED STATES, 1996–2009

Nilka Ríos Burrows, Israel Hora, Desmond Williams. Centers for Disease Control and Prevention, Atlanta, Georgia, USA.

Diabetes is a major risk factor for end-stage renal disease (ESRD), and high body mass index (BMI) is associated with developing type 2 diabetes. We assessed trends in mean BMI among adults initiating ESRD treatment in the United States.

Using 1996–2009 data from the U.S. Renal Data System, we obtained mean BMI at initiation of ESRD treatment among people aged ≥18 years with diabetes (ESRD-DM) or other conditions (ESRD-OTH) listed as the primary diagnosis. Mean BMI was examined by age group, and joinpoint regression was used to analyze trends and calculate an average annual percentage change (AAPC) with 95% confidence interval.

From 1996 to 2009, mean BMI increased from 25.6 to 29.9 (AAPC=1.3% [1.1%–1.4%] per year) among ESRD-DM incident cases, and from 23.6 to 26.9 (AAPC=1.0% [0.9%–1.1%] per year), among ESRD-OTH incident cases. Throughout the period, mean BMI increased in all age groups in both ESRD-DM and ESRD-OTH incident cases. Mean BMI was similar among ESRD-DM and ESRD-OTH incident cases aged <45, but higher among ESRD-DM than among ESRD-OTH incident cases aged ≥45. Mean BMI was >30 among ESRD-DM incident cases aged 45–64 from 2005–2009, and among those aged 18–44 in 2009. Among ESRD-OTH incident cases, mean BMI was <30 from 1996 to 2009 in all age groups.

Mean BMI at initiation of ESRD treatment increased during the study period irrespective of diabetes status. Higher BMI is associated with greater likelihood of survival in the first 12 months of ESRD treatment, but also associated with comorbidities, such as cardiovascular disease (CVD), which could impact survival. Evaluation of the nutritional profile of people preparing for ESRD treatment and reduction of CVD risk factors is important to improve outcomes.

FOOD INSECURITY AND CKD IN THE UNITED STATES

Deidra Crews[1], Laney Light[1], Vahakn Shahinian[2], Elizabeth Hedgeman[2], Nilka Rios-Burrows[3], Desmond Williams[3], Neil Powe[4] for the CDC CKD Surveillance Team

[1]Johns Hopkins University, Baltimore, MD; [2]University of Michigan, Ann Arbor, MI; [3]Centers for Disease Control and Prevention, Atlanta, GA; [4] University of California at San Francisco, San Francisco, CA

Food insecurity (the inability to afford nutritionally adequate and safe foods) associates with chronic diseases, including diabetes and hypertension. However, the relation between food security and CKD is not known. We determined the prevalence of CKD within food security categories in 9,126 adults (20+ years old) with a poverty income ratio <4 (<400% of federal poverty limit) surveyed by NHANES during 2003-2008. We included all participants who had food security [assessed using 10-item questionnaire, and scored as: full (0 "yes" responses), marginal (1-2), low (3-10)], serum creatinine and urine albumin data available (92%). CKD defined as eGFR 15-60 ml/min/1.73m^2 or albuminuria (urinary albumin:creatinine >30 mg/g). Descriptive statistics and logistic regression (adjusted for age, sex, race, education, marital status and insurance status) were performed. Persons with low or marginal food security were younger; more likely of Mexican American or Non-Hispanic black race/ethnicity; less likely to be married, insured or have >H.S. education; more likely to be smokers, have BMI >30 kg/m^2 and/or hypertension (P<0.01 for all). Persons with low or marginal security had age-adjusted prevalence of CKD 18.9% and 17.6%, respectively, compared to 14.2% of persons with full food security (P <0.01). After adjustment, there was a greater odds of CKD comparing low to full food security groups [OR 1.28 (95% CI 1.04-1.58)], with a significant trend across all 3 groups (P <0.05). This trend was significant only among those with diabetes or hypertension. Food insecurity is associated with CKD among persons with diabetes or hypertension.

ASSOCIATION OF PREOPERATIVE CHRONIC KIDNEY DISEASE AND ACUTE KIDNEY INJURY

A Osama Gaber, Linda W Moore, Stephen L Jones, Lillian W Gaber, Wadi N Suki, Richard Knight, Barbara L Bass, The Methodist Hospital, Houston, TX

As population demographics change, there is an increase in the number of patients with CKD that undergo surgical procedures. Post-operative acute kidney injury (AKI) is a spectrum of renal complications that increases risk for poor outcomes. We examined whether preoperative eGFR as a marker of CKD, correlates to post-operative AKI. The ACS-NSQIP database from 2005-2007 was used; 255,188 cases were analyzed. eGFR was assessed by MDRD formula and CKD staged by NKF guidelines. AKI was defined as a rise in post-surgery serum creatinine >2mg/dL (progressive renal insufficiency, PRI) and/or requiring dialysis (ARF).

eGFR mL/min	S Creatinine, mg/dL	AKI* %	PRI* OR	ARF* OR	Survival, AKI*, %
>90, Normal	0.7 (0.3-1.3)	0.42			71.1
60-89, Reduced	0.9 (0.7-1.8)	0.58	1.33	1.44	71.5
Stage 3	1.3 (0.9-3.0)	2.33	4.48	6.77	64.0
Stage 4	2.4 (1.7-5.4)	9.09	13.20	34.00	62.2

*p<0.0001; OR=odds ratio

A matched cohort (age, race, gender, diabetes, year of surgery) analysis was performed of patients undergoing colon surgery. Risk of ARF increased from 0.05 (95%CI, 0.01-0.13) in patients with normal function to 20.4 (95%CI, 7.43-83.86) in stage 4 CKD (p<0.0001). CKD stage 4 was also associated with increased 30-day mortality (OR, 0.20 to 5.03 p<0.0001).

In conclusion, CKD has a powerful association with post-operative AKI. The eGFR is a simple tool that can be used as a single estimator of kidney function to help identify patients at greatest risk for AKI in the critical post-operative period.

TRENDS IN OBESITY AND KIDNEY DISEASE RISK FACTORS IN CHILDREN AND YOUNG ADULTS: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES III AND 1999-2008).

G. M. Henriquez, H. Sarathy, J. Kumar, A. Skversky, M. Abramowitz, M. L. Melamed. Albert Einstein College of Medicine Bronx, NY; Weill Cornell Medical College New York, NY USA

Obesity prevalence is increasing nationally across all ages. Obesity indirectly contributes to chronic kidney disease (CKD) through the development of diabetes and hypertension and may have direct effects as well. An association between the increase in prevalence of abdominal obesity and an increase in CKD risk factors has not been studied in a large population based study of children and young adults.

We evaluated the changes in obesity prevalence over the past 20 years and its impact on CKD risk factors among children, adolescents and young adults ages 8-40 from NHANES 1988-2008 (n= 20,527) representative of 70,140,968 US residents.

The prevalence of abdominal obesity (AO) (adult male >102cm, adult female > 88cm, pediatric population: $\geq 90^{th}$ percentile for age and gender) increased from 23% in 1988-1996 to 36% in 2007-2008. This increase remained statistically significant after adjusting for demographic variables. There was a multivariable adjusted significant association between AO and higher risk of CKD risk factors, including systolic blood pressure (BP) [mean (SE)][+5.3 (0.2)], diastolic BP [+2.1 (0.3)], total cholesterol (+14.0 (1.0)), triglycerides [+50.9 (3.4)], LDL [+10.7(1.3)], HDL [-7.4 (0.3)], fasting plasma glucose [5.5 (0.7)], and fasting serum insulin [9.1 (0.5)]. AO was associated with a higher risk of microalbuminuria (OR 1.3 [1.1-1.6)] among adults ages 18-40 and with a higher risk of elevated C-reactive protein [OR 5.2 (4.5-6.0)] among children, adolescents and adults. Finally, AO was associated with a significantly higher estimated GFR by the Schwartz and CKD-EPI equation [mean (SE)] [+4.5 (0.7)], respectively, in children and adults. Analyzing the data using body mass index instead of AO did not significantly alter these associations.

In conclusion**,** AO has increased in prevalence in the US population aged 8-40 years of age. Even in this young cohort, AO predisposes to the development of CKD risk factors.

IMPACT OF eGFR FORMULAE ON PREVALENCE OF CKD IN RANDOM POPULATION SCREENING - THE TEXAS CKD STUDY

Mohammed S Hussain, Ronnie Orozco, John Moeller and Sharma Prabhakar.
Department of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose: Current knowledge of prevalence of CKD is based on sample studies from sources such as National Health and Nutrition Examination Surveys (NHANES). The true prevalence of CKD in general population is currently unknown. The aim of the present study was to estimate the prevalence of CKD in a representative population in a general community of West Texas and evaluate the impact of using two different formulae for eGFR on CKD prevalence.

Methods: Subjects with ages over 21 were prospectively recruited using random digit dialing method from a large West Texas community with a representative ethnic and urban- rural population mix. Detailed demographic and medical information as well as body weight, blood pressure and family history was obtained. Samples of urine and blood were collected for estimation of GFR and microalbuminuria. CKD was diagnosed using K-DOQI staging guidelines and the impact of using MDRD vs. CKD-EPI formula was evaluated on the prevalence ok CKD in this general community cohort.

Results: We have enrolled 1,606 subjects in the Texas CKD Study to date. Of them, 1,579 subjects completed the study which included 922 (57%) Whites and 566 Hispanics (35%) while Blacks comprised 105 (7%). About 25% of the subjects were above the age of 60 and 58% of total were women. Using the K-DOQI criteria and MDRD equation CKD was present in 17.03% while the prevalence was 15.3% using the CKD EPI formula. With CKD –EPI formula some of the subjects diagnosed as stage 3a without MA using MDRD formula were excluded from CKD thereby decreasing those with CKD stage III.

Conclusions: These observations indicate that 17.03% of the subjects in an unselected random population screening had CKD by K-DOQI criteria using the MDRD formula. This rate of prevalence is much higher than what is currently known. Of these 58% were in stage III or worse CKD. Most subjects were unaware of the condition. Using CKD- EPI formula excluded some of the CKD diagnosis and thereby decreased the prevalence slightly, which however was not statistically significant.

CKD PRACTICE AND REFERRAL PATTERNS IN ACADEMIC PRIMARY CARE CLINICS IN WEST TEXAS.

Abeer Kaldas, Ronnie Orozco, John Moeller, and Sharma Prabhakar.
Department of Medicine, Texas Tech University Health Sciences Center (TTUHSC), Lubbock, TX.

Purpose: The care of CKD patients currently is far from optimal in both primary and specialty clinics. Understanding the gaps in such care is crucial to improve the management of subjects with CKD. The aims of the current study are to examine the prevailing practices in the screening for CKD in primary care clinics and referral to nephrology, as well as to assess adherence to established practice guidelines of CKD detection and prevention in these clinics.

Methods: The study is a cross-sectional screening of patients ≥ 18 years of age seen in the primary care clinics of all TTUHSC campuses for screening of eGFR, microalbuminuria (MA) and prescription of ACEi/ARBs for those who had MA. Those that were not screened were tested and results communicated to their PCPs along with management suggestions when needed. A three months follow up to access changes in management by PCPs were evaluated. The study was approved by TTUHSC- IRB.

Results: Of a total of 840 subjects who completed the study, 70% had risk factors for CKD but kidney function not tested in 40%. Only less than half of the total patients diagnosed with advanced CKD (eGFR<60 ml/min) were referred to nephrology clinics. About 70% of those required to be tested -per guidelines- for MA were actually tested and 20% of those with MA were not placed on ACEi/ARBs. A total of 154 letters were sent to PCPs notifying practice guidelines. We noted upon our 3 month medical chart follow up, that the guidelines were followed only in 41 patients (27%).

Conclusions: The study demonstrates low awareness of CKD by providers in primary care clinics as shown by inadequate screening for eGFR and MA and non-adherence to established guidelines. These observations in academic medical centers point to potentially greater magnitude of the problem in non-academic practice settings. More emphasis is needed on providers education, awareness and screening of CKD and early referral to nephrologists.

METABOLIC SYNDROME AND PROGRESSION OF CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW

Sadaf S Khan, George Thomas, Sankar D Navaneethan.
Internal Medicine and Nephrology, Cleveland Clinic, Cleveland, OH.

Metabolic syndrome (MetS) and its components are associated with the development of chronic kidney disease (CKD). We conducted a systematic review to examine the association between MetS and the progression of CKD.

We searched MEDLINE (1966-Oct 2011), American Society of Nephrology, European Renal Association, and World Congress of Nephrology proceedings for studies that reported the progression of CKD in participants with MetS. Two reviewers independently assessed study quality and extracted data. We did not pool the results due to small number of studies.

Out of 550 citations, only three met inclusion criteria. The African American Study of Hypertension subgroup analysis (n=842) demonstrated that MetS is associated with CKD progression (RR 1.31, 95% CI 1.03, 1.7) but this association became insignificant when adjusted for proteinuria (p=0.2). In a Taiwanese population (n=746), MetS was significantly associated with CKD progression in stage 1-3 CKD patients (HR 1.60, 95% CI 1.02, 2.52), but not in stage 4-5 CKD. In a single center study of patients who underwent nephrectomy (n=146), patients with MetS had a significant decrease in glomerular filtration rate at 1 year follow-up compared to patients without MetS (p=0.03). The quality of included studies varied.

Associations between MetS and progression of CKD are unclear, and very few studies have examined this association, reporting varying results. Large prospective studies to understand the relationship between MetS, its components, and progression of CKD are warranted.

DESCRIPTIVE ANALYSIS OF ATTENDANCE TO DIALYSIS SESSIONS AMONG IN-CENTER HEMODIALYSIS PATIENTS

Steven Blume[1], *Andrew Lee*[2], *Feng Pan*[1], *Chien-Chia Chuang*[1], *Gregory Hess*[3], *Chun-Lan Chang*[3], *Matthew Gitlin*[2] [1]United BioSource Corp., Bethesda, MD; [2]Amgen Inc., Thousand Oaks, CA; IMS Health, Plymouth Meeting, PA

Prior literature estimates the percent of missed dialysis session between 1 and 10% (Leggat et al 1998, Gordon et al 2003). Missed dialysis sessions may have clinical and economic consequences to dialysis organizations, thus we examined the distribution of missed dialysis sessions among hemodialysis (HD) patients treated at hospital and independent dialysis organizations in the US.

Using electronic medical records for HD patients on epoetin alfa at 58 hospital and 46 independent dialysis organizations in the US (June 2009 - May 2011), we estimated the distribution of missed dialysis sessions at the patient-month levels. Patients were followed in the base case until the last observed session, defined by a gap of ≥ 30 days without dialysis. We assumed three times per week (TIW) dialysis (13 sessions per month) as perfect dialysis attendance.

Of the 2341 HD patients in our sample, 45% were female, 25% were African American, mean (SD) age was 63 years (15) and mean follow-up was 11.6 months. Patients received a mean (SD) of 11.9 sessions (2.6) per month. Overall, patients missed 8.3% of dialysis sessions; 60.4% of patient-months had 0 missed sessions; 32.3% of patient-months had between 1 and 5 missed sessions; while 7.3% of patient-months had greater than 5 missed sessions.

Our observed mean of 8.3% of sessions missed was on the higher end of the previously reported literature and may be due to differences in study methodology, age of the data and/or differences in timeframe. A high percentage of missed dialysis sessions may have important clinical, operational and economic implications for dialysis organizations to consider. Dialysis organization management techniques, such as anemia therapies that can adapt to patients' missed dialysis sessions (e.g. TIW ESA) may help dialysis organizations mitigate the economic impact of missed dialysis sessions on their organization.

IMPROVING CHRONIC KIDNEY DISEASE CARE WITH GROUP VISITS: A FEASIBILITY STUDY

Vicki Montoya, University of Central Florida, Orlando, FL, USA

Despite recommendations for medications and lifestyle adjustments that delay the progression of chronic kidney disease (CKD) and improve CKD-related outcomes, patients with Stage 4 CKD show alarming rates of morbidity and mortality as they progress to Stage 5 CKD/end-stage renal disease (ESRD). Patients' lack of knowledge, low levels of self-efficacy, and poor ability to self-manage their CKD are commonly noted in the outpatient setting and may account for the low achievement of targeted outcomes. New interventions are needed for CKD patients and their providers that improve adherence to recommendations. The purpose of the study was to investigate the feasibility of using nurse practitioner-facilitated group visits (GVs) in CKD Stage 4 patients within an office-based nephrology practice.

Based on Social Cognitive Theory and the Chronic Care Model, GVs consisted of 5 monthly visits. Elements of a usual nephrology visit, including a physical examination, were components of the GV, in addition to an interactive discussion of CKD-related topics. A single-group, pretest-posttest design was used. A convenience sample of 8 CKD Stage 4 patients was enrolled in the GV intervention. Data were collected at baseline (pre-intervention) and at 5 months (post-intervention). CKD-knowledge, self-efficacy, and self-management scores were obtained. Recruitment, retention, and intervention delivery strategies were examined. Patient satisfaction surveys were completed.

Eight patients completed the study; the attendance rate was 93%. Knowledge of CKD improved from a median of 69% to 86% (related sample Wilcoxon signed rank; $p = .012$). Self-efficacy scores did not show improvement ($p = .230$). Satisfaction with the GV model ranged from very good to excellent. Four physiological measurements were suggestive of significant improvement over the 6-month time frame.

The GV model is a feasible approach to improve CKD care. Improvements in knowledge scores, physiological parameters, and high satisfaction demonstrate a need for a randomized study in a larger sample to evaluate long-term outcomes.

IN-CENTER HEMODIALYSIS PATIENTS WHO MISS MULTIPLE DIALYSIS SESSIONS EXPERIENCE HIGHER MORTALITY RATES

Benjamin Morgan, Areef Ishani, Yelena Slinin, Haifeng Guo, Suying Li, Jiannong Liu, Dave Gilbertson, Allan Collins
University of Minnesota, Minneapolis VA Health Care System, Chronic Disease Research Group, Minneapolis, MN, USA

Patient adherence to a hemodialysis (HD) prescription has been felt to be an important indicator of dialysis patient outcomes.

Using United States Renal Database System data for patients who initiated HD between October, 2003 and September, 2006 (final cohort n=134,372) we studied the effect of missed HD sessions on patient mortality. The cohort's characteristics and frequency of dialysis sessions were defined using data during months 4-6 after initiation. Criteria for inclusion were incident in-center HD patients with age ≥20 who survived their first 6 months of ESRD, no hospitalizations for at least one of months 4-6 of HD, and no history of kidney transplantation. The cohort was divided into groups based on total number of dialysis sessions within a 90 day timeframe during months 4-6 of ESRD: >39, =39, 38-<39, or <38. Only months without hospitalization were included in the dialysis session calculation. A Cox proportional hazard model was used to compare 12 month mortality rates between the groups, adjusted for baseline characteristics, co-morbidities, socioeconomic status, and total number of hospitalized days within the 90 day run-in phase.

Using patients with 39 dialysis sessions as the reference, the adjusted HR for patients with < 38 dialysis sessions was 18% higher than in patients with 39 sessions (HR 1.18, CI 1.15-1.21) and 17% higher than those patients with >39 sessions (HR 1.17 CI 1.14-1.20).

In conclusion, incident in-center hemodialysis patients missing more than one dialysis session within a 90 day timeframe for reasons other than hospitalization experience significantly higher mortality rates as compared to those patients missing no dialysis sessions.

SELF-REPORTED CHRONIC KIDNEY DISEASE AND SLEEP DURATION: ANALYSIS OF THE NATIONAL HEALTH INTERVIEW SURVEY.

Abhishek Pandey, Fasika Tedla, Clinton Brown, Ajibola Adedayo, Girardin Jean-Louis, Moro Salifu
SUNY Downstate Medical Center, Brooklyn, NY, USA.

Evidence suggests that chronic kidney disease (CKD) is associated with sleep disturbances. This study examined association of sleep duration with the presence of self-reported CKD. We examined the National Health Interview Survey (NHIS), an annual cross-sectional household interview survey conducted by the National Center for Health Statistics and the Centers for Disease Control and Prevention. The survey utilizes a multistage area probability design that provides representative sample of U.S. households. A total of 128,486 Americans adults who participated in the 2005-2009 NHIS survey reported physician diagnosed CKD and their habitual sleep duration. Of the respondents, the average age was 45.3 ± 17.3 years, 51.6% were female, 14.9% Blacks, 1.9% reported physician diagnosed kidney disease, average sleep was 7.17 ± 1.4 hours. Compared with individuals reporting 7 hours habitual sleep, both short sleepers (<6 hours) and long sleepers (>8 hours) had a greater likelihood of reporting CKD (49.9% and 53.4%, $p<0.0001$; respectively). Multivariate regression analysis adjusting for sociodemographic, risk factors, and medical comorbidities showed that both short and long sleepers had a higher risk of reporting chronic kidney disease than individuals who reported sleeping 7 hours [OR = 1.97, 99% CI = 1.96-1.97; OR = 1.78, 99 % CI = 1.77 – 1.79; $p<0.001$; respectively]. In conclusion, short and long American sleepers have a greater risk of reporting chronic kidney disease than those sleeping 7 hours.

RVCARE: ASSERTIVE MANAGEMENT AND POSITIVE OUTCOMES IN FIRST 120 DAYS OF DIALYSIS

Naveena Reddy, Laura Schmidt, Tom Parker
Renal Ventures Management LLC, Dallas TX USA

High mortality rate is a concern in dialysis patients during the first year. The purpose of Renal Ventures Coaching for Action Results and Empowerment (RVCARE) program is through intense counseling and coordination of care, reduce mortality and hospitalizations and improve the quality of life (QOL) in incident patients during the first 4 months, there by impacting the outcomes within the first year and beyond.

RVCARE is introduced within the first week of admission to the clinic. The Care Partner (CP) educates patients on aspects of health including treatment options, permanent access care, diabetes management, cardiovascular (CV) disease, and referral to surgeons and specialists as needed. The focus is to make patients, physicians and staff aware of those issues that most impact outcomes, even superceding the usual clinical performance measures.

A total of 231 patients successfully completed the 120 days program in Texas and New Jersey area clinics. Patients were not excluded for co-morbid conditions, but had to be able to participate in the program. Selected outcomes are as follows:

Core Component	% At start	% At 120 days
Home Modality	14	26
Permanent Access	55	95

Access infections occurred at 3.8% (9 infections in 231 patients) and annualized mortality rate is 3.4% as opposed to 38% reported by USRDS 2011 data, at 4 months for all causes. Attention to nurtrition, removing catheters, volume management during intra- and interdialysis periods have had the greatest impact.

In conclusion, this abstract demonstrates that intensive care at the beginning of dialysis, among several other benefits, significantly improves outcomes and mortality rate in incident patients.

DECREASED LOWER EXTREMITY PHYSICAL PERFORMANCE IS ASSOCIATED WITH MORTALITY IN MIDDLE-AGED CHRONIC KIDNEY DISEASE. Baback Roshanravan, Cassianne Robinson-Cohen, Kushang V. Patel, Jonathan Himmelfarb, Bryan Kestenbaum. University of Washington, Seattle Sarcopenia is an under-recognized complication of CKD that may have important clinical consequences. We determined associations of upper and lower extremity performance measures with all-cause mortality in a prospective cohort of non-dialysis CKD patients. We measured grip strength, usual gait speed, timed up and go (TUNG), and 6 minute walk in 309 stroke-free participants with eGFR <90mL/min/1.73m^2. Study coordinators assessed mortality by telephone contacts, medical record review, and the social security death index. Median follow-up was 2.9 yrs (27 days- 4.8yrs) with 33 deaths. After adjustment for age, sex, race, body mass, diabetes, coronary disease, and eGFR by cystatin c, each 0.1 m/s slower gait speed was associated with an estimated 34% greater (95% CI 16% to 54% greater) risk of death. Each 1 second greater TUNG was associated with an estimated 11% greater (95% CI 4% to 19% greater) risk of death. In summary, lower extremity performance measures are associated with all cause mortality in non-dialysis CKD patients.

		Mortality rate per 1,000 pyrs	Adjusted HR (95% CI)
Grip	Normal grip	36	*reference*
	Weak grip	57	0.96 (0.42-2.19)
Gait speed	>0.8m/s	24	*reference*
	≤0.8m/s	79	2.90 (1.33-6.41)
TUNG	Faster (<12s)	26	*reference*
	Slower (≥12s)	75	2.48 (1.10-5.56)
6 min walk	≥350m	19	*reference*
	<350m	81	2.99 (1.14-7.85)

ASSOCIATION OF LEAN BODY MASS WITH GFR USING CREATININE VERSUS CYSTATIN C BASED GFR ESTIMATION IN NHANES 1999-2004

Deep Sharma, Matthew Abramowitz, Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY, USA.

Muscle wasting is a common complication of advanced CKD. However, changes in lean body mass (LBM) in earlier stages of CKD have not been examined. In addition, such analyses may be confounded by the method of GFR estimation. Using creatinine-based estimation, persons with loss of muscle mass may be misclassified into earlier stages of CKD. Estimation of GFR using serum cystatin C may be less prone to such misclassification. We therefore examined the association of LBM with eGFR estimated using both creatinine and cystatin C in adult participants aged ≥20 years in NHANES 1999-2004.

Body composition was measured by dual energy x-ray absorptiometry (DEXA). Percent LBM (%LBM) was calculated as total lean mass/total mass. eGFR was calculated using the CKD-EPI equation (eGFRcreat) and using a validated equation including cystatin C, age, sex, and race (eGFRcys). Linear regression models were created to examine the association of %LBM with eGFR categories.

In unadjusted analyses, lower eGFR was linearly associated with lower %LBM beginning with eGFR<120 mL/min/1.73m^2, using both eGFRcreat and eGFRcys ($p<0.001$). This association persisted after adjustment for age, sex and race using eGFRcys ($p<0.001$). However, using eGFRcreat the association was reversed after adjustment for age, sex and race, such that lower eGFR was associated with higher %LBM ($p<0.001$). For example, compared with eGFR≥120 mL/min/1.73m^2, eGFRcreat 15-29 mL/min/1.73m^2 was associated with 1.2% higher LBM (95% CI -0.2 to 2.5), whereas eGFRcys 15-29 mL/min/1.73m^2 was associated with 4.3% lower LBM (95% CI 1.6 to 3.7). There was also evidence of effect modification by age using eGFRcreat but not with eGFRcys.

In conclusion, reductions in LBM may be present in relatively early stages of CKD. Furthermore, after accounting for age, sex and race, the association of %LBM with eGFR is qualitatively different depending on the method of GFR estimation. This may be due to misclassification of GFR using creatinine-based estimation due to changes in LBM.

CKD MANAGEMENT IN PRIMARY CARE SETTING.

Yuvraj Sharma, Sean Flynn, Linet Lonappan, Saurabh Bansal, Sarun Thomas, Karthik Bekal, Nathan Okechukwu. Crozer Chester Medical Center, Upland, PA, USA.

Chronic Kidney Disease (CKD) is a major public health problem, affecting 1 in 9 US adults. Majority of the CKD patients are currently being managed by PCPs, and they are 20 times more likely to die from cardiovascular disease before they progress to hemodialysis or renal transplantation or see a nephrologist.

Goal of the study was to evaluate the management of CKD patients in our Internal Medicine Resident Continuity Clinic and to increase residents' knowledge about CKD management. A retrospective study was conducted and the data was collected from electronic medical records.

A total of 77 patients with CKD stage 3 and above were identified in the continuity clinic and included in the study. Patients already on hemodialysis and those followed by nephrologists were excluded. Anemia was present in 33 patients and its proper evaluation (i.e. iron studies, vitamin B12, folate levels and stool heme occult) was done in less than 60%. Bone mineral disease was also being under-evaluated, with the serum phosphorus, iPTH and vitamin D levels being checked in only 29%, 10% and 18% patients respectively. Urine protein/creatinine ratio was identified in only 14% patients. Diabetes was present in 39 patients and in only 54 % HbA1C was at recommended goal (i.e. HbA1C < 7%). In 43 % patients, hypertension was uncontrolled (two B.P readings >130/80 mm of Hg). Lipid profile was checked in 72 patients and goal LDL (i.e. LDL less than 100 mg/dl) was reached in less than 47% patients. Only 35% of the patients were immunized for the recommended pneumococcal and influenza vaccine.

In conclusion, CKD is being under-evaluated and under-treated, leading to loss of the opportunities to prevent its complications. There is a need to increase the awareness among PCPs to provide CKD patients with better quality care, to slow their progression to End Stage Kidney Disease and for timely referral to the nephrologists.

IMPACT OF PREDIALYSIS EDUCATION ON HOME DIALYSIS UTILIZATION

Richa Pandey, Dumitru Rotaru, and Ashutosh Shukla,
Division of Nephrology, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR.

Comprehensive pre-dialysis patient education (CPE) leads to better CKD care and higher choice of home dialysis (HOD) amongst the incident ESRD patients. However, the true utilization rates of HOD amongst those choosing HOD after CPE is not known. We present a retrospective review of our newly established multidisciplinary CPE clinic over last 18 months to study the impact of CPE on both, the patient's initial choice and final true utilization of HOD modalities.

RESULTS: One hundred and three patients with mean age of 55 years (57% female) were identified during the period of 18 consecutive months since the clinic was established. The mean MDRD eGFR on referral was 17.5 ml/min. Large majority of patients had Medicare/Medicaid (69%), whereas, private insurance was available in 18%, and 13% of patients had no health care coverage. 63% of patients chose HOD after the first session of CPE (49% peritoneal dialysis and 14% home hemodialysis) where as 30% of those receiving CPE chose in-center hemodialysis (30%) and the rest (7%) were undecided. Only 57 (55%) patients attended more than one CPE session with a third of them (19 patients) changing the choice of dialysis modality on subsequent visits. At the end of the follow up period (mean duration 4.05 months, with average 2.4 CPE visits per patient), 84% of patients maintained their primary modality choice in HOD. Twenty six (25%) patients progressed to ESRD during follow up. 15 of these 26 patients had initially chosen PD as their modality of choice, and 14 (93%) were initated on PD.

In conclusion, our study re-establishes the fact that comprehensive pre-dialysis education leads to a higher choice of Home dialysis modalities. Additionally, it gives an indication that this choice of Home dialysis modality eventually translates in higher utilization of home dialysis in majority of those patients.

IMPORTANCE OF RATE OF EGFR DECLINE IN PREDICTING THE NEED FOR DIALYSIS IN CKD PATIENTS

Neeraja Talakanti, David Leehey, Kavitha Vellanki. Hines VA Medical Center, Hines, IL

Current KDOQI guidelines recommend referring patients for preparation for renal replacement therapy when eGFR is < 30 mL/min/1.73m^2, with arteriovenous fistula (AVF) placement at least 6 months before anticipated need for dialysis. However, the means of anticipating need for dialysis are not well delineated, and patients with a slow rate of progression of kidney disease may not ever require dialysis.

We did a retrospective chart review of CKD patients at Hines VA Hospital, IL who underwent preemptive AVF placement during the period of 2004-2009 with a minimum follow-up of 2 years post AVF placement (range 2-7 years). We used a linear regression tool to estimate the rate of eGFR decline over the 3-year period prior to AVF placement.

A total of 138 patients underwent AVF placement for CKD during the study period. Of these, 21 either died prior to dialysis (11), had AKI (7), or had insufficient data for analysis (3). Of the 117 patients analyzed, mean eGFR at time of AVF placement was 17.4 $\pm$ 5.9 mL/min/1.73m^2, 96% had hypertension, 76% had urine Pr/Cr > 1 g/g, 74% had diabetes, 30% had CHF, and 28% had anemia requiring ESAs. 23 patients never required dialysis and 94 did eventually require dialysis (39 within one year of AVF placement and 55 after more than one year). Rate of decline of GFR was significantly higher in the group requiring dialysis than in the group who never required dialysis (mean/SD: 8.7 $\pm$ 7.2 vs. 5.8 $\pm$ 3.2 mL/min/1.73m^2/yr, $p < 0.05$). Of patients with rate of decline of GFR $\geq$ 10, only 4/35 (11%) never required dialysis, whereas in patients with rate of decline of GFR < 10, 19/82 (23%) never required dialysis.

Rate of decline of GFR is an important factor in predicting future need for dialysis and should be considered when deciding when to place hemodialysis access.

EFFECTS OF DUAL BLOCKADE OF THE RENIN ANGIOTENSIN SYSTEM (RAS) IN DIABETIC KIDNEY DISEASE (DKD): A SYSTEMATIC REVIEW AND META-ANALYSIS

Jacqueline T. Pham[1], Brian P. Schmitt[1,2], David J. Leehey[1,2] [1]Edward Hines Jr.VA Hospital, Hines, IL, [2]Loyola University , Maywood, IL USA

There is much evidence to support a renoprotective effect of inhibitors of the RAS in DKD. However, it remains unclear whether dual RAS blockade has additional benefits or risks.

A systematic review and meta-analysis of studies of DKD patients with overt proteinuria was performed. All randomized, controlled, parallel- or crossover-design studies which compared combination RAS blockade to monotherapy were included. The primary outcome measure was the percent reduction in proteinuria in combination therapy vs.monotherapy. Secondary outcomes included post-treatment difference in proteinuria, changes in systolic blood pressure (SBP), glomerular filtration rate (GFR), and serum potassium, and incidence of hyperkalemia. Several sub analyses were also performed.

Proteinuria was reduced by 27% after treatment with combination therapy and SBP was 4.1 mmHg lower. However, hyperkalemia was 3-fold more common with dual blockade.

Dual RAS blockade in patients with DKD reduces proteinuria and SBP but is associated with a higher incidence of clinically significant hyperkalemia. Further studies assessing long-term outcomes are needed to weigh the benefits versus risks of combination RAS inhibitor therapy.

DESIGN AND RATIONALE FOR RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED PHASE 2 STUDY TO EVALUATE THE SAFETY AND EFFICACY OF CTP-499 IN PATIENTS WITH DIABETIC NEPHROPATHY (DN)

LuAnn Sabounjian, James Shipley, Virginia Braman, Mark Harnett, Lijun Wu, David Turnquist, Philip Graham; Concert Pharmaceuticals, Lexington, MA, USA

CTP-499 is a deuterium-containing analog of 1-((*S*)-5-hydroxyhexyl)-3,7-dimethylxanthine (HDX), an active metabolite of pentoxifylline (PTX). It is being developed as a treatment for DN based on previous evidence of beneficial effects with PTX in chronic kidney disease patients. CTP-499 retains the binding, potency and selectivity of HDX but appears to have an improved metabolic profile. Nonclinical studies have shown CTP-499 possesses anti-inflammatory, anti-fibrotic and anti-oxidative properties. In rats with streptozotocin-induced diabetes, CTP-499 significantly decreased kidney weight, reduced plasma cytokines, and showed a trend to lower urine albumin levels. CTP-499 is being developed as a novel treatment for DN which is expected to be additive to RAS blockade. Preliminary data from a Phase 1b study in stage 3 CKD patients demonstrated that CTP-499 600 mg controlled release tablets were well tolerated.

170 patients, from 50 US centers, with type 2 DN, macroalbuminuria (UACR ≥200 mg/g if male and ≥300 mg/g if female and ≤5000 mg/g for either) and eGFR between 30 and 89 mL/min/1.73m^2 (MDRD), receiving concomitant ACEi and/or ARB therapy. After a 4 week screening period, during which BP must be ≤145/90 mmHg, patients will be randomized (1:1) to receive 600 mg BID CTP-499 or placebo. Treatment duration will be 24 weeks. UACR will be assessed pre-treatment and at Weeks 16, 20, and 24. At each visit eGFR will be determined along with pro-inflammatory proteins and markers of fibrosis and kidney function. Plasma concentration of CTP-499 and its metabolites will be assessed monthly.

Primary endpoint will be % change in UACR from pre-treatment to on-treatment using a longitudinal mixed model with data from Weeks 16, 20, and 24. This study will evaluate whether CTP-499 effectively reduces UACR in the treatment group as compared to placebo.

EFFECT OF LOSARTAN AND SPIRONOLACTONE ON LIPOPROTEIN METABOLISM IN DIABETIC NEPHROPATHY

Anand Srivastava, Beverley Adams-Huet, Gloria L. Vega, Robert D. Toto, UT Southwestern Medical Center Dallas, Texas, USA.

Angiotensin-converting enzyme inhibitors (ACEi) and angiotensin receptor blockers (ARB) can improve dyslipidemia in patients with diabetes and albuminuria. But, it is not known whether combined ACEi+ARB or ACEI+mineralocorticoid receptor blockade can improve dyslipidemia. We hypothesized that long-term administration of either losartan (Los) 100 mg or spironolactone (Spiro) 25 mg once daily added onto lisinopril 80 mg once daily would improve dyslipidemia in diabetic nephropathy (DN). We measured lipid levels, very low-(V), intermediate-(I), low-(LDL), high-(HDL) density lipoproteins, LDL particle size and their respective cholesterol (C), and apolipoprotein B levels (ApoB), and urine albumin/creatinine ratio (UACR) at 12 week intervals during a 48 week randomized, double-blind placebo-controlled trial in 81 patients with DN. Plasma lipids and lipoprotein C were analyzed enzymatically and Apo B was determined chemically. Data were analyzed by mixed model repeated measures. (Values in table are geometric mean, N=27 per group)

Variable	Drug group	Week 0	Week 48	Δ, %	p-value
UACR, mg/g					0.02
	Placebo	917	507	-24.6	
	Los	897	552	-38.2	
	Spiro	1094	542	-51.6	
TG, mg/dl					0.0002
	Placebo	183	192	34.3	
	Los	175	150	-20.9	
	Spiro	191	219	-5.1	

There was no correlation between change in UACR and change in TG or any of the lipid or lipoprotein measurements. Compared to placebo Los, but not Spiro, decreased TG (-20.9% vs +34.3%, $p<0.0001$), V+I C (-18.8% vs +21.3, $p=0.0005$), and V+I-ApoB (-13.2% vs +21%, $p=0.0006$). There were no significant changes in body weight, HbA1c or other lipoprotein variables. We conclude that losartan improves dyslipidemia in patients with DN. We speculate that the mechanism of this effect is improved clearance of VLDL and remnant lipoproteins.

THE URINE MICROALBUMIN TESTING RATE IN PATIENTS WITH TYPE II DIABETES MELLITUS (TYPE II DM) AT AN ACADEMIC COMMUNITY HEALTH CENTER: A RETROSPECTIVE ANALYSIS

Dhavalkumar Sureja, Ghada Mitri
Easton Hospital, Drexel University Affiliate, Easton, PA

This retrospective analysis was undertaken to study the initial testing rate and subsequent follow-up of the urine microalbumin test in type II diabetic patients.

We reviewed the charts of 141 type II diabetic patients seen between 2004 and 2010 at the clinic. Total 78% of patients had been tested for urine microalbumin at least once after 2004. Of those tested, only 10% had received tests annually after the diagnosis of type II DM. On average patients were tested on 47% of occasions of which they should have been tested regularly. Among those tested, 69% were classified as negative, 23% as microalbuminuria and 8% as macroalbuminuria. The results show a suboptimal annual testing rate and follow-up. This could be related to patient factors, such as lack of adherence to appointments and socioeconomic status or health care provider factors such as lack of awareness of the guidelines or care provided by multiple physicians in training.

Microalbuminuria is an early clinical finding in diabetic nephropathy and it is frequently underutilized. According to quest diagnostics, the rate of urine microalbumin testing in diabetic patients is 43.1%; ours is 78%. As a quality measure we need a follow-up study utilizing the Plan-Do-Study-Act cycle to achieve 100% testing compliance and to optimize our patient care.

FATAL HYPERMAGNESEMIA RESULTING FROM THERAPEUTIC DOSES OF OVER THE COUNTER MAGNESIUM CONTAINING LAXATIVES AND ANTACIDS

Muhammad Rizwan Afzal, Nicholas Pleat, Tahir Sajjad
Good Samaritan Hospital, Cincinnati

An 84-years old female was brought to ED with altered mental status from nursing home. The patient had invariably complained of indigestion and constipation for two weeks and received Maalox, Milk of Magnesia and Magnesium Citrate this time. The patient had a large bowl movement followed by unresponsiveness 12 hours prior to arrival in the ED. The vitals in ED were; BP: 76/36, pulse: 110 BPM, respiratory rate: 15 per min, temperature 99.8 F and oxygen saturation of 78 % in ambient air. The abdominal examination revealed rigidity and hypoactive bowl sounds. The ABGs revealed a pH of 6.91 & CO2 of 142. BMP was significant for a creatinine of 2.8 mg/dl with an unknown baseline. Magnesium level was not checked. An abdominal x-ray revealed free air in the peritoneal cavity. The patient underwent an emergent repair of the perforated gastric ulcer. Routine post-op labs revealed extreme hypermagnesemia (Mg = 9.7 mg/dl). A calcium gluconate infusion as well as emergent hemodialysis led to drop of magnesium level to 5 mg/dl after 2 hours. However, the patient continued to require higher vasopressor support and finally developed cardiovascular arrest. **Conclusion**: OTC magnesium containing products should be taken cautiously in elderly people with vulnerable kidney function.

PSEUDOHYPERKALEMIA IN EXTREME LEUKOCYTOSIS

Mohini Alexander, Hitesh Patni, Michael Gitman, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York, United States.

Pseudohyperkalemia occurs occasionally in patients with extreme leukocytosis. We present a rare case of extreme pseudohyperkalemia of 13.8mmol/L in a patient with chronic lymphocytic leukemia who was managed with emergent hemodialysis. An 81year-old male with known chronic lymphocytic leukemia presented with dyspnea on exertion and lower extremity edema.He was admitted for his first cycle of chemotherapy with rituximab. On presentation he was found to have an elevated WBC count of 525K/microL, potassium of 5.5mmol/L, serum bicarbonate of 22mmol/l and serum creatinine of 1.48mg/dL.Overnight his WBC count trended up to 710K/microL, potassium was extremely high at 13.8mmol/L, serum bicarbonate was 31mmol/l and serum creatinine was 1.57mg/dL. The blood sample was confirmed to be non-hemolyzed. Tumour lysis syndrome causing hyperkalemia was unlikely given that serum uric acid and serum phosphorus were not elevated at 5mg/dL and 4.4mg/dL respectively and serum calcium was only slightly low at 7.9mg/dL. A repeat blood gas potassium was sent for a suspicion of pseudohyperkalemia which also came back elevated at 9.8mmol/L. EKG showed first degree AV block and prolonged QTc of 450ms without peaked T waves. The patient was placed on telemetry and treated with intravenous calcium gluconate, dextrose 50%, insulin and kayexalate.The patient remained asymptomatic throughout. Given this degree of hyperkalemia on repeat blood gas analysis we dialyzed the patient against a 2K dialysate bath for 3 hours. Repeat serum potassium drawn after hemodialysis treatment was further elevated at 14mmol/L. Our suspicion for pseudohyperkalemia was further strengthened and we decided to draw a blood gas potassium and requested the laboratory to analyze the sample right away with minimal storage at room temperature.The repeat potassium came back at 4.4mmol/L.This case represents the importance of having a high suspicion of pseudohyperkalemia in patients with extreme leukocytosis and to repeat the potassium level using blood gas analysis which is a quick and reliable test so as to avoid inappropriate management and untoward complications of potentially even making patients hypokalemic.

PSEUDOINFARCTION DIALYZABLE CURRENTS OF INJURY

Ricardo Baltodano, Chandandeep Takkar, Nasim Mastouri, Hasan Salameh, Shilpa Rastogi. University of Texas Medical Branch, Galveston, Texas.

Hyperkalemia can cause several characteristic ECG abnormalities. Rarely, ST-segment elevation mimicking myocardial infarction, described as a "pseudo infarction" pattern can occur.

We report a case of a 54 year old male with a history of Type 2 diabetes and alcohol abuse who presented to the ED with history of acute onset of nausea, vomiting and generalized weakness. On arrival ECG showed ST elevation in leads V1-V3 along with hyper acute peaked T waves in leads V4-V6. A diagnosis of acute STEMI was made and the patient underwent an emergent coronary angiogram which revealed angiographically normal coronary arteries. Later the serum chemistries revealed: Na of 114 mmol/L, K of 7.9 mmol/L, bicarbonate 18 mmol/L, BUN of 141 mg/dL, creatinine of 17.4 mg/dL, glucose 307 mg/dL and Troponin I was 0.051 ng/mL. The patient was aggressively fluid resuscitated. The hyperkalemia was treated with insulin, dextrose, calcium gluconate and sodium polystyrene sulfonate. A repeat potassium was 4.9 mmol/L and subsequent ECG showed resolution of ST-T changes 9 hours later. Patient had a complete renal recovery and uneventful hospitalization.

Even though the 'Pseudo infarction' pattern of hyperkalemia is well known, ST segment elevation is so striking at times that one cannot help agonizing over the possibility of coexistent acute infarction. With the current emphasis on reducing door-to-needle times for primary Percutaneous Coronary Intervention (PCI), it is worth remembering that metabolic abnormalities can sometimes alter electrocardiographic appearances. Proceeding to urgent cardiac catheterization before metabolic abnormalities are corrected may expose to our patients to unnecessary treatments, along with its attendant risks An echocardiogram can be extremely useful in this situation.

PSUEDOHYPERKALEMIA WITH FIST CLENCHING: A GRADED PHENOMENON

David Bennett[1], Maitreyee Gupta[2], Lawrence S. Weisberg[2]
[1]Department of Medicine, New York Hospital Cornell Weill Medical Center, New York, NY, and [2]Division of Nephrology, Department of Medicine, Cooper Medical School of Rowan University, Cooper University Hospital, Camden, NJ, USA

Pseudohyperkalemia is a false elevation of serum potassium concentration (S_K). Unrecognized, it can lead to potentially harmful treatment. Fist clenching during phlebotomy can cause pseudohyperkalemia, but the determinants of its magnitude are unknown. We hypothesized that the increase in S_K is proportional to the force of muscle contraction.

We studied 8 healthy adult subjects. Maximum voluntary contraction (MVC) was determined by squeezing a dynamometer with maximum force for one minute. We measured antecubital vein S_K at baseline and after one minute, under each of five conditions: tourniquet only; 20%, 40%, 60%, and 80% of MVC, with a one-minute washout in between. Serum was analyzed for K and sodium using routine clinical laboratory methods. We analyzed differences with paired t-test; change over MVC, using one-way ANOVA and linear regression (using SPSS).

Results of S_K (mEq/L, mean ± SD) are shown as baseline *vs.* final, by condition: **tourniquet only**, 3.7 ± .2 *vs.* 3.6 ± .2, p=.73; **20% MVC**, 3.7 ± .3 *vs.* 4.5 ± .4, p <.01; **40% MVC**, 3.8 ± .3 *vs.* 4.6 ± .6, p<.01, **60% MVC**, 3.6 ± .2 *vs.* 5.1 ± .7, p<.01; **80% MVC**, 3.8 ± .2 *vs.* 5.6 ± .6, p<.01. There was a linear increase in %-change S_K with increasing force of contraction (R^2 = 0.60; p <.001). No such relationship was seen with serum sodium concentration (R^2 = .01; p = 0.31).

We noted a graded and clinically important rise in S_K with force of fist clenching. Future studies will estimate the prevalence of significant pseudohyperkalemia, and assess the effect of clinical factors that alter internal potassium balance on the magnitude of pseudohyperkalemia.

A CASE OF GITELMAN SYNDROME WITH A NOVEL MUTATION

Sanjay Chaudhary, Qi Qian. Mayo Clinic, Rochester, MN

Gitelman's syndrome (GS) is a rare, autosomal recessive, salt-losing tubulopathy caused by mutations in the SLC12A3 gene, which encodes the thiazide-sensitive NaCl cotransporter resulting in hypokalemic metabolic alkalosis, hypomagnesaemia, and hypocalciuria.

A 19-year-old Caucasian male presented for evaluation of recurrent muscular cramps on exertion since about 12-13 years of age. They had been severe enough to warrant him being taken to the emergency room on multiple occasions and evaluation revealed potassium to be as low as 2.6 mEq/L. He had been on potassium chloride supplementation 240 mEq daily. On presentation to our institution, his BP was 107/62 mmHg. His serum chemistry revealed potassium 3.2 mEq/L, bicarbonate 31 mmol/L, calcium 10.2 mg/dL, and magnesium 1.5 mg/dL. His plasma renin activity was 15 ng/ml/hour and aldosterone 63 ng/dL. His 24-hour urine calcium was 66 mg and calcium/creatinine ratio 0.04. Mutation analysis for Gitelman syndrome showed a heterozygous mutation in exon 4, c.533C>T that is predicted to result in abnormal protein (p.Ser178Leu) and a heterozygous variant in exon 6, c.815T>C on the other allele that is of unknown significance. The patient was effectively treated with potassium 240 mEq/day, amiloride 10 mg/day, and magnesium oxide 1600 mg/day.

To date, >180 mutations in SLC12A3 have been reported. We describe a patient who exhibits Gitelman phenotype with a novel double heterozygous variant of SLC12A3 that has not been previously known to be pathogenic.

HYPONATREMIC HYPERTENSIVE SYNDROME

Victor Fayad, Timothy Muchayi, Feras Helou, Omid Bakhtar, Irfan Omar, Gregory Berger. Sinai-Grace Hospital/DMC, Detroit, Michigan.

Hyponatremic hypertensive syndrome is an uncommon syndrome where the reno-vascular system affects the blood pressure (BP) along with the sodium levels. The syndrome is important, in part, because it can lead to adverse outcomes in cases of misdiagnosis due to loss of water and sodium as well as uncontrolled hypertension.

We report a case of a 51-year-old African American male with a past medical history of hypertension who presented to the emergency department with sudden onset of shortness of breath, diplopia, polydipsia, generalized weakness, and severe proximal muscle cramps. His medications included metoprolol, hydralazine and amlodipine. He was allergic to ACEIs due to prior development of angioedema.

On physical examination, he was found to have a BP of 204/134. There were no focal neurological findings and fundoscopic exam did not demonstrate cotton wool exudates, hemorrhages or silver wiring. The rest of his physical exam was unremarkable.

Serum sodium level was 122 mmol/l, potassium 2.2 mmol/l and an anion gap of 10. Serum renin level was 3565 ng/dl/hr and serum aldosterone level was 54.3 ng/dl. Urinary sodium was 45 mmol/l, urinary potassium 14.7 mmol/l and urine osmolality was 178 mOsm/kg. Chest X-ray was negative. A renal ultrasound showed atrophy of the right kidney. A Nuclear Medicine Captopril Renal Scan demonstrated split renal function of 87% and 13% in right and left kidney, respectively. Diuretics were subsequently stopped and the patient was placed on his home antihypertensives with the addition of spironolactone. He had marginal improvement in his BP. He was subsequently scheduled for a right nephrectomy after which his hypertension and hyponatermia significantly improved.

The combination of hyponatremia and hypertension can be caused by renal artery stenosis, diuretic use, chronic renal failure, or renin-secreting tumors amongst others. Hyponatremic hypertensive syndrome is one of the rarest but frequently under recognized causes of this constellation. The treatment of choice is ACEIs. However, in the case of ACEI allergy, ARBs or Aliskerin can be used. Nephrectomy of the ischemic kidney is the ultimate definite treatment.

VIRTUAL PATIENTS TO TEACH ELECTROLYTE DISORDERS

Laura Ferreira Provenzano, Kristine Schonder, Hoda Kaldas. University of Pittsburgh, School of Medicine and School of Pharmacy, Pittsburgh, PA, USA

Electrolyte abnormalities are common. Accurate patient assessment and lab interpretation are critical in their management**.** Medical and pharmacy students are taught physiology of electrolyte disorders in the didactic portion of the curriculum. Cases are reviewed through lectures or bedside discussion during clinical rotations. The complexity of these disorders makes students unable to achieve competency unless exposed to many cases. Previous studies showed most students lack electrolyte management competency. Those with the opportunity to practice problem solving score better on tests than those who depend on standard teaching methods. We propose an innovative approach to teach electrolyte disorders using VpSim, an online virtual patient player, authoring and administration application for medical education. Virtual patients are computer simulations of clinical encounters where learners interact with an on-screen patient.

Course objectives were established with the aid of experts in the field. The first phase involved development of four cases to teach water disorders (hypo and hypernatremia). Cases included a clinical scenario and questions covering key aspects of the pathophysiology and treatment of the disorder. Questions were followed by pertinent feedback and combined with a tutorial integrating the physiology learned in the curriculum with clinical aspects of the virtual patient. Cases also allowed experiencing possible harms associated with mismanagement. They were reviewed by 3 senior nephrologists for content and level of difficulty.

Cases will be validated to assess effectiveness in improving knowledge by comparing scores of pre and posttests and the feasibility to integrate the module in the current medical and pharmacy curricula. If proven effective, virtual patients can be used by other specialties to integrate basic science with common clinical conditions and provide more cases to teach complex disorders and topics that require repeated practice to promote competency.

HYPONATREMIA - A RARE COMPLICATION OF GITELMAN'S SYDROME

Anirban Ganguli, Judith H Veis
Washington Hospital Center, Washington, DC

Gitelman's syndrome(GS) is a rare autosomal recessive genetic disorder caused by mutations in the SLC12A3 gene encoding the thiazide sensitive NaCl cotransporter(NCC) .We report a 49 yr old , normotensive woman, who presented in 2000 with longstanding hypokalemia since her 20s thought to be due to Bartter's syndrome. Biochemistry showed hypokalemia, hypomagnesemia, normal renal functions, metabolic alkalosis, high fractional excretion(FE) of chloride and potassium and hypocalciuria with a negative urinary diuretic screen which was consistent with a diagnosis of GS. Mg and K were replaced to normal levels. She returned to our clinic in 2008 for evaluation of asymptomatic hyponatremia after a hip fracture with lowest serum Na 127mmol/L. Clinically she was euvolemic. On re-evaluation she had serum Na 132 mmol/L, BUN 16mg/dL,creatinine 0.7mg/dL, low serum osmolarity 275.3mOsm/kg , urine osmolarity 879mOsm/kg, urine Na58mmol/L, low serum uric acid , normal thyroid and adrenal function suggesting a diagnosis of Syndrome of Inappropriate Antidiuretic hormone (SIADH). Clinical and radiologic evaluation did not reveal any intracranial, neoplastic or pulmonary cause of SIADH. She subsequently improved with fluid restriction and high salt diet though remains mildly hyponatremic with values ranging 134-137mmol/L. Despite disturbed urinary dilution capacity, hyponatremia is distinctly rare in GS and has only been reported in the setting of known stressors. This patient had persistent hyponatremia in the absence of other known factors. We hypothesize that patients with GS have a fragile sodium balance with impaired diluting capacity similar to those on thiazides. Any additional stimulus for ADH secretion may tip the balance and lead to significant hyponatremia.

HYPERCALCEMIA: AN UNUSUAL PRESENTATION OF UTERINE LEIOMYOMA

Amarinder Garcha, Purva Gumaste, Sujith Cherian, Apurv Khanna. SUNY Upstate Medical University, Syracuse, NY.

A 79 year old female was admitted with altered mental status and acute renal failure after a fall. She was lethargic but had no focal neurologic deficits. Laboratory data revealed a serum creatinine of 2.8 mg/dL and serum calcium of 17mg/dL.

Renal ultrasound, serum and urine protein electrophoresis were unrevealing. Further workup revealed a suppressed parathyroid hormone level of 14 pg/ml (normal :15-65 pg/ml), 25-hydroxy vitamin D level of 28 ng/ml and an elevated parathyroid hormone related peptide (PTHrP)40 pg/ml (14-27 pg/ml). CT scan of the abdomen and pelvis showed multiple punctate calcifications within the uterus thought to be leiomyomas. A CT scan of the thorax was unrevealing. A bone scan did not show any areas of osteolytic metastatic disease. Her CA 125 level was elevated at 48 units/mL(<35 units/mL). A MRI of the pelvis without contrast revealed multiple leiomyomas with the dominant one involving the right lateral wall. Her hypercalcemia and renal failure resolved with aggressive hydration and intravenous furosemide.

Hypercalcemia is seen in nearly one-third of the patients with a malignancy most commonly due to secretion of PTHrP. This is known as Humoral Hypercalcemia of Malignancy (HHM). However, humoral hypercalcemia associated with a benign tumor is extremely rare and has been described in uterine leiomyoma, dermoid cysts of the ovary and mammary hyperplasia. To our knowledge, hypercalcemia associated with uterine fibroids has been described in only three cases previously and is thought to be associated with production of PTHrP.

TIZANIDINE: A CAUSE OF HYPOKALEMIA. Georges Nakhoul, Amr El Toukhy, James Simon. Cleveland Clinic, Cleveland, OH, USA.

Hypokalemia is a common clinical problem, most often due to unreplenished losses from the GI tract or the kidney. Drug-induced renal potassium wasting is commonly seen with diuretic use. Tizanidine (Zanaflex™) has been associated with bradycardia, prolonged QT interval and torsades de pointe. There has been one case report of hypokalemia in association with Tizanidine and diuretic use. We present the case of a 47-year-old female admitted to a peripheral hospital after being found unresponsive, having had a history of progressive weakness. She was intubated for airway protection and transferred to the Cleveland Clinic for further management. Labs at transfer showed: creatinine 1.06mg/dL, sodium 146mmol/L, potassium 2.9mmol/L, chloride 113mmol/L, bicarbonate 19mmol/L, albumin 3.9g/dL, magnesium 1.8 mg/dL. Her altered mentation resolved without treatment but the hypokalemia persisted (K ~ 2.5-3.1mmol/L) despite aggressive intravenous replacement. Trans-tubular potassium gradient (TTKG) was 5.7, suggesting an element of renal potassium wasting. She denied vomiting, diarrhea, alcohol or substance abuse, laxative or diuretic use. Her EKG was relevant for sinus tachycardia and prolonged QTc interval (582ms).

She had been started on Tizanidine 8 months prior. She was admitted with hypokalemia 4 months later that was controlled with oral potassium supplements. The Tinazidine dose was doubled two weeks prior to presentation. Tizanidine was discontinued with resolution of hypokalemia and EKG changes within 24 hours and metabolic acidosis in 48 hours.

Tizanidine (Zanaflex) is a centrally acting muscle relaxant that is known to cause sinus bradycardia and torsade de pointes in animal models as well as in humans. Our patient was tachycardic, which is not a typical adverse reaction to Tizanidine. This case is unique as it is the first case of hypokalemia directly linked to the use of Tizanidine, as evidenced by the onset of hypokalemia initiation of Tizanidine that resolved after it was discontinued. The mechanism in this case appears to be renal potassium wasting.

EXTREME HYPOCALCEMIA ASSOCIATED WITH DENOSUMAB: Arkadiy Pinkhasov, Kiran Goli, Nandheesha Hanumanthappa, Rouzbeh Afsari, Michael Germain, Gregory Braden. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. **Introduction:** Denosumab is a monoclonal antibody to the RANK ligand inhibitor approved by FDA in 2010 for prevention of skeletal-related events in patients with bone metastases from solid tumors. Severe hypocalcemia has been described in the package insert and was seen more often in patients with renal insufficiency. We present a case of extreme hypocalcemia in a patient with normal renal function who received one dose of denosumab. **Case:** An 84 year old man diagnosed with metastatic prostate cancer. He was initially started on leuprolide injections. His whole body bone scan revealed diffuse osteoblastic lesions involving spine, ribs and femur. His serum calcium was normal at 9.0 mg/dL. He was not on calcium or vitamin D supplements. He received desonumab (Xgeva) 120 mg subcutaneously for prevention of skeletal events. Four weeks later he presented with fatigue, paresthesias and depression and his labs revealed serum calcium of 3.9 gm/dL (normal 8.6 to 10.5 mg/dL) and ionized calcium of 0.64 mmol/L. His serum albumin was 3.7 gm/dL. His phosphorus was 2.1 mg/dL and magnesium was 1.2 meq/L. PTH was elevated at 345 pg/mL. His creatinine was 0.6 mg/dL. His active form of vitamin D (1,25) was within normal limits. His EKG revealed prolonged QTc interval of 532 ms. He was treated with intravenous calcium initially followed by oral calcium and vitamin D supplements. At one month follow up he was still mildly hypocalcemic requiring calcium and vitamin D supplements. **Conclusion:** Physicians need to be aware of dangerously low levels of hypocalcemia with denosumab even in the setting of normal renal function. Close monitoring of calcium and phosphorus should be done and prophylactic administration of calcium and vitamin D supplements should be given to prevent life-threatening complications of hypocalcemia.

CARBON MONOXIDE POISONING, PROLONGED QTc SYNDROME WITH HYPOKALEMIA: MYSTERY REVEALED

Rupesh Raina, Katherine M Dell, Mark Dugan, Lisa Metz, Beth A Vogt, Cleveland, Ohio, United States of America.

We report the case of a 12 year old girl who presented with a syncopal episode. She had been exposed to carbon monoxide 1 week prior to admission, and was treated with hyperbaric oxygen. Her evaluation showed hypokalemia(2.4 meq/L) and a prolonged QTc interval with normal carboxyhemoglobin. She had orthostatic changes in blood pressure and pulse; however physical examination was otherwise normal. There was no history of prior episode of syncope, muscle cramping, salt craving, vomiting, or diuretic use. Two siblings had a history of prolonged QTc, and the patient's paternal uncle had sudden cardiac death of unknown etiology at the age of 29 years. Further evaluation revealed a metabolic alkalosis (HCO3=30 meq/L), urine Cl 58 meq/L, TTKG 8, hypomagnesemia (1.2 meq/L), and FEMg > 8%. Urinary Ca was undetectable. Our patient's constellation of clinical and laboratory findings suggested a diagnosis of Gitelman syndrome. Oral KCl and MgO supplements were initiated, and spironolactone later added, to decrease the requirement for KCl supplementation. No further syncopal episodes have occurred.

Gitelman syndrome is a rare autosomal recessive disorder caused by a variety of inactivating mutations in the thiazide-sensitive Na-Cl co-transporter gene. It is a renal tubular disorder with a characteristic set of metabolic abnormalities that include hypokalemic metabolic alkalosis and hypocalciuria. The QTc has been reported to be prolonged in up to 40% of patients with Gitelman syndrome. In our patient, we believe that the effects of carbon monoxide poisoning may have caused exacerbation of low normal blood pressure that brought her to medical attention, allowing early diagnosis and treatment of Gitelman syndrome. We recommend that all patients with prolonged QTc be evaluated to rule out Gitelman syndrome and allow prompt electrolyte supplementation to prevent cardiac arrythymias.

HYPONATREMIA WITH HYPERKALEMIA IN INFANCY PRESENTING AS A LIFE-THREATENING OCCURRENCE: AN ELECTROLYTE POTPOURRI.

Rupesh Raina, Jonathan H Ross, David N Kenagy, Cleveland, Ohio, United States of America

In the first weeks of life, hyperkalemia with hyponatremia may be associated with aldosterone deficiency. However, mineral corticoid unresponsiveness should also be considered. A 10 month-old girl, presented with persistently poor weight gain. Her birth history was unremarkable. Her serum sodium was 103 mmol/L, and potassium was 6 mmol/L, prompting admission to ICU. She had non anion gap metabolic acidosis with TTKG <3. The urine sodium was <25 mmol/L. Infusion of 3% saline, partially corrected the hyponatremia. She received fludrocortisone, and within 24 hours the electrolytes normalized. The evaluation excluded 21-hydroxylase deficiency as well as other causes of CAH. Her cortisol was normal. Her aldosterone was elevated(308.3 mg/dl), implying tubular unresponsiveness. Renal imaging detected duplication of a left upper pole renal collecting system. The ectopic ureter extended to the bladder neck and refluxed during voiding. She will soon undergo an upper pole nephroureterectomy. In the setting of hyponatremia and hyperkalemia, the key finding of an elevated serum aldosterone strongly suggests that she had primary pseudohypoaldosteronism(PHA). This condition is generally characterized by mutations in the mineral corticoid receptor or in the genes encoding subunits of the epithelial channel; leading to resistance to aldosterone. The unilateral nature of this patient's renal anomaly makes the finding of PHA especially surprising. There are, however, several reports of transient PHA in infancy, including cases of unilateral disease.

INTRAVENOUS IMMUNOGLOBULINS FOR OSMOTIC DEMYELINATION SYNDROME (ODS). Tulsi Sharma, Pearl Dy, Arnold M. Moses. Upstate Medical University, Syracuse, NY, USA.

Introduction: Hyponatremia is a common medical problem but can be challenging in the presence of an associated endocrine disorder. **Case:** A 21-year-old female with central Diabetes insipidus (DI) well controlled on DDAVP (Desmopressin) presented to an outside facility with vomiting and serum Na-127meq/L. She improved with normal saline (NS). Her symptoms however recurred a week later (Na-129). This time however the Na decreased to 119 despite NS over next 2days! DDAVP was discontinued and hypertonic saline was initiated. Why did Na go down despite therapy? Adrenal insufficiency was suspected and treated with hydrocortisone. Na rose to 132 in 10 hours. She became increasingly lethargic, nonverbal and developed a blank affect. She was transferred to Upstate Hospital. Her Na at arrival was 157, a rise of 38meq/L in 18 hours. She had multiple episodes of seizures, and had to be intubated. MRI suggested extrapontine ODS. Considering the hypernatremia with hypotonic urine (osmolality-80mosm/kg) DDAVP was restarted. She was treated with hydrocortisone, antiepileptics and NS. Urine osmolality normalized, Na was slowly brought down to 140 in 48 hours. Her clinical status however failed to improve despite the correction of hyponatremia. She was then given IVIG for 5 days and her motor functions improved dramatically, followed by speech and cognition. Even though she had tremendous clinical improvement, repeat MRI showed worsening of the brain lesions. **Discussion:** This case highlights multiple teaching points:-1) Adrenal insufficiency should be strongly considered when hyponatremia develops in a patient with DI who was previously in good control. Repletion with corticosteroids should be done cautiously as it can lead to rapid diuresis of hypotonic urine. 2) IVIG therapy may accelerate recovery of ODS based on data from a few case reports. Effect is possibly caused by the reduction of myelinotoxic substances and antimyelin antibodies. 3) MRI changes in ODS may be delayed and are not prognostic. 4) Prognosis of ODS is not uniformly bad. Significant improvement may occur with aggressive supportive therapy as in our patient however, prevention is obviously better than cure.

This can cause a rapid rise in S.Na predisposing to myelinolysis.During this period, there was no record of urine volume or osmolality and she had not received any DDAVP.

DOUBLE TROUBLE: SAFELY CORRECTING HYPONATREMIA WITH POTASSIUM AND DESMOPRESSIN

Lonika Sood, Jonathan Bress
Rochester General Hospital, Rochester, New York, United States

The treatment of severe hyponatremia can be challenging. When associated with hypokalemia, the combination can be difficult to manage since infused potassium can intracellularly exchange with sodium (Na), causing rapid correction. As reported by Berl (AJKD 2010), osmotic demyelination can be a serious complication even when potassium (K) is used alone for the correction of hyponatremia. Recently, our group described a strategy using 3% saline with desmopressin to manage severe hyponatremia (ASN 2011) with the rationale that desmopressin prevents spontaneous water diuresis. Here, we describe 2 cases that were managed using only potassium (KCl) under the cover of desmopressin.

Case 1 was an 80 year-old woman who was admitted with lethargy from hyponatremia and hypokalemia secondary to thiazide use. Case 2 was a 53 year-old man who presented with profound hyponatremia and hypokalemia, secondary to losses from *Clostridium difficile* colitis. We used 2 mcg desmopressin every 8 hours in conjunction with intravenous KCl riders of 20 mEq in 50 ml of water (which is hypertonic). Using the Adrogue formula, the amount of KCl needed to raise the Na was calculated. 3% saline was not used in either case. The rate of rise of Na was less than 12 mEq/day over the first 48 hours.

Hyponatremia and hypokalemia coexist commonly, often with thiazide use. The use of desmopressin and KCl is a reasonable method for correcting hypokalemia as well as hyponatremia at a safe rate.

	Case 1		Case 2	
	Na(mEq/L)	K(mEq/l)	Na(mEq/l)	K(mEq/l)
0 hours	110	2.2	119	2.0
24 hours	121	4.2	124	3.0
48 hours	126	3.8	132	3.8

PRE-TREATMENT OF FORMULA OR EXPRESSED BREAST MILK WITH SODIUM POLYSTYRENE SULFONATE (KAYEXALATE) AS A TREATMENT FOR HYPERKALEMIA IN INFANTS WITH ACUTE OR CHRONIC RENAL INSUFFICIENCY.

Kirsten Thompson, Joseph Flynn,
Seattle Children's Hospital, Seattle, WA, USA

Hyperkalemia is a common complication of acute kidney injury and chronic kidney disease. Kayexalate, a cation exchange resin that binds to potassium in exchange for sodium, is commonly used to treat non-life threatening hyperkalemia. It is often administered rectally or orally, however, in neonates and premature infants this route of administration increases the risk for necrotizing enterocolitis. A safer alternative in this patient population is to use Kayexalate as a resin to remove potassium from formula or expressed breast milk (EBM) prior to consumption, then administer the decanted formula. We retrospectively evaluated the serum potassium-lowering effect of treating infant formula or EBM with Kayexalate prior to consumption. Twelve patients <2 years of age (mean 3.7 weeks, range 36 weeks gestation to 7 months) between September 2009 and December 2011 were identified for study inclusion. A set of 3 serum potassium levels before and after patient consumption of pre-treated formula with Kayexalate were averaged and compared using a paired t-test. Average treatment dose was 0.8g of Kayexalate per 100 mls of prepared formula with a range of 0.4-1.5g/100 mls. All patients were receiving either EBM, Similac PM 60/40, or a combination of both. There was a a 25% decrease in serum potassium levels, (from 6.2 to 4.6) after consumption of pre-treated formula, $p<0.0001$. After 24 hours, hyperkalemia had resolved in all 12 patients. There was no significant difference in pre and post calcium, sodium, phosphorus, magnesium, bicarbonate, BUN and creatinine levels.

Pre-treatment of formula with Kayexalate prior to consumption is an effective treatment for hyperkalemia in infants. Caution needs to be taken in patients who have sodium restrictions as the exchange for potassium produces a sodium rich formula.

RELAPSING ACUTE KIDNEY INJURY ASSOCIATED WITH PEGFILGRASTIM

Swati Arora, Arpit Bhargava, Barbara Clark, Allegheny General Hospital, Pittsburgh, PA

We report a previously unrecognized complication of severe acute kidney injury (AKI) after the administration of Pegfilgrastim with biopsy findings of mesangio-proliferative glomerulonephritis (GN). A 51 year old white female with a history of breast cancer presented to the hospital with AKI with serum creatinine (Cr) of 6.9 mg/dl (baseline Cr 1.1mg/dl). Two weeks earlier, she had central line associated bacteremia, treated successfully with daptomycin and port removal. One week before that, she had received chemotherapy with Cyclophosphamide and Docetaxel along with Pegfilgrastim. Her AKI was initially thought to be secondary to sepsis and/or daptomycin. Patient was subsequently hemodialyzed for six weeks following which her kidney function recovered to near baseline but her urine analysis showed 3.5gm protein/day and dysmorphic hematuria. Repeat blood cultures and serological work up (complement levels, hepatitis panel, ANA, ANCA and anti-GBM) were negative. She received her next cycle of chemotherapy with the same drugs. Two weeks later, she developed recurrent AKI with a Cr of 6.7 mg/dl. A native kidney biopsy was consistent with mesangio-proliferative GN, tubular epithelial damage and rare immune complex. Pegfilgrastim was suspected as the inciting agent after exclusion of other causes. Her Cr improved to 1.4 mg/dl over the next 3 weeks, this time without dialysis. Patient had the next two cycles of chemotherapy without Pegfilgrastim, with no further episodes of AKI. Literature review revealed a few cases of possible association of filgrastim to a self-limited acute GN but none of those patients required dialysis.

In conclusion, pegfilgrastim may cause GN with severe AKI requiring dialysis. Milder cases may be missed and therefore routine monitoring of renal function and urine analysis is important.

SOLIRIS – IS THIS A NEW SUNRISE FOR PATIENTS WITH ATYPICAL HEMOLYTIC UREMIC SYNDROME?

Saritha Boyapati, MD[1], Ramya vejella, Peter Van, MD[2], Mary Buffington, MD[2] 1. Internal Medicine LSU Health Sciences Center, Shreveport, LA 2. Nephrology, LSU Health Sciences Center, Shreveport, LA

Typical HUS is often associated with shiga toxin producing E. coli O157:H7. 10% of pediatric patients and a higher % of adult patients with HUS have atypical HUS (aHUS) which is a non-shiga toxin HUS. It is due to over-activation of the complement system and carries a poor prognosis. Treatment of aHUS has included plasma exchange but it has poor outcomes. Recently, eculizumab (Soliris) has been used for treatment of aHUS with great success. Eculizumab is a monoclonal antibody directed against complement factor C5, which prevents generation of the MAC and endothelial injury. Here, we report a 20 year old Caucasian female who had a relapse of HUS. She was referred to our service for evaluation of chronic kidney disease (CKD), baseline cr 1.6. She has a PMH of non-diarrhea associated HUS at the age of 2, 4 and 5 She was treated each time with plasma exchanges . At the time of her first visit, she was hypertensive with a serum Cr of 1.8 mg/dl with eGFR of 39 ml/min/m2, Hgb was 8.2 gm/dl. Two weeks later, she was noted to have hypertensive urgency with a blood pressure of 192/120 and a Cr of 3.5 mg/dl, Hgb 6.7 gm/dl and platelet of 98,000. Work up revealed patient had elevated LDH of 428 IU/liter with haptoglobin less than 8 mg/dl and low complement levels. Autoantibodies were negative along with hepatitis serology, HIV, and ADAMTS-13. Renal biopsy shows findings consistent with chronic HUS. Despite plasma exchanges, her hemolysis persisted and renal function worsened. Based on a review of recent literature, we began treatment with eculizumab. Her renal function improved ,an increase in her platelet count and haptoglobin levels and she is in remission.. In this patient, eculizumab effectively inhibited the complement mediated hemolytic process and has not only halted renal failure but has lead to some recovery of renal function.

URINARY LOSS OF VIABLE PODOCYTES IS ASSOCIATED WITH BEVACIZUMAB-INDUCED THROMBOTIC MICROANGIOAPTHY

Juan C. Calle, Iasmina M. Craici, Steve Wagner, Aminah Jatoi, Joseph Grande, Vesna Garovic
Mayo Clinic, Rochester, MN, USA

Proteinuria is a common side effect of anti-VEGF therapy in cancer patients. We recently reported a direct correlation between the degree of proteinuria and podocyturia (i.e., the urinary loss of viable podocytes) in the urines of patients treated with bevacizumab.

In this case report, we present a 64 year old male with metastatic liver angiosarcoma treated with bevacizumab. After 35 months of treatment, he was found to have nephrotic range proteinuria and active urinary sediment. A renal biopsy showed evidence of chronic thrombotic microangiopathy and IgA nephropathy. The sediment from a random urine sample was cultured overnight and then stained for the podocyte specific protein, podocin, demonstrating 2.12 podocytes/mg of creatinine after his bevacizumab had been held for approximately 2 months. Upon follow up testing performed 2 months later, his proteinuria had decreased by more than 50%, as had the number of podocytes (0.62 cells/mg of creatinine). At 6 months, his proteinuria had decreased to less than 500 mg/24 hour and his urinary sediment was inactive.

This case demonstrates that active podocyte loss may contribute to proteinuria and the renal injury of thrombotic microangiopathy which may occur secondary to anti-VEGF treatment. We postulate that podocyte detachment is a consequence of the removal of a trophic VEGF effect by anti-VEGF treatment.

ACUTE KIDNEY INJURY SECONDARY TO TYPE I CRYOGLOBULINEMIA ASSOCIATED WITH DIFFUSE LARGE B-CELL LYMPHOMA: RARE PRESENTATION WITH UNIQUE RENAL PATHOLOGY.

Kiran Goli, Arkadiy Pinkhasov, Ranjit Dhelaria, Jonathan Freeman, Barbara Greco. Baystate Medical Center, Springfield, MA.

Introduction: IgG lambda monoclonal type I cryoglobulinemia (cryo) is rare and has not been reported in the setting of lymphoma. We describe a rare presentation of type I cryo presenting with acute kidney injury (AKI) and unique renal pathology not previously reported. **Case:** A 66 year old woman presented with AKI in the setting of recurrent lymphoma. Her past history was remarkable for large B-cell lymphoma that was successfully treated with autologous stem cell transplantation 12 years prior. Physical examination was significant for extensive purpura and ecchymosis involving the face and extremities and cervical lymphadenopathy. Labs revealed a BUN of 78 mg/dl, creatinine of 3.7 mg/dl, UA with proteinuria, hematuria and pyuria. C3 was 29 (normal 90-180 mg/dl), C4 was 10 (normal 10-40 mg/dl) and serum cryoglobulin was positive with negative hepatitis C serology. TTP was ruled out by negative schistocytes and normal haptoglobin. Serum immunoglobulins were suppressed and immunofixation revealed an IgG lambda monoclonal protein. Right cervical lymph node biopsy confirmed diffuse large B cell lymphoma with IgG lambda specificity.Skin biopsy demonstrated leukocytoclastic vasculitis. Renal pathology showed lobular hypercellularity in only one of 11 glomeruli and light and electron microscopy showed marked glomerular endothelial swelling occluding the capillary loops with interposition of macrophages. Characteristic cryoglobulin deposits, platelet or fibrin thrombi, subendothelial deposits and membrane reduplication were not identified. Immunoflourescence showed bright focal staining for IgG and lambda in glomerular capillary loops. The patient required dialysis support and was treated with steroids and plasmapheresis but succumbed to late septic complications. **Conclusion**: AKI secondary to monoclonal cryo of IgG lambda phenotype is extremely rare. The pathologic findings in this case are very unusual, consisting of diffuse endothelial swelling resulting in occlusion of capillary loops (without subendothelial widening or platelet thrombi), with relative paucity of cryoglobulin deposits.

PUZZLING CASE OF RENAL FAILURE REGRESSION AFTER TUMOR RESECTION IN A HEPATITIS C ASSOCIATED CRYOGLOBULINEMIC MPGN

Vineet Gupta, MD, Amit Ladani, MD Marappa Gowdner, MD, Maureen Lawlor, MD, FASN, UPMC Mercy, Pittsburgh, PA

Paraneoplastic Glomerulo Nephritis (GN) is an uncommon entity associated with cancers of lung, GI tract, head, neck, prostate & kidney. We report a 57 years old African American male with past medical history of hepatitis C, IV drug abuse, seizures who presented in February 2010 with oliguric (200-300 ml/day) acute kidney injury. Prior creatinine was 1 mg/dL (2007) that increased to 7.9 mg/dL at admission. Laboratory tests were remarkable for BUN 130, sodium 130, potassium 5.3, AST 176, ALT 120. Urinalysis showed specific gravity 1.030, hematuria (3+ blood, >50 RBC /hpf), >300 mg% proteinuria. USG kidneys showed slightly enlarged kidneys. Renal biopsy was significant for diffuse MPGN type 1, extensive mesangial and subendothelial deposits, full house pattern on direct Immuno florescence- IgG, IgM, IgA, C3, kappa and lambda depositions. Further tests included negative HIV, positive cryoglobulins, HCV RNA, HCV antibodies c33, c22, c100, rheumatoid factor, negative hepatitis B, decreased C4 and C3 levels. Patient was diagnosed with hepatitis C associated cryoglobulinemic MPGN induced ESRD and started on hemodialysis (HD). Patient received no treatment for hepatitis C. In August 2010, patient was diagnosed with rectal cancer and he received neoadjuvant chemoradiation with 5FU followed by tumor resection in February 2011. In April 2011 patient's renal function markedly recovered (Cr- 1.3, 1+ proteinuria, no hematuria), urine output 1-2 liters/day. He was taken off HD and did not require HD at 3 months follow up.

In this patient the cause of renal failure regression could not be established with confidence. While the dramatic recovery of renal function with tumor resection is suggestive of paraneoplastic GN; biopsy and laboratory studies were consistent with ESRD due to hepatitis C cryoglobulinemic MPGN. Importantly, after 13 months of HD, recovery of renal function has never been reported. ESRD needing HD is uncommon in hepatitis C associated cryoglobulinemic MPGN (<10%) and carries poor prognosis.

REVIEW OF GLOMERULAR PATHOLOGY IN NYC HISPANICS COMPARING NATIVE AMERICAN AND AFRICAN ANCESTRY

Sudhanshu Jain[1], Salwa Rhazouani[1], George Coritsidis[1], Ayesha Shaikh[2], Isaiarasi Gnanasekaran[2], Neha Garg[2], Sandra Vargas[2], Elmhurst Hospital Center[1], Lincoln Medical Center[2].

The type and incidence of different glomerular diseases vary worldwide based on race, age and sex. American Hispanics can have either Native American or African ancestry, which may influence renal pathology. Retrospective kidney biopsy data between 2001 and 2010 from 3 ethnically diverse city hospitals in New York City area (Elmhurst Hospital Center, Queens Hospital Center and Lincoln Hospital) was reviewed. 103 Hispanic patients identified by charts were separated into two groups based on ancestry: South & Central American Hispanics representing Native American ancestry (SH), and Puerto Rican, Dominican and Cuban Hispanics representing African ancestry (Caribbean Hispanics, CH). Variables studied were age, gender, proteinuria; MDRD estimated glomerular filtration rate (eGFR), and glomerular pathologies. Incidence of diabetes mellitus, focal segmental glomerulosclerosis, membrano-proliferative glomerulonephritis, and membranous nephropathy was similar. The most common diagnosis in both groups was lupus nephritis. Caribbean Hispanics had a higher male prevalence and presented with worse renal function.

	SH (n=68)	CH(n=35)
Age	41.41± 1.69	41.11 ± 2.13
Gender (Male)	38.24%	45.71%
Proteinuria (g/day)	7.95± 1.2	5.48± 1.1
eGFR (ml/min)	66.4 ± 4.64	55.86 ± 6.24
IgA	7(10.3%)	1 (2.9 %)
FSGS	11 (16.2%)	5 (14.3%)
SLE	17 (25%)	11 (31.43 %)
eGFR(ml/min)	83.3 ± 8.4	62.7±11.5
Gender (Male)	3 (17.6%)	4 (36.4%)

IgA nephropathy (IgAN) was highest in our SH population possibly due to genetic predisposition related to native ancestry. The incidence of FSGS was unexpectedly similar in both populations despite African ancestry in Caribbean Hispanics. However, consistent with African ancestry, Caribbean Hispanics presented with worse renal function.

A CASE OF HEPATITIS B CAUSING TYPE III MPGN PATTERN INJURY DURING PREGNANCY

A Kataria[1], J Chevalier[2], S Seshan[2], Salvatore S[2], KD Jhaveri [1]
[1]Nephrology and Pathology, HOFSTRA NORTH SHORE LIJ SCHOOL OF MEDICINE and [2]WEILL CORNELL MEDICAL CENTER, NY.

While a majority of Hepatitis B virus associated glomerular lesions are represented by membranous GN, only a few cases of membranoproliferative pattern (MPGN) mostly of type I morphology are reported. We describe a 39-year-old otherwise healthy woman of Asian descent presenting with nephrotic syndrome at 14 weeks gestation. Laboratory workup for nephrotic syndrome included negative serologies for lupus and Hepatitis C virus, but a positive Hepatitis B surface antigen with a viral load of 161 million units was noted. A planned termination of pregnancy was done due to oligohydramnios. The kidney biopsy showed glomerular mesangial and focal endocapillary proliferation with focal capillary wall interposition. Polyclonal IgG, IgM as well as C3 and C1q were identified in the subepithelial, subendothelial, intramembranous and mesangial deposits. Focal disruption of lamina densa is noted, suggestive of MPGN III, Burkholder type. Immunohistochemical localization of HBV core antigen and surface antigen was performed in the glomerular deposits. The patient was treated with antiviral therapy (Entecavir) and ACE inhibitor followed by complete remission of the proteinuria. Type III MPGN is a rare glomerular injury pattern which has both subendothelial and subepithelial deposits, irregular lamina densa and composed of immunoglobulins, complement C3 and C1q. A prolonged exposure to HBV antigens and host factors may participate in the pathogenesis. To date, this has not been described in Hepatitis B infected patients and is observed to have a better response to treatment than the typical Type 1 lesion.

KIMMELSTIEL WILSON GLOMERULOSCLEROSIS AND PROLIFERATIVE RETINOPATHY WITHOUT DIABETES MELLITUS

Suzi Kochar, Wah Wah Htun , Rajnish Khillan, Orlando Suarez, Adib Alhaddad
Lutheran Medical Center, Brooklyn, NY, USA

Idiopathic nodular glomerulosclerosis (ING) resembles diabetic nodular glomerulosclerosis but occurs without DM or secondary disorders. We present a patient with the renal pathology of diabetic glomerulosclerosis in the absence of DM.

A 38-year-old Hispanic man with history of hypertension for 1 year and ex-smoker presented with complaints of pedal edema and weakness over the last 6 months. Physical exam revealed earthy discoloration of the skin with pedal edema. His BUN/Cr on admission was 64/4.7 with normochromic normocytic anemia, hypocalcaemia and hyperphosphatemia with elevated parathyroid hormone. There was nephrotic range proteinuria. His HbA1c level was 6.0. Fundoscopic examination revealed changes consistent with proliferative retinopathy. During his hospital stay, all finger stick glucose tests were normal. Oral glucose tolerance test was negative. Renal ultrasound compared with one 6 months prior showed normal size bilateral kidneys without change. Renal biopsy revealed diffusely thickened glomerular basement membranes and extensive mesangial expansion and mesangial sclerosis. Podocytes were acutely injured and showed extensive foot process effacement. The final pathology report interpreted the findings as diffuse nodular glomerulosclerosis. ESR was elevated and complement C3 levels were decreased with normal C4. Autoimmune etiologies and secondary causes of ING were excluded.

In conclusion, nodular glomerulosclerosis and proliferative retinopathy may present in the absence of overt diabetes or impaired glucose tolerance. Despite unclear etiology, ING seems related to severe arteriolosclerosis. Treatment with low protein diet and rennin-angiotensin system inhibition may be beneficial for such patients.

COLLAPSING GLOMERULOPATHY FOLLOWING TREATMENT OF RHEUMATOID ARTHRITIS WITH ADALIMUMAB, AN ANTI-TNF ALPHA MONOCLONAL ANTIBODY

Sarath Kolluru, Waseem Ahmed, Negin Misaghian
Brody School of Medicine, East Carolina University, Greenville, North Carolina, USA

A 54-year-old African American female was diagnosed with rheumatoid arthritis (RA) and started on prednisone as well as adalimumab. Four months later, when the patient complained of weakness and myalgias, adlimumab was discontinued. Laboratory data showed an elevated creatinine phosphokinase level range 2000-3000 U/L, serum creatinine 3.7 mg/dL, and ANA positive titer 1:360. Serum was negative for Parvovirus B19, HIV, anti-native DNA antibody, anti-Smith antibody, and anti-RNP antibody. Urine toxicology screen was negative and urine protein was 4 grams/24 hours. The clinical diagnosis was acute renal failure and a diagnosis of systemic lupus erythematosus was considered.

Kidney biopsy revealed collapsing glomerulopathy, acute tubular injury in 30% of tubular profiles and moderate arterionephrosclerosis with 30 to 40% tubulointerstitial scarring. Immunofluoresence and electron microscopy were negative for immune complexes. Global podocyte foot process effacement and podocyte hypertrophy were seen on electron microscopy.

Use of anti-TNF alpha agents in the treatment of RA can cause autoantibody formation, such as anti nuclear antibody, and flares of vasculitis. Renal complications due to glomerular disease are uncommon. A temporal relationship between anti-TNF alpha agents and new onset glomerulonephritis (GN), pauci-immune necrotizing crescentic GN, lupus nephropathy and membranous nephropathy has been reported. As in our case, a pathogenic role in the development of collapsing glomerulopathy is suggested by the temporal relationship between anti-TNF alpha treatment and collapsing glomerulopathy. It is possible that anti-TNF alpha agents could trigger podocyte damage that leads to collapsing GN, a podocytopathy.

ADRENOCORTICOTROPIN HORMONE (ACTH) FOR THE TREATMENT OF PRIMARY FOCAL GLOMERULOSCLEROSIS (FSGS)

Richard A Lafayette, Christa Root, Kshama Mehta
Division of Nephrology, Stanford University, Palo Alto, CA, USA

We wished to assess the potential of ACTH to improve proteinuria through a prospective pilot study in adults with biopsy proven primary FSGS, (eGFR ≥ 30ml/min and urine protein ≥ 2000 mg/day). Biopsies, medical histories and physical exams were used to rule out secondary forms of FSGS. All subjects were treated subcutaneously with ACTHar Gel, with an escalating dose to achieve 160 USP units per week by week 5 for a total 16-week treatment period. We monitored blood pressure (BP), weight, serum creatinine, 24-hour urine protein excretion, lipid profile and blood sugar values.

Eleven patients (7 men, 4 women) have completed the trial; median age 47 years, baseline creatinine 1.8 ±0.9mg/dl, urine protein 3550 mg/day (range 2010-23,800), average weight 198 lbs., and one patient has dropped out (compliance). Median protein excretion dropped from 3550 to 2200mg/day ($p=0.06$). Six of 10 subjects had a reduction in proteinuria; there were two partial remissions and one complete remission. Renal function was stable overall with only one patient demonstrating progressive renal dysfunction. No significant rebound of proteinuria was observed over an additional two months.

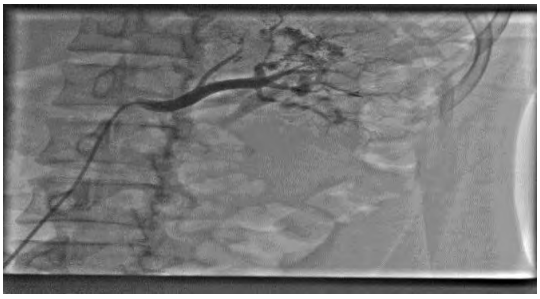
Therapy was well tolerated overall with stable mean BP, lipids, and glucose. There were 2 adverse events of hypertension, and one adverse event of new onset diabetes, which was reversed by stopping ACTH. Patient response was inversely correlated with BMI and with degree of glomerular fibrosis.

ACTH therapy may have the potential to reduce proteinuria in patients with primary FSGS and is well tolerated. Further study will be needed to assess long term responses and ideal patients for therapy.

OCCULT RENAL INVOLVEMENT IN POLYARTERITIS NODOSA: THE ROLE OF RENAL ANGIOGRAPHY

Rakesh Malhotra[1], Zaher Hamadeh[2], Anjali Acharya[2], Naheed Ansari[2], [1]James J Peters VA Medical Center, Mount Sinai School of Medicine, [2]Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA. We report a case of a 39-year-old Vietnamese female who presented with severe headache and new onset double vision in the left eye. She had a history of hypertension, dilated cardiomyopathy with an ejection fraction of 45%, and chronic Hepatitis B. Physical examination revealed blood pressure of 128/87 mmHg and pulse of 85/min, diplopia in left gaze when looking down and mild gait imbalance. Computer Tomographic (CT) scan of brain revealed an old lacunar infarct in the left side of thalamic region and CT angiography (CTA) of the head was negative for aneurysm or thrombus. Laboratory work was negative for antinuclear antibody (ANA), anti-cardiolipin antibodies and cryoglobulins. The complement level, Hemoglobin and plasma biochemistry were normal. Urine microscopy was normal with no proteinuria. Hepatitis B surface antigen (HBs Ag) was positive and HBV DNA as detected by PCR revealed a viral load of more than 218,337 copy/ml. Renal angiogram, performed because of a suspicion of PAN, showed multiple microaneurysms in the renal circulation (Fig 1). A diagnosis of PAN was made and steroid and tenofovir therapy was started. Patient had symptomatic improvement. Renal angiography should be considered in cases where PAN is suspected even if patient has stable and normal renal function.

Figure 1: Renal Angiogram showing multiple microaneurysms



RECURRENCE OF IMMUNOTACTOID GLOMERULONEPHRITIS IN THE NATIVE KIDNEY THAT IMPROVED WITH FLUDARABINE THERAPY

Suchita Mehta[1], Mark Samarneh[2], Militza Kiroycheva[2], John Pepe[2]. 1. Department of Medicine, Staten Island University Hospital, Staten Island, NY; 2. Department of Nephrology, Staten Island University Hospital, Staten Island, NY.

INTRODUCTION Recurrence of immunotactoid glomerulonephritis (ITG) has been described in renal allograft but there is no literature on immunotactoid glomerulonephritis recurring in the native kidneys and there is no definite guideline for treatment of recurrent ITG. We report a case of recurrent immunotactoid glomerulonephritis associated with chronic lymphocytic leukemia (CLL) that recurred in the native kidneys and improved with fludarabine both the times.**CASE** 83 year-old woman with untreated CLL, presented with a serum creatinine of 3.7mg/dl and a 24-hour urine protein of 7.8 gm. Biopsy showed ITG. Chemotherapy with fludarabine was initiated with complete remission. However, eight years later, she had acute kidney injury and nephrotic range proteinuria. ITG was found on the repeat biopsy. Fludarabine was started with complete remission once again. **DISCUSSION** 50% of ITG patients progress to ESRD in 2 to 4 years. Renal transplantation is good option. Recurrence of ITG has been described in the renal allograft but there is no literature on recurrence of ITG in the native kidneys. There are three cases of successful treatment of recurrent ITG reported but there are no standard guidelines for treatment of recurrent ITG. Here, we have a case of ITG that responded to fludarabine with complete remission and recurred in the native kidneys eight years later. Renal function improved with fludarabine both the times and the patient was never in need of any renal replacement therapy.

COLLAPSING GLOMERULOPATHY DURING PREGNANCY

Fernando Ottino, Ashish Verma, Konstantin Abramov, University of Massachusetts Medical School, Worcester, MA,USA. Collapsing Glomerulopathy (CG) is a clinical-pathological entity characterized by severe nephrotic syndrome resistant to standard therapies usually progressing to renal failure and a distinct pattern of parenchymal injury with podocyte proliferation, pseudo-crescents formation and collapse of the glomerular capillary loops. First described in 1979 as an idiopathic disorder and in 1984 following HIV infection (HIVAN), it has been diagnosed in association with multiple disorders including genetic forms, non-HIV infections, autoimmune diseases, hematologic malignancies, TMA, Guillain-Barre, post-transplantation and drugs but has never been reported in association with pregnancy. We report the first case of biopsy-proven CG in a pregnant woman who presented as an atypical pre-eclampsia (PE). A 25 year old G4, P3 Hispanic female presented at 27 weeks gestation with high-grade proteinuria and AKI. She had no history of prior PE, HTN, kidney disease or autoimmune disease. Baseline creatinine (Cr) and urinalysis (UA) were normal. At 22 weeks 4+ proteinuria was noticed and 3 days PTA she developed headaches, visual scotoma, RUQ pain and was admitted with a presumptive diagnosis of severe PE. She was alert, afebrile with BP 143/83. Abdomen was soft and gravid with mild RUQ tenderness and she had trace ankle edema. Laboratory data: Cr 1.6, Mg 6.8, Uric Acid 5.1, AST 17, ALT 17, HCT 31.8, Hb 11.5, Plat 236000, Proteinuria 8.2 gr/24hs. UA showed SG 1.030, 3+ Protein, Trace OB, free fat bodies and few dysmorphic RBC. ANA, C3-C4, CRP, HIV, Syphilis, Hepatitis B/C serologies, Renal US with Duplex were all normal. Solumedrol 1gr IVx3 was given. Kidney biopsy revealed collapsing glomerulopathy. She was discharged home on Prednisone 60 mg/day with normal BP and Cr 1.25. She was induced at 36 weeks due to HTN and worsening renal function and delivered a healthy 2795gr baby boy. Pathophysiology of CG remains unknown. This case illustrates the importance of kidney biopsy when atypical PE features are present (e.g. first episode in 4th pregnancy, severe proteinuria and AKI, mild HTN and minimal edema, normal Uric Acid, LFTs and platelets) since continuation of pregnancy beyond 32 weeks is relatively safe in this context and neonate survival rate is greatly improved.

SARGRAMOSTIM EXCACERBATES A CLINICALY SILENT CRYOGLOBULINEMIC GLOMERULONEPHRITIS Alfredo Peguero, Reji Nair, Craig Courville, Jorge Lamarche James A. Haley Tampa VA Hospital, University of South Florida, Tampa USA

63 y/o male with hepatitis C virus, clinically silent cryoglobulinemia (mild hypocomplementemia, hematuria, proteinuria with detectable levels of cryoglobulins in blood), pancytopenia, and a recently diagnosed low grade B cell lymphoma was admitted to the hospital with a left lower extremity cellulitis. Adverse effects of antibiotic therapy on top of his underlying pancytopenia lead to severe neutropenia. Thus, to improve the neutrophil count the patient received sargramostim. After 3 doses, the patient developed a palpable purpuric rash in the abdomen. A skin biopsy revealed a leukocytoclastic vasculitis. After 5 doses, the patient had laboratory evidence of acute kidney injury with worsening of his prior hematuria, proteinuria, and hypocomplementemia. A renal biopsy was performed which revealed cryoglobulinemic glomerulonephritis. The patient was treated successfully with corticosteroids and rituximab. The renal function and the skin rash normalized. Glomerular macrophage colony stimulating factor (GM-CSF) has been demonstrated to be a mediator in the pathogenesis of glomerulonephritis. Sargramostim, an analogue of granulocyte macrophage colony stimulating factor is similar to GM-CSF. Therefore, this clinical scenario illustrates how a clinically silent cryoglobulinemia converted to a systemic illness after administration of sargramostim.

TREATMENT OF FIBRILLARY GLOMERULONEPHRITIS WITH RITUXIMAB

Michaela Restivo, Pietro A. Canetta, Jai Radhakrishnan, Gerald B. Appel, Andrew S. Bomback. Department of Medicine, Division of Nephrology, Columbia University College of Physicians and Surgeons, New York, NY, USA

BACKGROUND: Approximately 50% of patients with fibrillary glomerulonephritis (GN) progress to ESRD within 2 years of diagnosis, and no standard therapy exists. It has been hypothesized that B cell targeted therapies may prove effective in its treatment.

METHODS: We retrospectively reviewed all cases of fibrillary GN treated with rituximab at the Center for Glomerular Diseases at Columbia University. Patients with a minimum of 6 months of follow-up were eligible for inclusion in this retrospective cohort. Rituximab was given as 2 doses of 1 g IV two weeks apart; pre-medication with pulse methylprednisolone, acetaminophen, and diphenhydramine was standard.

RESULTS: Over a 9 year period, 11 patients with fibrillary GN were treated with rituximab. All patients were on concomitant renin angiotensin system blockade. Median creatinine at time of treatment was 2.1 mg/dl (range 0.7-4.4). Six of 10 patients received immunosuppressive therapy before rituximab therapy, and 6 of 10 received additional therapy after rituximab. The median follow-up time was 37 months from time of diagnosis (range 9-98) and 18 months post-rituximab (range 5-62). Four of 11 patients exhibited no progression of disease with stable creatinine and stable or declining proteinuria over a median 23 months from time of diagnosis (range 10-64) and 22 months post rituximab (range 5-62). Three of 11 patients progressed to ESRD within a median of 58 months (range 56-70) of diagnosis and 17 months (range 14-27) after rituximab therapy; the remaining 4 demonstrated progression to later stages of CKD over median 30 months from diagnosis (range 9-98) and 17 months post-rituximab (range 5-36). No adverse events were reported.

CONCLUSION: In this cohort of 11 patients with fibrillary GN treated with rituximab, 4 patients demonstrated stable renal function with stable or declining proteinuria. Rituximab appears to be an effective therapy for some, but not all, patients with fibrillary GN.

NEGATIVE DOUBLE STRANDED DNA AND ANTI-SMITH ANTIBODIES IN SEVERE LUPUS NEPHRITIS

Gagangeet S. Sandhu, Anip Bansal, Aditi Ranade, Isha Gupta, James P. Jones, Steven D. Smith, St. Luke's - Roosevelt Hospital Center, Columbia University College of Physicians & Surgeons, NY, NY.

In Systemic lupus erythematosus (SLE) auto-antibodies are generated against a variety of intracellular antigens. Anti-Smith (Sm) and anti-double stranded DNA (dsDNA) antibodies are particularly considered nephritogenic. In addition, severe lupus nephritis (LN) may facilitate the process of Anti Myeloperoxidase (MPO) antibody (p-ANCA) formation by promoting neutrophil degranulation. ANCAs may also possibly have a pathogenetic role in LN. We present a case where the patient had diffuse proliferative "full house" LN with very high serum anti-MPO titers, yet negative ds-DNA and anti-Sm antibodies. PubMed literature was reviewed for cases of lupus nephritis with negative dsDNA antibodies. Albeit very rare, a subset of patients with drug-induced (hydralazine) LN have been quoted in literature to have negative dsDNA and anti-Sm antibodies. However, our patient had no evidence of drug induced LN. We found 6 additional well documented cases of non-drug induced severe LN with negative dsDNA antibodies (table). In conclusion, although considered nephritogenic, dsDNA and anti-Sm antibodies may be negative even in patients with severe proliferative LN.

Age/Sex	Presentation	ANA	Compl	pANCA	Renal Bx
9/F	RF	Neg	N	N/A	LN IV
8/F	Nephrotic	Neg	N	N/A	LN IV/V
10/F	Nephritic	Neg	N	N/A	LN III
10/F	Atypical	Neg	N	Neg	LN III
22/F	RF	1:128	L	Pos	LN IV & ANCA GN
50/F	RF	1:160	L	Pos	LN III & ANCA GN
29/F	RF	1:80	L	Pos	LN IV/V

Abbreviations: Compl: Complement, Bx: Biopsy, F: Female, Neg: Negative, Pos: Positive, N: normal, L: low, N/A: Not reported, LN: lupus nephritis, RF: Renal failure, GN: Glomerulonephritis.

OBESITY AND PROTEINURIA!!

Anila P Sankar , Zohreh Soltani Department of Internal Medicine, Section of Nephrology, LSUHSC, New Orleans.

Obesity -related glomerulopathy (ORG) has been reported in obese patients without overt diabetes and preexisting renal diseases. It is a secondary form of FSGS that manifests with proteinuria and progressive CKD.

Case:28 year old African American female with past history of obesity and hypertension presented with proteinuria of 7 grams/dl. Medications were HCTZ 25 mg, multivitamin but no NSAIDs. Physical exam showed a normotensive patient with morbid obesity of 410 lbs. Lab data revealed serum creatinine of 1.9 mg/dl and a total protein / creatinine ratio of 7 grams. Serological workup was negative. Renal ultrasound showed enlarged echogenic kidneys. Renal biopsy revealed focal segmental glomerulosclerosis (FSGS) which is related to obesity.

Discussion:The prevalence of obesity is on the rise in United States and other industrialized countries. ORG is becoming an emerging epidemic and is an increasing cause of ESRD. The pathophysiology of obesity induced glomerulomegaly and glomerular sclerosis is incompletely understood. Weight loss reduces proteinuria in ORG patients. Our patient was placed on RASS inhibitor therapy which has reduced proteinuria significantly to 1.2 gm/dl.

UNUSUAL PRESENTATION OF COLLAPSING FOCAL SEGMENTAL GLOMERULOSCLEROSIS INDUCED BY GRISEOFULVIN.

Neetu Sharma University of Cincinnati, Ohio, USA.

In 2004, the association of Collapsing Focal Segmental Glomerulosclerosis (CFSGS) with Pamidronate was reported for the first time but there is paucity of literature showing relation between CFSGS and Griseofulvin an antifungal agent. We report first case of biopsy confirmed Acute Interstitial Nephritis (AIN) and CFSGS associated with Griseofulvin use in a 28 yrs old African American female, which showed rapid improvement in renal function after discontinuing the therapy. During the course of patient's hospitalization her creatinine (Cr) peaked to 3.9 mg/dl from baseline Cr of 0.9 mg/dl. Her estimated proteinuria was 21 gm/d based on urine protein to urine Cr ratio. Kidney biopsy showed AIN and CFSGS. The patient was started on 4 weeks course of oral steroid along with supportive treatment. One month later, her Cr decreased to 0.9 mg/dl with the decrease in proteinuria to 0.8 gm/d. Improvement seen in this patient after discontinuation of drug strengthens the case for association between the agent and the disease.

In conclusion, physicians should be aware of the possibility of CFSGS and AIN as one of the potential adverse reaction to systemic Griseofulvin, and consider monitoring them for proteinuria during therapy.

NON-RENAL HYPOALBUMINEMIA MASKING NEPHROTIC SYNDROME IN A PATIENT WITH SLE-LIKE MIXED CONNECTIVE TISSUE DISEASE.

Donjeta Sulaj, Lin Lwin, Hugo Villanueva, Jinil Yoo.
Nephrology, Montefiore Medical Center North, Bronx, NY, USA

We observed a patient with severe hypoalbuminemia who was found to have SLE-like mixed connective tissue disease (MCTD) with coexisting membranous nephropathy (MN) and most likely protein – losing nephropathy (PLE). Non-renal hypoalbuminemia initially masked co-existing nephrotic syndrome.

The case is a 43-year old lady with chronic abdominal pain and diarrhea, who was found to have marked muscle weakness, anasarca, serum creatinine (Scr) 1.3mg/dl, serum albumin (Salb) 0.9 g/dl, total protein 2.2 g/dl, serum cholesterol (Schol) 140 mg/dl (on simvastatin), 24-hr urine protein 418 mg, (+) ANA 1:1260, (-) anti-ds DNA, (+) anti-Ro, (+) anti-RNP, low serum complements and normal liver enzymes. On IV infusion of albumin Salb remained < 1.6g/dl and 24-hr urine protein < 1.0g. Upper endoscopy and colonoscopy showed nonspecific histological findings. The kidney biopsy revealed MN and mesangial deposits suggestive of lupus nephritis. 24-h stool for α-1 antitrypsin was discarded because of improper collection. Under presumptive diagnosis of PLE, oral methylprednisolone (Medrol) 48 mg po daily was initiated. Abdominal pain and diarrhea promptly resolved. In 4 weeks, anasarca disappeared. Salb rose to 2.6g/dl, but proteinuria increased >3 g in 24-h urine. When Salb reached 3.2 g/dl, 24-hr urine protein was > 6.0g and Schol > 225mg/dl (on simvastatin). For the appearance of nephrotic syndrome she was placed on mycophenolate up to 3.0 g/day and Medrol 16 mg/day.

The protein loss in PLE is considered due to increased permeability of intestinal mucosa and/or capillaries, different from that in glomerular diseases, independent of molecular weight of protein, and responds dramatically to corticosteroids. In our patient, “nephrotic syndrome” due to MN was not evident until her likely-PLE was controlled with Medrol and Salb reached 2.6 g/dl. Extra-renal protein loss may mask nephrotic syndrome and may present a clinical pitfall to nephrologists.

MICROSCOPIC POLYANGIITIS AFTER BILATERAL MASTECTOMY AND SALINE BREAST IMPLANTATION Judy Tan, Anjali Acharya, Fuad Spath, Rakesh Malhotra, Zaher Hamadeh. Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA, North Central Bronx Hospital Bronx, NY, USA

We report a case of a 57-year-old female with history of diabetes mellitus, asthma, hypothyrodism, breast cancer who presented with fever, cough and hemoptysis for 7 days. Two months prior to admission, the patient had bilateral mastectomy with isotonic saline-filled in silicone elastomer shell breast implantation. Physical exam on presentation was significant for bibasilar crackles. Radiologic imaging of the chest revealed left midlung, basilar and perihilar opacities. She was initially treated with broad-spectrum antibiotics for presumed multi-focal pneumonia. However, due to clinical deterioration, a bronchoscopy was performed which revealed diffuse alveolar hemorrhage. Urinalysis revealed 44 RBCs/HPF, elevated ESR and CRP, and anti-myeloperoxidase antibody > 100 U/ml (normal: <6 U/ml). Renal biopsy showed focal segmental necrotizing and crescentic glomerulonephritis, pauci-immune type (anti-myeloperoxidase-associated) with moderate activity and minimal chronicity, minimal tubular interstitial fibrosis (Figure 1). A diagnosis of Microscopic Polyangiitis (MPA) was made.

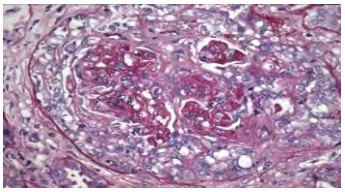


Figure 1

She was started on pulse-dose steroids, cytoxan and plasmapheresis with symptomatic improvement. Though malignancy and silicone implants have been known to be associated with autoimmune diseases and anti-neutrophil cytoplasmic antibodies associated vasculitis, this case raises the possibility of the development of MPA even after saline breast implantation possibly due to silicone exposure from the elastomer shell.

IgA DOMINANT ACUTE POST INFECTIOUS GLOMERULONEPHRITIS SUCCESSFULLY TREATED WITH CORTICOSTEROIDS

Maria R.Valcarcel , Kumar Dinesh , Burl R Don
University of California Davis, Sacramento,CA

A 58 y/o African-American transgender (male to female) presented with an upper GI hemorrhage, altered mental status and acute renal failure. Two weeks prior to admission, she was treated with vancomycin for a lower extremity cellulitis and bacteremia due to MRSA. Dysmorphic RBCs and an RBC cast were seen on urine microscopy. Serology was significant for low C4 and a normal C3 level. Cryoglobulins were negative. She has a low titer P-ANCA and an elevated anti-PR3. Kidney biopsy showed endocapillary proliferation and early crescents in 4 out of 30 glomeruli. There was also mesangial expansion consistent with moderate diabetic nephropathy. On immunofloursence, there was coarse granular staining of the mesangium with IgA and C3. On EM, there were "hump-shaped" subepithelial deposits. These findings were characteristics of IgA-dominant acute post-infectious glomerulonephritis (IgA-PIGN)

Despite appropriate antibiotic therapy and clearance of bacteremia, renal function continued to worsen and she was started on hemodialysis. She was treated with pulse IV methylprednisolone followed by oral prednisone which was rapidly tapered over 18 days. She recovered renal function and discontinued dialysis after 5 months.

IgA -dominant PIGN following *Staphylococcus aureus* infection has recently been recognized as a more aggressive variant of Post infectious glomerulonephritis. It occurs more often in diabetic and older patients and patients frequently present with acute renal failure. It carries a worse prognosis compared to classic PIGN with less than 20% of patients recovering full renal function. There is no established therapy other than antibiotics. Traditionally steroids have been avoided due to concerns of worsening infection. Our case suggests that steroid therapy may have a role in the treatment of IgA- dominant PIGN in improving renal function and preventing the development of end-stage renal disease and that cautious use of steroids in patients with severe renal dysfunction, particularly those with crescentic GN who fail to improve with antibiotics alone, can result in recovery of renal function.

INCREASING INCIDENCE IN PAUCI-IMMUNE GLOMERULONEPHRITIS IN A COMMUNITY HOSPITAL

Anita Zaidi, Jordan Rosenstock
Renal Division, Lenox Hill Hospital NY, NY USA

Pauci-immune glomerulonephritis (PI-GN) is an important cause of rapidly progressive glomerulonephritis and is usually associated with anti-neutrophil cytoplasmic antibodies. A few reports have shown an increase in PI-GN incidence. The aim of this study is to see if there was an increase in PI-GN at our hospital.

We retrospectively reviewed all renal biopsies performed at our institution between 2002-2011. PI-GN was identified from biopsy reports. Biopsies were divided between two time periods; 2002-2006 and 2007-2011.

Between the period of 2002-2006, 110 biopsies were done and between 2007-2011, 120 biopsies were done. Of the biopsies, PI-GN was found in 3 patients (2.7%) between 2002-2006 and 13 patients (10.8%) from 2007-2011. The mean age of patients with PI-GN was 57 ± 14 between 2002-2006 and 64 ± 13.6 from 2007-2011 (P=0.09). The mean age of all patients who underwent biopsy between 2002-2006 was 47.9 ± 17 and between 2007-2011 it was 50.1 ± 16 (P=0.17). Patients older than 65 years of age made up 20.9% between 2002-2006 and 20.8% between 2007-2011 (P=0.33).

We identified an increase in the diagnosis of PI-GN during the past 10 years at our institution. Though PI-GN is more common in the elderly, this increase did not appear to be a result of an older biopsy population as there was no change in the mean age of our biopsy patients. The cause of the apparent increased incidence remains uncertain.

ESRD IN PREGNANCY SECONDARY TO ATYPICAL HEMOLYTIC UREMIC SYNDROME DUE TO THROMBOMODULIN MUTATION

Rosemary Nwoko, Amy Williams and Vesna Garovic. Mayo Clinic Rochester, MN USA.

Hemolytic uremic syndrome (HUS) is characterized by microangiopathic hemolytic anemia, thrombocytopenia and renal failure. Atypical HUS (aHUS) accounts for approximately 10% of HUS cases.

An 18-year-old female with a 7-year history of biopsy-proven IgA nephropathy (baseline creatinine 1.7 mg/dL) presented to our institution in acute renal failure (creatinine 7 mg/dl). She denied diarrheal-like-illness prior to presentation. She was also found to be 15 weeks pregnant at the time of evaluation. She underwent a kidney biopsy which revealed a thrombotic microangiopathy, and was initiated on hemodialysis. As she presented with HUS during pregnancy, without a triggering diarrheal illness, we obtained testing for genes associated with aHUS. A heterozygous mutation in the thrombomodulin (THBD) gene was detected. Testing for complement factors I, B and H as well as membrane cofactor protein (MCP) and C3 were negative.

Her immediate family underwent testing for the THBD mutation, with only her mother detected as a carrier. Our patient underwent daily dialysis and delivered a healthy newborn at 32-2/7 weeks. 9 months postpartum, she received a living related kidney transplant from her father. aHUS may recur in a transplanted kidney, but our patient has not had any evidence of recurrence to date. Mutations in the THBD gene are very rare and accounts for approximately 5% of patients with aHUS. The particular mutation in our patient (c.1456G>T, D4864), has been previously reported in 2 patients only. This case illustrates aHUS presentation in pregnancy due to a rare THBD mutation.

HEARING LOSS, PERSISTENT MICROSCOPIC HEMATURIA AND PROTIENURIA: THINK BEYOND THE BOX

Rupesh Raina, Gretta H Jacobs, Lisa Metz, Katherine M Dell, Cleveland, Ohio, United States of America

We report a case of a 3 year old Caucasian fraternal twin male, who was referred for evaluation of persistent microscopic hematuria and 3+ proteinuria identified during a routine urinary examination, at a well child care visit. His past medical history was notable for symmetrical and bilateral sensorineural high frequency hearing loss diagnosed at birth. He had a cochlear implant placed at 6 month of age and a history of poor weight gain, seasonal and food allergies, recurrent rhinitis and pharyngitis. His family history included, mother with a history of hematuria and mild proteinuria since adolescence. His blood pressure was normal. Complement levels, lupus serology, ASO titers, ANA and ANCA, renal function panel and renal ultrasound, were normal. However, protein/creatinine was 4. This classic presentaton of sensorineural deafness, microscopic urinary abnormalities with one or more episodes of intermittent gross hematuria and proteinuria in a patient with a maternal history of persistent hematuria strongly suggested the diagnosis of Alport's syndrome(AS). Children with AS, may initially present with only persistent hematuria. B/l SN hearing loss and occular abnormalities in this disease usually begins by late childhood or early adolescence. A review of the literature failed to identify any reported cases of congenital sensorineural hearing loss in AS. The typical changes of the glomerular basement membrane are also age dependent and may be absent from initial biopsy samples obtained from young children with AS. We perused a renal biopsy, which was consistent with IgA nephropathy. Thus, it is likely that both genetic susceptibility and environmental factors may have contributed to his early disease expression. Congenital, in contrast to acquired SN hearing loss, may not be a features of AS and alternative diagnoses need to be considered.

COEXISTENCE OF ALPORT SYNDROME AND PREECLAMPSIA

Chadi Saifan, Rabih Nasr, Marie Abdallah, Mayurathan Kesavan, Suzanne El-Sayegh, Edward Epstein. Staten Island University Hospital, Staten Island, NY

Alport's Syndrome is a hereditary glomerular disease affecting the basement membrane. It is due to different gene mutations of the collagen type 4 protein family. The coexistence of Alport's Syndrome with preeclampsia is rarely described in the literature.
We report a case of Alport's syndrome in a pregnant patient with preeclampsia.

20 y/o woman, G1P0 at 29 weeks gestation with a history Alport's Syndrome presented with hypertension and 3+ proteinuria. BP was 162/111. The rest of the physical exam was unremarkable except for mild swelling in her lower extremities. Cr was 1.45, platelets 276000, uric acid of 5.8, 24 hr urine protein of 14.1. She was treated with IV labetalol, mg sulfate, and betamethasone. Induction of labor failed leading to a c-section and an unremarkable post-op course with a decrease of her Cr to 1.1 and a better control of her BP.

In a review of the literature, only four case reports describe the association of Alport's syndrome and preeclampsia during pregnancy. The delivery leads to the resolution of proteinuria, hypertension, and renal failure. The majority of women with Alport's syndrome may undergo normal pregnancy. A plausible explanation linking the two diseases together could be due to the mutated collagen type4 found in the kidneys and the placenta leading to microvascular damage. The link between Alport's syndrome and preeclampsia remains unclear, and clinicians should be aware of the possible renal complications in such patients during pregnancy. In the future, an attempt should be made to correlate the pathology between the two diseases and perhaps establish a genetic link.

STEROID RESISTANT NEPHROTIC SYNDROME IN A PATIENT WITH CORNEAL OPACITIES AND LOW HDL: A CASE OF LECITHIN:CHOLESTEROL ACYLTRANSFERASE DEFICIENCY

Grace Snyder, Rupesh Raina, Rachel Fissell, Surafel Gebreselassie. Cleveland Clinic, Cleveland, Ohio.

The enzyme lecithin:cholesterolacyltransferase (LCAT) is responsible for the formation of cholesteryl esters from free cholesterol in the plasma. Familial LCAT deficiency is a rare autosomal recessive disease characterized by accumulation of lipoproteins in tissues. A 35-year-old Hispanic man presented to our clinic for evaluation of nephrotic-range proteinuria, renal failure, hypertension, and hypoalbuminemia. He underwent a renal biopsy that showed FSGS-type injury with moderate interstitial fibrosis and tubular atrophy. He was treated with prednisone 120mg orally every other day tapered over a course of 6 months to which he did not respond. Repeat renal biopsy showed similar lesions but with advanced fibrosis. He didn't tolerate cyclosporine nor mycophenolate mofetil. He had corneal arcus initially thought to be from long standing dyslipidemia but further ophthalmologic evaluation revealed bilateral corneal opacities with normal vision. He also had elevated total cholesterol (416 mg/dL) and low high-density lipoprotein (HDL, 14 mg/dL). Pathology from renal biopsies was revisited, and large lucent areas with electron dense cores in the glomerular basement membrane were found to be suggestive of LCAT deficiency. The combination of corneal opacities, low HDL levels, FSGS and intramembranous electron dense deposits led to a diagnosis of LCAT deficiency.

Lipid accumulation in LCAT deficiency results in a clinical syndrome that includes progressive renal failure, with lipid deposition in the glomerular basement membrane, mesangium and capillary subendothelium. Pathogenesis appears to involve uptake of the abnormal lipoprotein-X by mesangial cells leading to calcium influx that can activate calcium-dependent PKC. This results in elevation of MCP-1 mRNA expression which can enhance monocyte chemotaxis and infiltration into the glomeruli. The infiltrating macrophages and mesangial cells will accumulate lipids, ultimately forming foam cells.

The clinical presentation of corneal opacities, very low HDL, and nephrotic syndrome should prompt consideration of LCAT deficiency.

RISK FACTORS ASSOCIATED WITH RETURN TO CENTER AMONG HOME HEMODIALYSIS PATIENTS.

Luis Bent-Shaw, Margaret Yu, Courtney Lyles, Bessie Young, University of Washington Medical Center, Seattle, Washington, USA.

Home hemodialysis (HH) is a rapidly growing modality; however, many programs have difficulty with patient attrition and failure to remain home. The purpose of this study was to describe the pathway of patients referred to the HH unit over 9 year period. Data from all HH patients referred to the Northwest Kidney Center's HH unit were abstracted from 2001-2009. Data abstracted included demographics, electrolytes, albumin, parathyroid hormone, Kt/V, hemoglobin, and iron parameters. Data were analyzed using student t-test, chi squared, or logistic regression. Of the 174 patients who initiated training in the HH unit, 42 (24.1%) initiated Conventional hemodialysis, 108 (62.1%) short daily, 11 (6.3%) nocturnal , and 13 (7.5%) did not complete training. The majority of patients were white (59.9%), while blacks (21.3%), Asians (14.4%), and others (7.4%)) made up the remainder of patients. Diabetes was the main cause of kidney failure for 42.8% of patients. The majority of patients had arterial venous fistulas (69.5%). Of the 174 patients trained, 79 (45.1%) remained in the HH unit, 2 (1.1%) started PD, 40 (22%) returned in center, 13 (7.4%) transferred out of the unit for various reasons, 18(10.3%) were transplanted, and 23 (13.2%) died. Compared to whites, Blacks were 4-fold more likely to be among those who transferred back into center (OR 4.4, 95% CI=1.01-19.3), while Asians trended towards a higher odds of return (OR 3.5, 95% CI .82-15.5), after adjusting for age, smoking status, access, diabetes, and albumin. In conclusion, the majority of home patients remained in the HH program. Among those who transferred back into center, Blacks had a greater risk compared to Whites. More research is needed to determine factors associated with return to center for home hemodialysis patients.

NEISSERIA SICCA PERITONITIS IN A PATIENT ON CHRONIC PERITONEAL DIALYSIS; A RARE CAUSE

Subhraleena Das, Sujith V Cherian, Wasim A Hamarneh, Waleed Javaid, Stephen Knohl.
Department of Internal Medicine,SUNY Upstate Medical University, Syracuse, NY, USA.

Introduction: Bacterial peritonitis is a well recognized complication of chronic ambulatory peritoneal dialysis (CAPD) in patients with ESRD. Gram negative cocci are very rarely cited as pathogens (1-2%).

Case report: A 79-yr-old female with ESRD secondary to diabetes on peritoneal dialysis was admitted with nausea and vomiting of two days. The patient was febrile, and dialysis effluent grew *Klebsiella oxytoca and Enterococcus faecalis* for which the patient was started on intravenous vancomycin and oral ciprofloxacin with improvement. The patient had to be retained secondary to placement issues, and eighteen days later, she complained of similar symptoms. Her dialysis effluent was noted to be cloudy and grew 2850 cells/ microL with 91% neutrophils. The patient was started on vancomycin and tobramycin after cultures of dialysis effluent were sent. However, the patient did not show any improvement over the next 2 days. Cultures later grew gram negative diplococci, identified to be *Neisseria sicca.* Vancomycin and tobramycin were discontinued and the patient was started on IV ceftriaxone to which the patient improved clinically along with clearing up of the dialysis effluent.

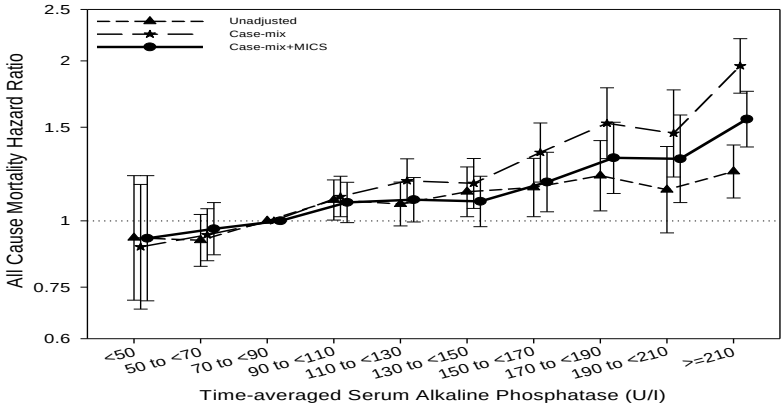
Discussion: *Neisseria sicca*, usually an oropharyngeal commensal should be considered as a possible pathogen in CAPD associated peritonitis when a patient, specially in a hospital setting, fails to respond to gram positive coverage and aminoglycosides, or when a patient with a recent episode of peritonitis develops another episode. Usually, this organism is sensitive to third generation cephalosporins, or oral fluroquinolones like levofloxacin can be a simple solution. To the best of our knowledge, this is the first reported adult case of *Neisseria sicca* peritonitis in a CAPD patient from United States.

COMPARATIVE MORTALITY-PREDICTABILITY FOR PTH AND ALKALINE PHOSPHATASE IN PERITONEAL DIALYSIS PATIENTS

Kamyar Kalantar-Zadeh, Miklos Z Molnar, Uyen Duong, Joshua J. Zaritsky, Isidro B. Salusky, Csaba P Kovesdy, Rajnish Mehrotra

Harold Simmons Center, Harbor-UCLA, Torrance, CA, Salem VAMC, Salem, VA, UCLA, Los Angeles, CA.

It is unknown how biochemical indices of mineral metabolism are associated with mortality in peritoneal dialysis (PD) patients. Survival models were examined to assess the association of serum PTH and alkaline phosphatase (ALP) and mortality in a 6-year cohort of 12,422 PD patients. PD patients were 54±16 years old and included 47% women and 23% Blacks. In the fully adjusted model, hazard ratios (HR) of death (and 95% CI) for time-averaged intact PTH increments of 500-<600, 600-<700, and ≥700 pg/ml, compared to 200-<300 pg/ml (ref.), were 1.21 (1.05-1.39), 1.19 (0.99-1.41), and 1.16 (1.03-1.31). Increased mortality risk was detected in groups with lower PTH.



Compared to serum PTH 200-<300 pg/ml (ref.), patients with PTH 100-<200 and ≤100 pg/ml had 17% (1.17 (1.07-1.28)) and 40% (1.40 (1.25-1.58)) higher death risk, respectively. Figure shows unadjusted, case-mix, and MICS adjusted death HR respectively for time-averaged serum ALP. Hence, whereas PTH shows a U-shape association, ALP shows a more linear association with mortality in PD patients.

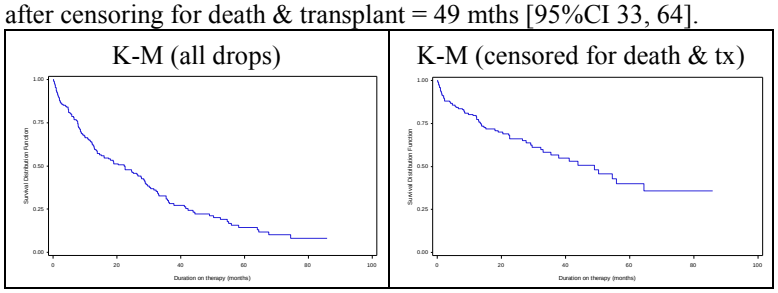
THERAPY RETENTION EXPERIENCE OF A LARGE HOME SHORT DAILY HEMODIALYSIS (SDHD) CENTER.

Michael Kraus, Catherine Cox, Yoojin Lee
IU Health, Indianapolis, IN; Tufts University, Boston, MA.

IU Health home dialysis program has trained over 200 pts since 2004. We retrospectively analyzed 169 pts that started home SDHD on the NxStage System One between 2005-10. Data included pt characteristics, social & employ status, partners, prescription and reasons for drop. Analysis included K-M and univariate Cox regression.

Mean age was 54±14 yrs, 66% male, 48% AVF & 36% catheter, 85% prescribed 6 tx/wk, and 10% 5tx/wk. Mean dialysate vol was 22±5L/tx and 126±23L/week. 59% of pts were married, and 37% single. 55% of partners were spouse (40% wife), 12% child, 10% parent, and 5% self care. Mean time on therapy was 23±20 mths.

14% of pts dropped <3mths, 23% 3-12mths and 63% ≥12 mths. Reasons for drop incl death 25%, transplant 24%, burden of therapy 20% (10% partner, 10% pt), health issues 15% and other 16%. Fig below show 50% technique survival = 22 mths [95%CI 14, 28] and after censoring for death & transplant = 49 mths [95%CI 33, 64].



Regression analyses show higher risk of drop in older pts (>74)(HR = 2.5, p = 0.003) vs. pts ag 45-64, pts with catheters (HR 1.8, p = 0.005) vs. fistulas, and pts who use premixed dialysate bags (HR 2.0, p = <0.0001) vs. the NxStage PureFlow system. Incident pts trended towards improved technique survival (HR 0.3, p = 0.06) vs. prevalent.

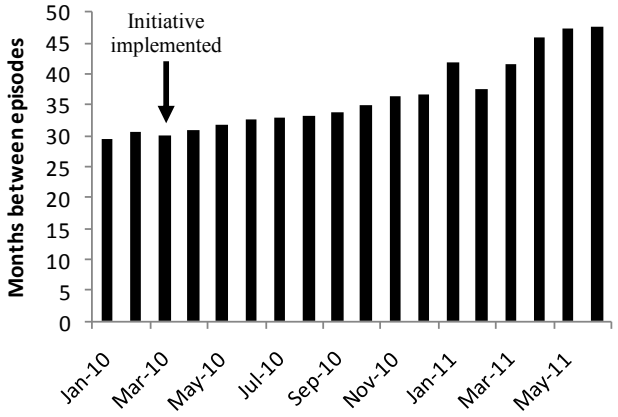
In conclusion, pts of all ages & char can be successful on SDHD, however, to ensure technique survival, factors such as age, vascular access & dialysate source need to be managed. We intend to further investigate the effects of patient and partner social status in SDHD.

IMPROVEMENT IN PERITONITIS RATES WITH THE USE OF SODIUM HYPOCHLORITE

Tracey Milligan, Patrick Cha, John Moran
DaVita Inc., Denver, CO, USA

Peritonitis is a common complication in peritoneal dialysis (PD) patients, and is a major cause of technique failure. We implemented an infection control initiative within a large dialysis organization in March 2010, and assessed its effectiveness in reducing peritonitis rates.

Electrolytically-produced sodium hypochlorite (Alcavis 50) was used to scrub the transfer set connection before and after a PD system connect/disconnect, as described by Funes (ADC, 2009). Monthly peritonitis rates were calculated using a 3 month rolling average, and were assessed between January 2010 and June 2011.



Peritonitis rates improved after implementation of the initiative, with the average time between episodes increasing from 29.4 months in January 2010 to 47.6 months in June 2011. The Alcavis 50 protocol provides a simple, cost-effective strategy for reducing peritonitis rates in PD patients.

CHARACTERISTICS OF PATIENTS WHO SURVIVED ON PERITONEAL DIALYSIS >1YEAR. Manpreet Samra, Jason Jones and Victoria Kumar, Kaiser Permanente, Los Angeles, CA, USA

We sought to examine characteristics of patients who survived ≥ 1 year on peritoneal dialysis (PD) at our institution. We identified all patients ≥ 18 years of age who initiated PD at our institution between January 1, 2001 and December 31, 2009. Patinets were grouped based on one year technique survival. Descriptions of patients at initiation of PD are shown below.

	PD ≥ 1 year (n=959)	PD < 1 year (n=188)	p value
Median age in years*	57 (47-65)	58 (49-68)	0.73
Number of females (%)	450 (47)	85 (45)	0.69
Race (%)			0.32
White	311 (32)	71 (38)	
Hispanic	303 (32)	48 (26)	
Black	187 (19)	36 (19)	
Asian	128 (13)	25 (13)	
Other	6 (1)	0 (0)	
English preferred	847 (90)	164 (89)	0.79
Charleson Co-morbidity index*	5 (3-7)	6 (4-8)	0.32
PD first modality	628 (65)	107 (57)	0.03
Diabetes mellitus (%)	564 (59)	113 (60)	0.81
enal creatinine clearance in L/week*	49 (25-78)	46 (26-81)	0.71

* =95% CI

Patients who survived ≥ 1 year on PD had similar baseline demographics, co-morbidity scores and renal creatinine clearances as patient who did not, but were more likely to have performed PD as their first dialysis modality.

RELATIVE RISKS OF DEATH AND HOSPITALIZATION IN HEMODIALYSIS PATIENTS ENROLLED IN DAVITA RX

Eric Weinhandl, Thomas Arneson, Wendy St. Peter; Chronic Disease Research Group, Minneapolis, MN.

Medication burden in end stage renal disease (ESRD) patients is high. Interventions to improve access, adherence, and persistence may improve outcomes. DaVita Rx (Rx) is a pharmacy that provides a range of prescription drug services to dialysis patients, including pharmacist access, medication reviews, refill management, and prior authorization assistance. Enrollment in Rx is voluntary. In a retrospective study, we assessed the relative risks of death and hospitalization in Rx enrollees and matched controls. Rx enrollees included maintenance hemodialysis (MHD) patients at DaVita dialysis centers in 2006-2008, with Medicare coverage during the 3 months before enrollment. For each Rx enrollee, we identified up to 5 matched controls from contemporary Medicare MHD patients at DaVita centers. Matches were defined by same state of residence, same dual Medicare/Medicaid eligibility status, and most similar propensity of Rx enrollment, as estimated from demographic characteristics, time since ESRD onset, comorbidity, treatment history, and transplant waitlist status. We followed patients from Rx enrollment or matched index date until earliest of death, MHD cessation, Medicare coverage loss, or December 31, 2008, and we identified hospitalization stays in the interval. All covariates and outcomes were ascertained from the United States Renal Data System, after linking to DaVita records.

The cohort included 14,933 Rx enrollees and 73,186 controls, and 61.7% were dual-eligible. Measured factors were balanced across the groups. The mortality hazard ratio (MHR) for Rx enrollees *vs.* controls was 0.88 (95% interval, 0.84-0.92). Among duals, the MHR was 0.85 (0.81-0.90). Relative rates of hospitalization admissions and days for Rx enrollees *vs.* controls were 0.97 (0.94-1.00) and 0.95 (0.92-0.99), respectively; Rx enrollees had 0.04 fewer admissions per year. Among duals, relative rates of admissions and days were 0.93 (0.90-0.97) and 0.90 (0.87-0.94), respectively; Rx enrollees had 0.11 fewer admissions per year. Rx enrollment was associated with lower risks of death and hospitalization, especially in medically complex dual-eligible patients. More research is needed to verify robustness of results to unmeasured confounding and to describe patterns of medication use in Rx enrollees.

NEEDS, CONCERNS, STRATEGIES, AND ADVICE OF DAILY HOME HEMODIALYSIS CAREGIVERS

Janet L. Welch[1], Tamilyn Bakas[1], Charlotte Thomas-Hawkins[2], Susan McLennon[1], Brian Decker[1], Doris M. Byers[1], Catherine Monetti[2]
Indianapolis, IN[1]; Newark, New Jersey[2], USA

Using a mixed-methods design, the purpose of this study was to identify and describe the needs, concerns, strategies, and advice of family caregivers of individuals receiving daily home hemodialysis and to compare these qualitative data with those obtained from two existing caregiver instruments.

Sixteen caregivers were interviewed (mean age 60, 12 female, 14 white, mean length of time on daily home hemodialysis 28 months). Qualitative data were collected using semi-structured interviews with 5 open-ended questions. Quantitative data were collected using two existing caregiver instruments: the Oberst Caregiving Burden Scale and the Bakas Caregiving Outcome Scale.

Caregivers described needs, concerns, and strategies and offered advice in 6 major categories: information and resources, physical care, instrumental care, emotions and behaviors, personal responses to caregiving, and benefits of home hemodialysis. Qualitative and quantitative data were congruent. Caregivers indicated they spent a large amount of time providing emotional support (68.7%) and transportation for the patient (66.7%), as well as monitoring symptoms (62.5%). Life changes as a result of providing care were mostly positive. A majority revealed changes for the better in their self-esteem (68.9%), relationship with the patient (68.7%), and future outlook (56.2%). Changes for the worse were time for family activities (50.1%) and financial well-being (43.8%).

This study provides valuable information about relevant areas to consider when developing an intervention program for daily home hemodialysis caregivers. Exploring the unmet needs of caregivers whose loved one has returned to center hemodialysis may also be necessary for a fully developed intervention program.

NEW ONSET HYPERTENSION FOLLOWING ABRUPT DISCONTINUATION OF CITALOPRAM

Walter Astorne, Sandra Herrmann, Qi Qian
Mayo Clinic, Rochester, MN

Abrupt cessation of selective serotonin (5-HT) re-uptake inhibitors (SSRIs) has been associated with dizziness, nausea, myalgias, anxiety and irritability. It is unclear whether blood pressure (BP) can be perturbed in the setting of abrupt SSRI withdrawal.

A 48-year-old woman on chronic citalopram (40mg daily) therapy for depression was referred to Nephrology for new-onset hypertension. Her BP was 172-180/103-110mmHg on an ambulatory BP recording. On presentation, she appeared restless and irritable. Her BMI was 34. On further questioning, she revealed self-discontinued citalopram two weeks prior for non-medical reasons. She subsequently developed headache, but denied NSAID, tobacco, alcohol, or illegal drug use. Her examination was benign. Her serum creatinine and urinalysis were normal, and urine drug screen negative. She was advised to resume citalopram and to try lifestyle modification including weight reduction and dietary salt restriction. At two-month follow-up, her BP was normalized (110-120/64-70 mmHg), without any weight change or adhering to a low salt diet.

Citalopram is one of the SSRIs commonly prescribed for depression and affective disorders. It blocks serotonin re-uptake, resulting in its therapeutic effects. Studies have shown that norepinephrine (NE) neurons from the locus coeruleus reciprocally interact with the 5-HT neurons in the brainstem. In rats, chronic administration of SSRI inhibits the activity of NE neurons, and abrupt removal of such inhibition could cause NE neuron hyperactivation. Abrupt cessation of SSRI may therefore trigger adrenergic hyperactivation and hypertension. In this patient, the temporal association of SSRI cessation and the occurrence of hypertension, as well as the complete BP normalization with the re-institution of citalopram and without needing antihypertensive medication strongly suggest that the abrupt SSRI withdrawal was the trigger for BP elevation. As illustrated in this case, the degree of hypertension in such setting could be severe.

Abrupt cessation of SSRI should be considered in the differential diagnosis of new onset hypertension.

ARTERIAL WAVEFORMS IN PREHYPERTENSION: EFFECT OF THE BETA-ADRENERGIC ANTAGONIST NEBIVOLOL

Jason T. Davis, , Srikrishna Khandrika Maple Fung, Milos M. Milic, Daniel T. O'Connor.
University of California, San Diego. San Diego, CA

Objective: Characterize the effect of the novel beta-adrenergic antagonist nebivolol on central aortic blood pressures, aortic augmentation index, and pulse wave velocity in prehypertensive individuals.

Background: Preypertension is emerging as major risk factor for adverse cardiovascular consequences. Increased pulse wave velocity, aortic augmentation index, and aortic blood pressures have been linked with augmented risk of cardiovascular disease and mortality. While the effects of antihypertensives on these parameters in hypertensive patients have been studied, there are few data in prehypertensives.

Methods: 50 individuals were randomized to either nebivolol (5 mg daily) or placebo in a double-blind clinical trial. Subjects underwent measurement of pulse wave velocity as well as aortic blood pressure and aortic augmentation index via pulse wave analysis at baseline and 8 weeks. Subjects also had peripheral blood pressures and blood and urine biochemistries done at each visit.

Results: Subjects treated with nebivolol displayed significant reductions in aortic systolic (112.7$\pm$2.5 to 106.2$\pm$2.4 mmHg p=0.011), aortic diastolic (79.1$\pm$2.1 to 71.3$\pm$1.9 mmHg p=0.009), and aortic mean arterial pressure (94.2$\pm$2.1 to 86.8$\pm$1.9 mmHg, p=0.002). Pulse wave velocity (6.73$\pm$0.28 to 6.00$\pm$0.18 m/sec, p=0.088) and aortic augmentation index (14.7$\pm$3.4% to 11.9$\pm$3.8%,,p=0.415) trended toward improvement but changes were not significant. Nitric oxide, measured as urinary nitrites, was also significantly elevated in the nebivolol group (40.31$\pm$5.05 to 64.38$\pm$14.25 mmoles/mg Cr p=0.030).

Conclusions: Central blood pressures can be effectively lowered by treatment while subjects are still in the prehypertensive phase.

AUTONOMIC AND HEMODYNAMIC ORIGINS OF PREHYPERTENSION: CENTRAL ROLE OF HEREDITY.

Jason T. Davis, Fangwen Rao, Dalal Naqshbandi, Maple M. Fung, Kuixing Zhang, Andrew J. Schork, Caroline M. Nievergelt, Michael G. Ziegler, Daniel T. O'Connor. University of California, San Diego. San Diego, CA. USA

Objective: To better understand the origins and progression of prehypertension.

Background: Prehypertension is a risk factor for progression to hypertension, cardiovascular disease and increased mortality. We used a cross sectional twin study design to probe the role of heredity in likely patho
physiological events (autonomic or hemodynamic) in the syndrome.

Methods and Results: 812 individuals (337 normotensive, 340 prehypertensive, 135 hypertensive) were evaluated in a sample of twin pairs, their siblings and other family members. They underwent non-invasive hemodynamic, autonomic and biochemical testing, as well as estimates of trait heritability (h^2: % of trait variance accounted for by heredity) and pleiotropy (r_G: genetic covariance or shared genetic determination of traits) by variance components. In the hemodynamic realm, an elevation of cardiac contractility (LV dP/dT max) prompted increased SV, in turn increasing CO, which elevated BP into the prehypertension range. Autonomic monitoring detected an elevation of norepinephrine secretion plus a decline in cardiac parasympathetic tone. Twin pair variance components documented substantial heritability as well as joint genetic determination for BP and the contributory autonomic and hemodynamic traits. Genetic variation at a pathway locus also indicated pleiotropic effects on contractility and BP.

Conclusions: Elevated BP in prehypertension results from increased CO, driven by contractility as well as HR, which may reflect both diminished parasympathetic and increased sympathetic tone. In the face of increased CO, SVR fails to decline homeostatically. Such traits display substantial heritability and shared genetic determination by loci not yet fully elucidated. These findings clarify the role of heredity in the origin of prehypertension and its autonomic and hemodynamic pathogenesis. The results also establish pathways that suggest new therapeutic targets for prehypertension, or approaches to its prevention.

BLOOD PRESSURE MANAGEMENT IN PATIENTS WITH CHRONIC KIDNEY DISEASE AT A TEACHING HOSPITAL AMBULATORY CLINIC

Nischala Dhanekula, Leela Mary Mathew
Unity Health System, Rochester, New York.

American Society of Nephrology (ASN), the National Kidney Foundation (NKF) and the Joint National Committee (JNC) seven recommend a goal BP of <130/80 mmHg for all chronic kidney disease (CKD) patients to prevent progression to ESRD. Clinical trials have shown that systolic blood pressure (SBP) is a more important risk factor than diastolic blood pressure (DBP). We have reviewed electronic medical records of patients with CKD stage 1-4 for blood pressures and the medications used for its management. 147 patients were identified and an average SBP of 3 months was calculated. 74 (50%) had SBP > 130mmHg, of whom only 19 patients (26%) were on 4 or more blood pressure medications.

The table below depicts the use of diuretics, angiotensin converting enzyme inhibitors (ACEI)/ angiotensin receptor blocker (ARB) and beta blocker in these patients.

	Number of Patients using currently (%)	Number of patients used in the past (%)	Number of patients never used(%)
Diuretics	49 (66%)	11 (15%)	14 (19%)
ACEI/ARB	38 (51%)	20 (27%)	16 (22%)
Beta Blockers	58 (78%)	4 (5%)	12 (16%)

In conclusion, we have to optimize the pharmacological and non-pharmacological measures to control blood pressure. Providers have to review the medications at each visit and educate the patient about the consequences of the disease as hypertension is asymptomatic.

PROSPECTIVE, OPEN, NON-RANDOMIZED STUDY TO EVALUATE INFLUENCE OF HEMODIALYSIS ON THE PLASMA CONCENTRATION OF NIFEDIPINE

Junzhou Fu,Ming Liang, Riguang Liu,Lin Chen,Haoxiong Chen,Junzhou Fu
Department of Nephrology,Guangzhou First Municipal People's Hospital,Guangzhou, Guangdong ,China

Adalat GITS, a long-acting dihydropyridine calcium channel blocker, is widely use to treat the hypertension.Since Whether the nefidipine in the circulation can be removed by HD is conversal, this study will evaluate the influence of HD on the drug plasma concentration. A total of 10 patients on maintenance hemodialysis were enrolled in this prospective, non-randomized, non-controlled study .Patients were assigned to recive nifedipine CR(Adalat GITS) 60mg orally once a day at 08:00h .After 4 week of antihypertensive treatment,venous blood samples were collected at the first, second ,third and fourth hour of the IHD session(13:00-17:00). Additional venous blood samples were drawn at the corresponding time points on the next hemodialysis-free day. In order to measure plasma concentrations of nifedipine by high performance liquid chromatography-mass spectrometry analysis. During hemodialysis and non-dialysis day,circulating level of nifedipine were increased gradually (from 23.79 ± 13.67 to 35.44 ± 14.64 micromol/L, $p<0.05$; from 21.43 ± 10.73 to 31.41 ± 12.98 micromol/L, $p<0.05$,respectively).and the changes in $AUC_{(5-9)}$ was found not to differ(147.16 and 129.32 microgram/L.h respectively ,$p>0.05$).These date indicate that hemodialysis doesnot influence the plasma concentrations of nifedipine,the therperutic dosage of Adalat GITS need not to modified for ESRD patient treated with HD.

RENAL VEIN RENIN LEVELS IN ATHEROSCLEROTIC RENAL ARTERY STENOSIS (ARAS) DURING ACE INHIBITOR/ARB Rx

Sandra M.S. Herrmann, Monika Gloviczki, Lilach Lerman, Stephen Textor, Mayo Clinic, Rochester, MN, USA.

Renal vein renin (RVR) levels are limited as diagnostic tests, partly due to BP Rx, volume status, and putative reduction in their role during the evolution of renovascular hypertension. We sought to compare peripheral PRA and RVR in patients with unilateral ARAS (n=33, mean age 68±9.3) as compared to essential hypertensives (EH) (n=32, mean age 63±16.3) under fixed sodium intake and ACE/ARB Rx. Most (75%) were taking thiazide-class diuretics. Renal blood flow was measured by multi-detector CT (MDCT). PRA was measured on Day 1, while RVR was obtained 2 days later after an additional dose of i.v. furosemide. NET contribution PRA of each RVR was determined as (Renal vein-IVC)/IVC x 100 %(see table). The mean degree of stenosis in the ARAS was 73% by MDCT. Results:

Parameters	*EH(N=32)*	*ARAS(N=33)*	*p-value*
$PRA_{day\ 1}$	6.2±7.5	9.63±12.4	0.3301
%NET PRA	23±39	105±131	0.0037
Kidney $RBF_{ml/min}$	399.18±174	221.84±148	<0.0001

NET addition of RVR from the stenotic kidney correlated inversely with the proportional reduction in RBF (R=-.36, *p*=.03). Data also demonstrate enhanced stimulation of PRA levels from Day 1 to Day 3 in ARAS (*p*=.02) as compared to EH group (*p*=.0.18). Despite older age and longstanding hypertension, many patients with ARAS still demonstrate lateralization of NET PRA from the post-stenotic kidney. These data support the ongoing role of renin-angiotensin system activation in ARAS and may warrant the need for continued renin-angiotensin system blockade during long-term therapy of ARAS.

ASSOCIATION OF URINARY SODIUM-TO-POTASSIUM RATIO WITH OBESITY AND TOTAL PERCENT BODY FAT

Nishank Jain; Essam F. Elsayed; Abu Minhajuddin; S. Susan Hedayati; University of Texas Southwestern Medical Center at Dallas, Veterans Affairs North Texas Health Care system, Dallas, Texas

Previous studies reported the association of dietary sodium (Na), but not potassium (K), with type 2 DM. One study investigating a similar association with obesity was limited to Venezuelan participants. We examined the association of dietary Na and potassium (K) intake (measured by first void morning urinary Na to K ratio, $U_{Na/K}$) with increased BMI and total body percent fat (TBPF, measured by DEXA scan), independent of the presence of DM, in 3,303 participants of the population-based multi-ethnic Dallas Heart Study using linear regression. Of the cohort, 52% were African American, 17% Hispanic, 12% diabetic, and 36% hypertensive. Mean (SD) age, BMI, TBPF and $U_{Na/K}$ were 43 (10) years, 30 (7) kg/m^2, 32 (10) % and 4.2 (2.8). In the unadjusted model, for each SD (3 units) increase in $U_{Na/K}$, BMI increased by 0.6 kg/m^2, 95% CI (0.3, 0.9), and TBPF increased by 0.6% (0.2, 1.0), p values <0.0001 and 0.003, respectively. This association remained significant even after adjusting for age, race, gender, Diabetes Mellitus, systolic and diastolic BP, with adjusted values of 0.4 kg/m^2 (0.1, 0.6) for BMI and for 0.4% (0.2, 0.7) for TBPF.

These finding suggests that high dietary Na and low K intake are associated with an increase in obesity as measured by BMI and TBPF, but independent of high BP and the presence of DM.

BILATERAL NEPHRECTOMIES AND HYPERTENSION CONTROL IN ADULT POLYCYSTIC KIDNEY DISEASE PATIENTS BEFORE AND AFTER RENAL TRANSPLANTATION

Sarath Kolluru, Vivek Miyani, MJ Barchman
East Carolina University Brody School of Medicine Greenville, NC

Despite patients developing end stage renal disease (ESRD) from adult polycystic kidney (PKD) disease, patient's kidneys continue to produce renin contributing to blood pressure. After removal of both kidneys, patients with PKD develop significantly lower blood pressure. Native bilateral nephrectomy in patients with PKD is not commonly performed due to the complications that may arise. PKD patients undergo bilateral nephrectomies due to uncontrollable flank pain caused by nephromegally and less commonly for the purpose of blood pressure control. The objective of our study is to identify the impact of bilateral nephrectomy on hypertension prior to and after renal transplant. A retrospective chart review was performed on patients with a history of PKD who underwent renal transplantation in the last 10 years at a single tertiary care facility. Patients were categorized into two groups, those who had bilateral nephrectomies prior to renal transplantation and those who did not. The analyses included patients' blood pressure and number of blood pressure medications prior to and after receiving renal transplant. We identified a total of 13 PKD patients, 4 underwent bilateral nephrectomies prior to renal transplantation. Patients with bilateral nephrectomies had lower blood pressure before renal transplant and were prescribed fewer blood pressure medications compared to patients that did not. Post-transplant, these patients continued to have lower blood pressure and required fewer blood pressure medications compared to their counterparts.

In conclusion, the patients who underwent bilateral nephrectomies, resulting in less renal mass and renin production, had lower blood pressure and required fewer blood pressure medications before and after renal transplantation. The study revealed that performing bilateral nephrectomies on ESRD patients' secondary to PKD reduced blood pressure which was sustained after renal transplantation.

ALDOSTERONE BLOCKADE IMPROVES ENDOTHELIAL FUNCTION IN OBESE PATIENTS WITH THE METABOLIC SYNDROME

Julio Cesar Moraes Lovisi, Danielle Guedes Andrade Ezequiel, Rogério Baumgratz de Paula, Thaís Chehuem Bicalho, Fernanda Castro Barros, Mônica Barros Costa

NIEPEN-Federal University of Juiz de Fora, Minas Gerais - Brazil

In recent years a role for aldosterone in the pathophysiology of the metabolic syndrome (MS) has been suggested. In this study we evaluated the effects of aldosterone blockade on blood pressure (BP), metabolic parameters as well as in brachial artery flow mediated vasodilatation (FMD) in non-diabetic obese individuals with the MS. Twenty seven subjects were enrolled in a protocol that included clinical evaluation, serum lipid profile and fasting plasma glucose analysis. Twenty-four hour ambulatory blood pressure monitoring and FMD analysis were performed both before and after 16 weeks of spironolactone (SPIRO) 50 mg once a day. Mean body mass index was 35.2±5.22kg/m^2 and did not change significantly after SPIRO (35.6±3.64kg/m^2). Systolic BP reduced from 137.5±9.69 to 124.1±1.78 mmHg and diastolic BP reduced from 88.9±7.98 to 81.1±5.64 mmHg before and after SPIRO treatment respectively ($p<0.001$). These findings were associated with HDL cholesterol levels increase (42.2±9.10 *vs* 47.8±7.08 mg/dL, $p<0,001$). Fasting plasma glucose (89.7±9.59 *vs* 91.6±10.64 mg/dL) and triglycerides (183.2±100.07 *vs* 182.5±118.84 mg/dL) levels did not change significantly after SPIRO. Flow mediated vasodilatation in brachial artery increased from 8.2±5.17% to 15.1±6.12% after SPIRO ($p<0.001$).

In conclusion, aldosterone blockade in subjects with the MS improved endothelial function and decreased blood pressure with favorable effects on metabolic parameters.

REFRACTORY HYPERTENSION SUCCESSFULLY MANAGED BY TARGETED THERAPY

Rosemary Nwoko and Qi Qian Mayo Clinic, Rochester, MN, USA

17-alpha-hydroxylase deficiency is a rare (1 in 50,000 births) genetic disease first described in the 1960s. The disease typically becomes symptomatic when affected individuals reach puberty and is characterized by hypertension (HTN), hypokalemia and hypogonadism.

A 24-year-old woman with a 46 XY chromosomal pattern and 17-alpha-hydroxylase deficiency was referred to our department for refractory hypertension. HTN was diagnosed at age 15, and she had been previously evaluated in multiple institutions without successful blood pressure (BP) control. On presentation to our institution, her anti-hypertensive regimen included valsartan (80 mg twice daily), bisoprolol (5 mg daily), felodipine SR (5 mg twice daily), and moxonidine (0.4 mg daily). She was also on dexamethasone (0.5 mg daily). On this regimen, her BP fluctuated widely causing episodic headaches and lightheadedness, associated with generalized fatigue and weakness.

17-alpha-hydroxylase deficiency follows an autosomal recessive inheritance resulting from mutations in CYP17 gene on chromosome 10q24. Cases described thus far typically occur in the setting of consanguinity, which was the case in our patient; her parents were 1st cousins. The defect in the gene product (17-alpha-hydroxylase) leads to diminished production of cortisol and sex steroids and a sustained ACTH elevation with resultant mineralocorticoid excess. In our patient, 11-deoxycortisol was < 5 ng/dL (reference range 10-79 ng/dL) and corticosterone was 13200 ng/dL (reference range 53-1560 ng/dL).

Based on the specific disease mechanism, we gradually weaned her off her old regimen and replaced them with single drug therapy of mineralocorticoid antagonizer, spironolactone (25 mg once daily). Over the course of three weeks, her BP stabilized to the range 112-124/80-88 mmHg. This case illustrates the importance of establishing the pathogenic mechanism of hypertension to aid successful treatment.

A RARE CASE OF INCIDENTALLY DISCOVERED URINARY BLADDER PARAGANGLIOMA

Anca Rafiroiu, Emmanuel Bravo, Department of Nephrology and Hypertension, Cleveland Clinic Foundation, Cleveland, OH

Bladder pheochromocytomas are rare tumors, occurring in less than 10% of all cases of pheochromocytomas; of those, more than 80% are hormonally active. We report the case of a 32 year old woman that presented with recent onset (within 10 months of the initial presentation) of micturition induced palpitations, diaphoresis and headaches. She was normotensive and asymptomatic at presentation; a bladder wall mass was visualized on pelvis US and subsequent MRI, biochemical studies were suggestive of pheochromocytoma (plasma norepinephrine NE 876 pg/ml, normetanephrine NMN 2.7 pg/ml, epinephrine <10 pg/ml and metanephrine <0.20 pg/ml), and an I^{123} metaiodobenzylguanidine (MIGB) scintiscan showed only a MIBG-avid bladder mass. In preparation for surgery she increased her dietary sodium intake, was started on incremental doses of the alpha-adrenoceptor blocking drug Doxazosin to reduce the reactivity to released NE, and on daily calcium channel blocker Verapamil to inhibit the subsequent HR response to decreasing BP. She underwent robotic partial cystectomy with no episodes of HTN documented intraoperatively, and subsequent pathology revealed paraganglioma (3.6 cm in greatest dimension). Convalescence was uneventful, with no further need for any antihypertensive medications, and plasma NMN returned to normal (0.63 pg/ml). Malignant tumors are documented in up to 40% of bladder pheochromocytomas; therefore, even though the patient did not exhibit any clinical or histopathological features indicative of malignancy, she will be followed up yearly with biochemical markers and, if indicated, with I^{123} MIBG scintiscan. This case illustrates three important teaching points in the detection and management of bladder pheochromocytomas– micturition induced symptoms are the clinical landmark of this disorder, relatively low plasma NE levels can explain normotension in between micturitions, and Doxazosin is a safe and efficacious drug in the preoperative management of these patients.

DIETARY POTENTIAL RENAL ACID LOAD (PRAL) VARIES BY SOCIODEMOGRAPHICS AND CKD STATUS AMONG U.S. ADULTS.

Tanushree Banerjee[1], Deidra Crews[2], Donald Wesson[3], Rajiv Saran[4], Anca Tilea[4], Desmond Williams[5], Nilka Burrows[5], Neil Powe[1]
[1]UCSF, San Francisco, CA; [2]Johns Hopkins University, Baltimore, MD;[3] Texas College of Medicine, Texas; [4]University of Michigan, Ann Arbor, MI; [5] CDC, Atlanta, GA.

Dietary acid induces kidney injury and promotes GFR decline in animals. However, dietary acid load is not well-described in humans. In a representative sample of 15,956 U.S. adults (aged>20 years) in NHANES 1999-2004, we examined the independent association between dietary PRAL and sociodemographics (age, gender, race/ethnicity, education, poverty status), health behaviors (smoking, physical activity), diabetes, hypertension & CKD status (eGFR <60 ml/min/1.73m^2 or urinary albumin:creatinine ≥30mg/g) using multiple logistic regression. We calculated PRAL based on 1-day dietary recall and body surface area. High PRAL was defined as above the median. The median PRAL in our study was -2598.5 mEq/100g. Younger adults (age 20-40 & 41-60 yrs) had lesser adjusted odds of high PRAL (OR [95% CI] =0.45[0.41-0.50] & 0.61[0.55-0.68], respectively) than adults >60 yrs. Women had greater odds of high PRAL than men (OR [95% CI] =2.87[2.65-3.11]). Individuals with education less than high school had greater odds of high PRAL than those with higher education (OR 1.39 [1.27-1.53]). As poverty index ratio (PIR) increased (reflecting higher income) there was a decrease in the OR of high PRAL, p (trend) <0.0001. A linear relation was seen between the log odds in PIR categories. Non-Hispanic blacks, Mexican Americans and other ethnic group (Asians) showed greater odds of high PRAL (OR [95% CI] = 2.1[1.86-2.32], 1.2[1.03-1.28] & 1.6[1.35-1.82], respectively) than non-Hispanic whites. Diabetes, hypertension, and health behaviors were not significantly associated with PRAL. People with high PRAL had twice the odds of having CKD as people with low PRAL The OR of high PRAL increased with CKD stage (1-5), P (trend) <0.0001. Older age, poverty, racial/ethnic status, low education and CKD status are associated with high PRAL among U.S. adults, which may contribute to the increased risk of progressive CKD observed in these groups.

SHORT TERM EFFECT OF NUTRITION INTERVENTION ON RISK FACTORS FOR THE METABOLIC SYNDROME.

Gina Bayless, Genevieve Popp, Christina Speiser, Alison Steiber, University Hospitals Case Medical Center, Cleveland, Ohio.

Risk factors for metabolic syndrome have been reported in post-kidney transplant (PKT) patients. The purpose of this study was to compare the change in weight and lipid concentrations between day 10 and 150 in PKT patients treated by or not, by a Registered Dietitian (RD). This was a retrospective chart analysis on PKT from one center in the Midwest United States. Data were analyzed with SPSS vs 20 and significance was defined as $p<0.05$. The patients analyzed (n=77), 40% were males and the mean age, weight, serum low density lipoproteins (LDL), high density lipoproteins (HDL), triglycerides (TG), and cholesterol (CHOL) were 50±13 years, 185.8±42.1 lbs, 99.6±38.5(mg/dl), 45.9±15.2(mg/dl), 150.3±91.3 (mg/dl), and 176.5±51.0 (mg/dl), respectively. Table 1 shows the day 10 and 150 values and whether there was a difference between those treated by an RD (n=12) and those not treated (n=65).

Parameter		10 d	150 d	P value
		[mean±SD]	[mean±SD]	
Weight	Yes RD consult	201.3±54.8	201.4±50.3	ns
	No RD consult	183.9±40.0	179.5±39.4	$p<0.05$
LDL	Yes RD consult	106.3±51.4	103.2±38.2	ns
	No RD consult	98.6±36.0	65.8±10.6	$p<0.05$
HDL	Yes RD consult	44.1±17.6	36.8±13.9	ns
	No RD consult	46.2±14.9	46.6±15.9	ns
TG	Yes RD consult	169.3±102.2	187.9±179.3	ns
	No RD consult	147.1±89.3	194.0±76	ns
Chol	Yes RD consult	181.8±64.0	141.4+29.6	$p<0.01$
	No RD consult	175.6±48.7	184.7+54.6	ns

In conclusion, patients with an RD consult tended to be heavier and have higher lipid values. Between day 10 and 150 PKT patients values' remained steady, except serum LDL and Chol. Patients who were seen by an RD had significantly better Chol at day 150, but patients who were not treated by an RD had better LDL.

IMPLEMENTATION OF A "GETTING BETTER" HEALTH AWARENESS PATIENT EDUCATION INITIATIVE USING TALKING CONTROL SUPPORT THERAPY IN CHRONIC HEMODIALYSIS RESULTS IN IMPROVED OR STABILIZED LABORATORY VALUES

Judith Beto, Katherine Schury, Mary Nicholas, Nora Moravcik, Bessie Baldovino, Vinod Bansal

Loyola University Health Systems Dialysis, Maywood, Il, USA

Chronic hemodialysis (HD) education may result in boredom , disinterest, and noncompliance. A cognitive behavior method, talking control (TC), comparable to befriending, has not been studied in HD patients. The purpose of this study was evaluate effect of TC within context of a "getting better" health awareness initiative in a single-unit chronic HD unit. Methods: TC consisted of general conversations about lifestyle without specific education goals. 49 patients (mean age 57.4 year, 60% African American, mean 4.2 years HD, 38% of unit) were randomly approached to participate during HD (5-10 minutes TC/wk/12 wks {n=31} or 20-30 minutes TC/ wk /6 wks {n=18}). A "getting better" rolling cart was used to provide potential talking points. Items (cost $65.00) were rotated (i.e., pens, small notebooks, single serve food items, pill boxes, games, brochures). Focus was on "talking" about life on HD; how barriers/problems might be addressed in a conversational format. Results were analyzed (quantitative) by changes in 3 mean laboratory values (ALB, P, PTH) or (qualitatively) by post-TC blinded survey comments. Results showed stabilization (24%) or improvement (76%) of lab values; 84% continued at least one activity. TC $\geq$ 5 min/wk may be an effective innovative way to deliver chronic education for both patients and staff.

FOOD PREPARATION AND CONSUMPTION HABITS IN URBAN HEMODIALYSIS PATIENTS. Ashley C. Vourakis[1], Conrad R. Mitchell[2], Premila Bhat[2] [1]Bronx High School of Science, Bronx NY [2]Atlantic Dialysis Management Services, LLC. Ridgewood NY.

Background Malnutrition is highly prevalent in ESRD patients and is associated with increased mortality. Measures to improve nutritional status include dietary counseling and modification yet little is known about food preparation and consumption habits of ESRD patients. Methods To better describe dietary habits in ESRD patients a Food Preparation and Consumption Habits survey was devised. The survey and the REALM-SF, a validated instrument for rapid assessment of health literacy, were administered to in-center Hemodialysis patients at three urban dialysis facilities. Clinical and demographic characteristics were obtained from the electronic medical record. Results 122 individuals were surveyed. Mean age was 69 years, 54% were Male, 20% Black, and 22% had Medicaid insurance. 39% of patients eat ≤3 meals a day. Many do not do their own cooking, grocery shopping or evaluate nutrition labels (Table 1). 45% had health literacy below High School level. Patients with low Health Literacy were less likely to go grocery shopping ($p<0.05$). There was no association between other food habits and Health Literacy. Conclusions Better understanding of food consumption and preparation habits may help to refine educational programs directed at improving nutritional status in dialysis patients.

Eats fewer than 3 full meals daily	39%
Prepares for ≤5 meals/ week themself	48%
Regularly goes grocery shopping	61%
Regularly looks at nutrition labels	46%
Eats at restaurants >10 times per month	8%
Eats alone	25%

HEALTH LITERACY IS ASSOCIATED WITH HIGHER SERUM PHOSPHORUS LEVELS IN URBAN HEMODIALYSIS PATIENTS. Ashley C. Vourakis[1], Conrad R. Mitchell[2], Premila Bhat[2] [1]Bronx High School of Science, Bronx NY [2]Atlantic Dialysis Management Services, LLC. Ridgewood NY.

Background Low levels of Health literacy are common among dialysis patients and are associated with higher mortality. We hypothesize that low Health Literacy is associated with adverse serum Phosphorus and Albumin levels—both markers of poor outcomes in ESRD. Methods Health literacy was measured using REALM-SF, a validated instrument designed to quickly assess levels of health literacy, in a cohort of unselected in-center Hemodialysis patients at three urban dialysis facilities. Clinical and demographic characteristics were obtained from the electronic medical record. Results REALM-SF was administered to 122 patients. Characteristics included Mean age 69 years, 54% Male, 20% Black, 22% with Medicaid insurance only. 45% of patients had health literacy below High School level and 12% had health literacy levels equivalent to third-grade or below. Patients with health literacy of high school level or above had higher serum Phosphorus levels (5.38 vs 4.99 mg/dL, $p<0.05$) and were more likely to have Phosphorus levels above 5.5 mg/dL (19% vs. 11%, N.S.). There was no difference in Albumin levels between the groups (4.0 vs. 4.1 g/dL). Conclusions, Lower health literacy is associated with a trend toward lower serum Phosphorus and better Phosphorus control in urban Hemodialysis Patients. The association of adequate health literacy with poorer Phosphate control suggests limitations of current educational materials focused on nutrition in CKD.

REALM-SF Health Literacy Level:	Average Phos	% with Phos >5.5 mg/dL
At or above High School Level	5.38	19
Below High School Level	4.99	11

RENAL BUDDY: A FAST FOOD NUTRITION WEB APPLICATION FOR PATIENTS WITH CHRONIC KIDNEY DISEASE

Daniel Colella[1], Janeen León[1, 2], Christopher Ouimet, Case Western Reserve University[1], MetroHealth Medical Center[2], Cleveland, Ohio

Patients (pts) with chronic kidney disease (CKD) are often instructed to limit their dietary phosphorus and potassium intake as a therapeutic strategy aimed to control serum levels. Unfortunately, fast food manufacturers are not required to label these nutrients on their products, making it difficult for pts with CKD and clinicians to determine the phosphorus and potassium content of various foods. The purpose of this project was to develop a web application for mobile devices to serve as a portable interactive reference guide for determining the phosphorus and potassium content (as well as other pertinent nutritional information) of common fast food items.

Nutritional information of 234 entrees, desserts and beverages from 14 fast food restaurants was extracted from the USDA Nutrient Analysis Database for Standard Reference. Variables include serving size, calories (kcal), protein (gm), carbohydrates (gm), sodium (mg), potassium (mg), phosphorus (mg) and the phosphorus-protein (mg/gm) ratio. In addition to the nutritional information we have included the number of phosphorus-containing food additives used in each menu item, when available from online ingredient lists. The application also provides a novel option for users to approximate the number of prescribed phosphorus binders necessary to absorb all the dietary phosphorus provided from a selected meal.

This mobile web application may assist CKD pts and clinicians to determine the appropriateness of fast foods for the renal diet. Furthermore, this tool may facilitate future research on the ability of mobile technology to influence food purchasing decisions by modeling the potential phosphorus binder pill burden of self-selected meals.

PATIENT-ORGANIZED EGG CLUB IMPROVES PATIENT EDUCATION AND SOCIAL NETWORK.

Linda Feder, Jo Mancinelli, Helen Elivera, Ziauddin Ahmed
Dialysis Clinic inc, Philadelphia and Drexel University College of Medicine, Philadelphia

Improvement of quality of life in ESRD population through patient education and their participation should be an important goal. Development of self management skills and safety initiatives can be supported and enhanced by organizing patients in the dialysis unit.

To support such idea we had encouraged our patients to develop "Egg Club" to improve the serum albumin level. Serum albumin level is one marker of protein stores. Protein malnutrition is common in this population. Therefore, improving protein is a priority for hemodialysis patients. Nutrition education, with a focus on intake of high-biological value protein, is one strategy for improving protein intake.

In March of 2011 the DCI clinic in Philadelphia encouraged a group of chronic hemodialysis patients to organize themselves in to an "egg club." Fourteen patients became active participants. Members of the "club" take turns bringing in hard-boiled eggs to share with the other members. The eggs, usually one per person, are eaten at the end of the dialysis treatment session. The unit dietitian provided educational handouts about the nutritional value and food safety related to eggs.

The review of records showed that 23% of all 130 patients pre-egg club serum albumin was below 3.5 g/dl. Among the 14 egg club members, the mean serum albumin level was 3.85. Eight months later, 22.6% of all patients in this clinic have serum albumin remained below 3.5 g/dL. Among the egg club participants, the mean serum albumin level is 3.83.

The patient-organized egg club did not have any effect on the serum albumin levels of its participants. This is not an unexpected result, in view of the small intervention (only 6 grams of additional protein, 3 times a week). The project was nevertheless considered worthwhile for its educational value; specifically, by raising awareness of the need for high-protein foods, and by promoting action, as well as conversation. In addition, clinic staff observed that the "egg club" had the benefit of enhancing social support networks among patients.

PREDICTORS OF MEASURED ENERGY EXPENDITURE IN MAINTENANCE HEMODIALYSIS PATIENTS: A PILOT STUDY.

Wai Yin Ho,[1] Laura Byham-Gray,[1] Scott Parrott,[1] Mary B. Sundell,[2] Alp Ikizler[2]
[1]University of Medicine & Dentistry of New Jersey, Newark & Stratford, NJ,
[2]Vanderbilt University Medical Center, Nashville, TN.

Optimal nutritional care requires an accurate estimation of energy expenditure (EE). Determinants for EE in maintenance hemodialysis (MHD) patients have not been clearly elucidated. This retrospective, cross-sectional study explored potential predictors of measured resting energy expenditure (mREE) among MHD patients. Data of adult MHD patients (n=67) from Vanderbilt University Medical Center were analyzed using Pearson's correlation and multivariate linear regression procedures to examine demographic, clinical, laboratory, and anthropometric data as predictors of mREE. The mean age of the sample was 47 ± 13 years, and 75.6% (n= 50) were African American, 92.5% (n=62) were non-Hispanic and 73.1% were males (n=49). Lean body mass (LBM) (r=0.598), alb (r=0.483), age (r=-0.455), weight (r=0.455), serum creatinine (r=0.355), height (r=0.313), BMI (r=0.275), sex (r=0.272), C-reactive protein (CRP) (r=0.265), and fat mass (r=0.256) were all significantly correlated with mREE ($p<0.05$). After screening for multicollinearity, the strongest predictive model ($R^2=0.489$, $F=14.14$, $p<0.001$) of mREE included: LBM, albumin, age, and CRP. Findings indicate that the best predictive model in this sample explained less than 50% variance of mREE. Further research with a larger sample size is needed to identify the best combination of predictors of energy expenditure in the MHD population.

DEVELOPMENT OF A NUTRITIONAL STATUS ASSESSMENT TOOL IN A HEMODIALYSIS POPULATION

Annie Lin, Kathryn S. Keim, Diane Sowa, Kelly Roehl, Stephen Korbet, Sheri Floramo-Korbet
Rush University Medical Center, Circle Medical Management, Chicago, Illinois

Protein-energy malnutrition (PEM) is associated with higher mortality risk in hemodialysis (HD) patients. The purpose of this retrospective chart review study was to develop and validate a comprehensive and easy to use nutrition assessment tool for HD patients. Malnutrition-Inflammation Score (MIS) tool was used with the addition of two new items. Added items included patient compliance with prescribed diet and exercise frequency. The new tool, MIS-B, included 12 items and ranged from zero (normal nutrition) to 34 (severely malnourished). Each MIS-B component was analyzed to determine whether it significantly contributed to the overall score. Total MIS-B was analyzed with different objective nutrition indicators to determine its construct validity. Nutrition status was determined in 23 subjects using the MIS-B in a predominately black, urban and low-income sample. Median MIS-B was 7 (IQR 5, 10). Subjects with a higher MIS-B (suggesting greater malnutrition) had reduced dietary intake ($p<0.001$), impaired functional capacity ($p=0.01$), depleted fat store ($p=0.03$), wasted muscles ($p=0.003$), a BMI less than 20 ($p=0.005$) and TIBC levels less than 200 mg/dL ($p=0.02$). Those with a higher MIS-B also did not comply with their prescribed diet ($p=0.03$). Subjects with higher MIS-B had lower serum calcium levels ($p=0.03$). There was a significant negative correlation between MIS-B and serum iron ($r=-0.5$, $p=0.007$). Most MIS-B components significantly contributed to the overall score among HD patients. Construct validity of the tool needs further examination in a larger sample size. This tool examined the HD patients' medical history, physical examination, laboratory parameters and lifestyle behaviors. All of these factors are important for clinicians to determine whether the patient is at risk for PEM.

A SELF-MANAGEMENT APPROACH TO DEVELOPING A POTASSIUM EDUCATION TOOL

Rachel Linzon, Josie Caruso-Ditta, Marla McKerracher, Richmond Hill, Ontario, Canada.

Typical potassium education tools (PET) depict food columns specifying foods to choose or avoid. Often patients feel their diet lacks variety and are confused about portions. The inclusion of a self-management approach to developing nutrition education is not routine. Subsequently, patients struggle with self-efficacy in managing their diet. A self-management approach would enable patients to provide feedback on PET and empower them with knowledge to manage the potassium in their diet.The purpose of this project was to incorporate a self-management approach in developing a PET to improve patient's ability to self-manage the potassium in their diet and improve serum potassium levels. Eighty-one patients receiving hemodialysis responded to a pre-test survey that included open and closed-ended questions. The results influenced the development of a PET booklet. Subsequently, this booklet was adapted into a double-sided PET that was evaluated by a post-test survey. Results of the pre-test and post-test surveys were analyzed and compared. Effects of the revised PET were measured by comparing serum potassium levels for 3 months with historical control. Initial results demonstrated the original PET was satisfactory but patients desired more information on specific portions, variety and multicultural food choices. After developing a patient-centered tool, the format was tailored to meet patient needs and incorporated adult learning principles. Averaged three-month results indicated 3% improvement in potassium for patients greater than 5.5mmol/L versus historical control. Patients perceived that the new PET enabled them to self-manage potassium in their diet and this was evident in improved serum potassium levels.

DEVELOPMENT OF THE KIDNEY COMMUNITY KITCHEN WEBSITE – MOVING FROM NUTRIENTS TO FOOD.

June Martin, Melissa Atcheson, Nadine Valk
Kidney Foundation of Canada, Montreal, Canada

The renal diet creates a significant burden for patients and caregivers living with kidney disease and may negatively impact quality of life. Patients perceive their diet as confusing, isolating and unhealthy. The Kidney Foundation of Canada received a generous bequest to develop a national nutrition resource to help patients deal better with their diet and its challenges. Initially, the goal was to develop a "tracker" website that would allow patients to track the sodium, potassium and phosphorus content of their diets by logging their intake online. However, focus groups with patients, caregivers and renal dietitians shifted the focus of the website to a meal-planning and recipe based site. Utilizing the information from the focus groups, the final website was developed and tested with patients to provide an interactive website that would allow meal planning, generate grocery lists and offer kidney-friendly recipes while providing reliable and positive nutrition advice. The user-friendly meal planner can be used to track daily sodium, potassium, phosphorus and protein intake for those who wish it. Patients have the ability to share strategies and resources and have their own recipes become "dietitian approved". Renal dietitians from across Canada comprise the expert advisory committee. The free website is available in both French and English. The Kidney Community Kitchen website (www.kidneycommunitykitchen.ca) is the first of its kind in Canada.

THE RELATIONSHIP BETWEEN BODY COMPOSITION AND INFLAMMATION IN HEMODIALYSIS (HD) PATIENTS (PTS)

Neal Mittman, Brinda Desiraju, Parampreet Ghuman, Prinyanka Singh, Jyotiprakas Chattopadhyay, Morrell M. Avram. Avram Division of Nephrology, S.U.N.Y. Downstate Medical Center UHB at Long Island College Hospital, Brooklyn, New York

Body composition and chronic inflammation have been individually associated with morbidity and mortality in dialysis pts, but little is known about their interrelationship. We examined the association of inflammation with different body compartment parameters in HD pts. Demographic, clinical and biochemical data were collected on thirty-six HD pts. Body composition was determined by bioelectrical impedance analysis (BIA). High sensitivity C reactive protein (hs-CRP) was measured by immunoturbidimetric method. Mean age was 63 years. Seventy-two percent were women, 82% were of African descent and 39% were diabetic. Mean body weight (BW), body mass index (BMI), body cell mass (BCM), extracellular mass (ECM), lean body mass (LBM), total body fat (TBF), % actual fat (PAF) were 166±48Lbs, 28.4±8.6Lbs/inch^2, 48.5±14Lbs, 68.9±13Lbs, 117±25Lbs, 52±42Lbs and 28±15%, respectively. Mean and median hs-CRP were 7.87 mg/L and 5.95 mg/L, respectively. The significant relationships between hs-CRP and body composition parameters are shown below:

Variable	Correlation Coefficient (r)	P-value
Body weight (Lbs)	0.49	0.003
BMI (Lbs/inch^2)	0.44	0.008
Total Body fat (Lbs)	0.40	0.02
% actual fat	0.41	0.02

hs-CRP was directly correlated with BW, BMI, TBF and PAF. BCM (p=0.61), ECM (p=0.89) and LBM (p=0.67) were not associated with hs-CRP. In multivariate regression analysis, adjusting for age, race, gender, diabetes and dialysis vintage, BMI (p=0.007), BF (p=0.027) and FPBW (p=0.013) were significantly and independently associated with hs-CRP. Pts with hs-CRP<8 (based on mean values) had significantly better long-term survival (7 years) than those with hs-CRP≥8 mg/L (p=0.03). In conclusion, increased body fat is associated with chronic inflammation and higher risk of mortality in these HD pts.

DIETARY PROTEIN AND ENERGY INTAKE OF ADULTS WITH CHRONIC KIDNEY DISEASE FROM POPULATION ESTIMATES WITHIN NHANES

Linda W Moore[1], Laura Byham Gray[2], J Scott Parrott[2], Diane Rigassio Radler[2], A Osama Gaber[1]. [1]The Methodist Hospital, Houston TX and [2]Univ of Medicine and Dentistry of New Jersey, Newark, NJ

The dietary protein (DPI) and energy intake (DEI) of people with chronic kidney disease (CKD) compared to people without CKD has not been described previously. We utilized NHANES 2001-2008 to identify CKD and dietary intake. Complex survey analyses were used to report population estimates of CKD, and DPI and DEI at each stage of CKD. Comparison to adults with No CKD was performed using ANOVA. One-sample t-tests compared intake to recommended values. Of 41,658 NHANES participants, 16,872 (40.5%) were ≥20 years of age and had evaluable data for CKD staging and dietary intake.

Dietary Intake	NoCKD	Stage 2	Stage 3	Stage 4
DPI, g/kg/d	1.34±0.01	1.27±0.03	1.14±0.2	0.04±0.05
p-value	ref	0.0008	<0.0001	<0.0001
DEI, kcal/kg/d	35.6±0.7	32.8±0.8	29.2±0.5	26.3±0.8
p-value	ref	<0.0001	<0.0001	<0.0001

Seventy percent of No CKD, 60% of stages 1-3 and 50% of stages 4 and 5 (not yet receiving dialysis) had DPI above recommended values from Dietary Reference Intake (DRI) and the Kidney Disease Outcomes Quality Initiative (KDOQI). Ten percent of No CKD and 20% of stages 2-5 (not yet receiving dialysis) had inadequate DPI according to the DRI and KDOQI.

In conclusion, DPI of US adults with CKD or without CKD was significantly higher than recommended. DPI and DEI was lower than those without CKD. DPI decreased with each progressive stage of CKD. Dietitians and physicians should consider this information when treating people with CKD.

DOES DM or TRANSPORTER TYPE INFLUENCE RESPONSE TO IPN? Eileen Moore and Gerald VanBolt. Pentec Health Inc. Boothwyn, PA

There is evidence of malnutrition in up to 56% of PD patients. Mortality, hospitalization and peritonitis are known to increase with decreasing albumin levels in PD patients. A method of providing nutrition to PD patients with refractory malnutrition is the use of Intraperitoneal Nutrition (IPN). IPN is comprised of dextrose and amino acids. While studies of intraperitoneal amino acid (IPAA) or IPN have demonstrated improvement in nutritional parameters, none to our knowledge have examined influence of transporter type or diagnosis of diabetes (DM). Methods: A retrospective analysis was performed using the Pentec Health internal data base. For inclusion patients must: have been approved for IPN therapy by insurance; not have received IPN for 3 mo. prior to initiating Proplete® IPN; and a baseline plus 3 mo. of albumin levels with no change in formulation. 3 mo. mean albumin level increases, transporter type and diagnosis of DM were observed in this analysis. Graph of results:

PROPLETE® IPN Increase in Albumin			
	Baseline Alb	3 Mo. Albumin	Mean Increase
Total IPN 65	2.90±.43g/dL	3.18±.38g/dL	.28±.37g/dL

PROPLETE® IPN Increase in Albumin DM vs. Non-DM			
	Baseline Alb	3 Mo. Albumin	Mean Increase
DM (37)	2.86 ± .41 g/dL	3.12 ± .32 g/dL	.26 ± .37g/dL
Non-DM (28)	2.94 ± .46 g/dL	3.26 ± .45 g/dL	.32 ± .39 g.dL

PROPLETE® IPN Transporter type and Change in Albumin			
	Baseline	3 Mo. Alb	Mean Increase
High (18)	2.90 ± .36 g/dL	3.16 ± .41 g.dL	.26 ± . 4 g/dL
High Avg (28)	2.83 ± .46 g/dL.	3.14 ± .38 g/dL	.31 ± .32 g/dL
Low Avg (15)	3.03 ± .47 g/dL	3.37 ± .31 g/dL	.34 ± .43 g/dL
Low (4)	2.85 + .39 g/dL	2.93 + .39 g/dL	.08 + .41 g/dL

Conclusions: Overall, the mean increase in serum albumin is similar to what has been demonstrated in the literature. Of interest: there was no statistically significant difference in albumin increase between DM/non-DM patients nor differences in transporter type.

NUTRITION FOCUSED PHYSICAL EXAMINATION PRACTICES OF RD MEMBERS OF THE RENAL PRACTICE GROUP AND/OR THE COUNCIL ON RENAL NUTRITION

Lynn K. Munson,[1,2] Laura D. Byham-Gray,[2] Diane Radler[2] and J. Scott Parrott.[2] [1]Kidney Specialists of Minnesota, Brooklyn Center, MN. [2] University of Medicine & Dentistry of New Jersey, Newark and Stratford, NJ.

Nutrition focused physical examination (NFPE) is one component of nutrition assessment. The purpose of this study was to determine the relationships between NFPE practices and demographic and professional characteristics of Registered Dietitian (RD) members of the American Dietetic Association Renal Practice Group (RPG) and the National Kidney Foundation Council on Renal Nutrition (CRN) and to assess barriers and enhancers to NFPE practice. An Internet-based survey was sent to 2738 unduplicated members of RPG and CRN. To examine relationships between NFPE performance and demographic and professional characteristics, Spearman's rank correlation, one-way ANOVA and ANCOVA were performed on a total of 722 (26.4%) usable surveys, with an *a priori* α level of 0.05.

NFPE skills most frequently performed independently included visual assessment of muscle and fat stores (66.2%, n=472), height measurement (49.1%, n=354), weight measurement (38.3%, n=276), skin assessment (26.2%, n=186), and assessment of peripheral edema (23.3%, n=165). Strong to moderate barriers included time availability (73.7%) and workload (71.5%). Number of NFPE skills performed independently increased when a mentor was available for training $F(1, 717) = 6.637$, $p = 0.010$. NFPE skills performed independently corresponded closely with those on the KDOQI-recommended Subjective Global Assessment tool. For greater performance of NFPE practices, workload and job responsibilities may need further consideration.

TREATMENT OF UREMIC PRURITIS WITH ORAL ERGOCALCIFEROL: A RANDOMIZED CONTROLLED TRIAL

Shayan Shirazian, Mary Schanler, Nasreen Bagwan, Maanvi Kumar, Nikhil Sood, Nobuyuki Miyawaki, Steven Fishbane
Winthrop University Hospital, Mineola, New York, USA

Hemodialysis (HD) patients have a high prevalence of pruritis. In addition, 25-OH vitamin D deficiency is common in this population and may play a role in skin immunomodulation. Because of this, we studied whether vitamin D_2 treatment with Ergocalciferol is effective for relief of uremic pruritis. 50 HD patients with complaints of moderate to severe generalized itching were randomized in a double-blind fashion to treatment with either Ergocalciferol or placebo. The duration of treatment was 12 weeks and patients were assessed every 2 weeks with itching surveys and clinical laboratory parameters. The primary endpoint was change in baseline to EOS itching score.

Table 1	Treatment (n=25)			Placebo (n=25)		
	Pre	Post	Absolute Change	Pre	Post	Absolute Change
25-OH (ng/mL)	19.7	38.7	19.0	15.3	16.7	1.4
Itching (score)	10.9	6.6	-4.3	9.8	5.1	-4.6

25 patients were randomized into the treatment group and 25 to the placebo group. 6 patients withdrew from the study (4 in the active group, 2 in the placebo). At baseline, the only significant difference between the two groups was time on dialysis. Over the course of the study both groups had a significant decrease in itching scores from the beginning to the end of study (**Table 1:** percent change -38.1% in the treatment group vs. -42.7% in the placebo group, p=0.73). By intention to treat, we no found significant difference in the primary endpoint between the two groups. In a subgroup analysis of patients with a greater than 75% increase in vitamin D 25-OH values over the course of the study, we found a 37.5% decrease in itching score. This was not significantly different from the entire cohort. In conclusion we did not find ergocalciferol to be effective for the treatment of uremic pruritis.

PREDICTORS OF ADHERENCE TO TECHNOLOGY-BASED DIETARY SELF-MONITORING. Susan Stark[1], Beth Hall[1], Ann Steenkiste[2], Maya Clark[1], Beth Piraino[1], Linda Snetselaar[3], Mary Ann Sevick[1,2]. University of Pittsburgh, 2. VA Pittsburgh Healthcare System, Pittsburgh PA and 3. University of Iowa, Iowa City IA, USA

Technology-based self-monitoring may help hemodialysis (HD) patients adhere to the complicated dietary regimen, but may not be feasible or acceptable for all. BalanceWise is an ongoing RCT to evaluate the efficacy of a 16-week behavioral intervention, paired with technology-based self-monitoring of diet for reducing sodium intake. We examined whether sociodemographic characteristics, duration of ESRD, and number of skipped HD treatments predicted adherence to an intervention that involved logging of meals into a handheld computer. Electronic meal logs were downloaded from handheld computers. Skipped treatments were abstracted from dialysis flow sheets. To date, 45 intervention group participants have completed the study. Twenty-five (55.6%) participants were male, 21 (46.7%) were of minority race, 23 (51.1%) were partnered, and 26 (57.8%) had a high school education or less. The average age was 58.7 (SD=13.0) years, and average duration of ESRD was 57.1 (SD=54.8) months. Thirty-one (68.9%) participants attended all scheduled HD treatments during the study period, 7 (15.6%) skipped $> 0\%$ but $< 5\%$ of HD treatments, and 7 (15.6%) skipped $\geq 5\%$. Participants logged an average of 1.6 (SD=1.2) meals/day. Mean logged meals/day did not vary with respect to gender, race, living in a partnered relationship, or employment ($p>0.16$ for all). There were no associations between mean meals logged/day and age or duration of ESRD ($p>0.13$ for each). Participants skipping $\geq 5\%$ of HD treatments entered an average of 0.64 meals/day compared to 1.80 meals/day for those skipping $< 5\%$ of HD treatments ($p=0.011$). Adherence of HD patients to technology-based dietary self-monitoring did not vary with regard to any of the nonmodifiable variables examined. Treatment attendance may be informative for selecting HD patients for whom technology-based dietary self-monitoring is feasible and acceptable.

NUTRITION DIAGNOSES RELATED TO VITAMIN D STATUS IN HEMODIALYSIS PATIENTS.

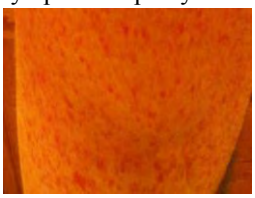
Andrea Coffman, Janeen Leon, Lilian Cuppari, Alison Steiber.
Case Western Reserve University, Cleveland OH and Federal University of Sao Paulo, Sao Paulo, Brazil

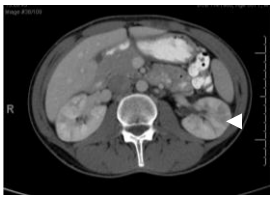
Vitamin D (VD) insufficiency has been well documented in hemodialysis (HD) patients. However, it is unknown if dietitians are identifying VD insufficiency or if intervention and monitoring of VD status is being done. Therefore, the purpose of this study was to determine 1) whether dietitians identified VD insufficiency and 2) whether follow up occurred. This was a prospective, observational study of dietitian practice over three months. Data were collected using an online nutrition algorithm designed for HD patients based on AND's Nutrition Care Process. Descriptive variables, nutrition diagnosis, and serum VD values were analyzed using SPSS vs. 20. Significance was defined at $p<0.05$. 38% of the patients (n=36) were female, 66% white, 17% black and 7% declared another race/ethnicity. At baseline, mean serum albumin, 25(OH), and BMI were 3.8 ± 0.3mg/dl (green), 22.0 ± 11.2ng/mL and 33 ± 10 kg/m^2, respectively. 24 % of the patients were deficient and 56% were insufficient in VD. 56% of the patients had a nutrition diagnosis not VD related, of those, 15 (75%) had 25(OH) values <30. Of the 44% with diagnoses related to VD, 3 (19%) patients had 25(OH) above 30 and 13 (81%) were below 30. Mean 25(OH) by nutrition diagnosis was: 1) not related to VD = 23.6+10.8, and 2) related to VD = 21.9 ± 12.2, ($p<0.05$). 12 of the 33 patients had 3 month VD values. The VD improved from 25.3 ± 14.4 to 31.0 ± 9.6ng/mL ($p<0.05$) in these 12 patients. In summary, 50% of the dietitians were not correctly identifying a nutrition diagnosis related to VD status. However, VD significantly increased in those patients who had documented evidence of treatment and monitoring by the RD.

BILATERAL KIDNEY LESIONS IN ASSOCIATION WITH URTICARIAL VASCULITIS

Deep Adhikari, Ashish Verma, Jeffrey Stoff, Ashfaq Balla.
University of Massachusetts Medical School, MA

Bilateral kidney lesions can occur in renal and non-renal disorders. We hereby present a case of bilateral kidney lesions in association with urticarial vasculitis with no other significant findings. A 31 year old Caucasian male presented with multiple bilateral hypodense lesions in both kidneys seen on CT scan with contrast of abdomen/pelvis done for 3 month history of abdominal pain, diffuse non-pruritic rash, night sweats and weight loss. Rash started as small nodules and spread to become maculo-papular. CT imaging showed wedge shaped hypodense lesions in both kidneys, and there was no organomegaly or significant lymphadenopathy.





Urine sediment was benign with no proteinuria or eosinophiluria. Patient had normal CBC, Renal, Liver and Thyroid function tests. Vasculitis labs including ESR, CRP, ANA, ANCA, Rheumatoid Factor, Cryoglobulins, C3, C4, C1q, CH50, Immunoglobulin levels, anti SSA, SSB, Anti centromere Ab were negative. Hypercoagulable work-up including lupus anticoagulant was negative. Serum and urine immunofixation were negative. Infectious work up including blood cultures, 2D Echo, HIV serology, hepatitis panel, syphilis titers, schistosoma Ab, lyme disease screen, bartonella Ab, ehrlichia Ab and mycobacteria testing were all normal. Skin biopsy of the rash showed lympho eosinophilic infiltrate with histiocytes, and immunoflurescence showed focal granular staining for C3 in mid dermal vessels suggestive of urticarial vasculitis. Rash improved with a tapering course of oral prednisone and subsequent CT angiogram after 2 weeks showed resolution of renal lesions and no vascular abnormalities.

ASSESSMENT OF COST EFFECTIVENESS OF AQUAPHERESIS IN CHF PATIENTS

Hasan Arif, Walter Shakespeare, Irfan Ahmed, Nauman Shahid, Ziauddin Ahmed
Drexel University College of Medicine

In patients with CHF, the standard treatment for fluid overload has classically been IV diuretics. Diuretic use is associated with many potential problems i.e.; prolonged hospitalization, diuretic resistance in CKD patients, uncontrolled overdiuresis resulting in hypotension, worsening renal function, and development of metabolic alkalosis and hypokalemia. Patients with CHF who already have significantly decreased kidney function and diuretic resistance can be successfully treated with ulttrafiltation (UF). Recently a smaller UF machine called AquaDex has been tried by cardiologists for treatment of CHF. This machine is designed for continuous UF and is considered an expensive alternative of usual intermittent HD machine for stable patients. We have decided to do a cost analysis of the UF treatment between aquapheresis and HD machine.

We have reviewed the charts of 12 patients who had received UF by Aquapheresis machine .The mean BP of patients was 131± 29.8 /77±22mm/hg. The average filtration volume was 4.2 L/day. The life of filter was 38.75 hours. The cost of disposable supplies with Aquapheresis is $900 per treatment. The cost of disposable supplies by regular HD machine is $15 per treatment. Total cost of Aquapheresis in these patients was $28,800 and predicted UF with HD machines would have been $480 for the same number of supplies.

The UF therapy for treatment of CHF is better than diuretics in diuretics resistance patients or with CKD. The new Aquapheresis machine is not only very costly but also has no capacity to provide dialysis when needed in case of hyperkalemia, metabolic acidosis and in worsening renal functions which are commonly associated with progression of CHF. Use of isolated UF in CKD patients with Aquapheresis is not cost effective.

RESEARCH INTERESTS AND EXPERIENCE OF SOCIAL WORKERS WITHIN A LARGE DIALYSIS ORGANIZATION

Mary Burgess[1], Shaun Boyd[2], Duane Dunn[2]
[1]DaVita Clinical Research, Minneapolis, MN, USA; [2]DaVita Inc., Denver, CO, USA

Nephrology social workers play a critical role in many aspects of ESRD patient care. The contributions of social workers to research are therefore important to the ESRD community however there is very little information in the literature relating to research participation and the research interests of nephrology social workers.

Social workers within a large dialysis organization were invited to complete a survey of research interests and participation. From 1300 social workers contacted, 601 responses were received, corresponding to a response rate of 46 %. Eight percent of respondents indicated that they had participated in a research project within the last 5 years as part of a thesis project, with 11% indicating that they had participated in a research project outside of their thesis work. Those that had participated in research projects were involved in a variety of capacities (consultant, 19%; study coordinator, 23%; sub-investigator, 32%; principal investigator, 16%). Survey respondents identified lack of opportunity and lack of capacity as the primary barriers to participation in research. Medication adherence, modality education, and motivational interviewing relating to central venous catheter reduction efforts were identified as areas in which research would be most valuable.

The survey results give an indication of the current levels of participation in research by social workers and the potential barriers to involvement. The areas of research priority indentified by social workers are well aligned with the needs of the ESRD community, and our results suggest that ESRD and dialysis organizations might consider developing models to provide opportunities and capacity for social workers to participate in research projects.

PROTOCOL TO DIAGNOSE CHRONIC KIDNEY DISEASE IN A RURAL FREE CLINIC

Sandra Cotton, Susan McCrone, Rebecca J. Schmidt
West Virginia University, Morgantown, West Virginia

Chronic kidney disease (CKD) is a major co-morbidity in West Virginia. CKD care in primary care is suboptimal. Clinical practice guideline (CPG) usage could improve care, but CPG adoption is difficult. The Kidney Disease Outcomes Quality Initiatives (KDOQI) outline CKD prevention and management. The primary goal of this project was to evaluate methods to increase KDOQI CPG adoption to enhance CKD diagnosis and staging in patients with diabetes mellitus (DM). Secondary outcomes included increasing provider knowledge and project satisfaction. Using a descriptive, retrospective design the KDOQI CPG, an overview of CKD care, and reminders of paper and electronic (e) prompts were introduced to providers and staff in one of three standardized educational sessions. Effectiveness of education and reminders for the diagnosis and staging of CKD were evaluated using a pre/post-test and pre/post chart reviews. A post provider satisfaction survey was also distributed. During a three month period, 11 providers evaluated 52 pts with DM. Compared with 100 population controls; providers screened 94% v 100% for CKD. CKD diagnosis was correct 36% v 90%. In addition, stage classification improved from 45% to 53%. Microalbumin testing was high >70% both pre and post project. As pre-test provider knowledge was high, it did not improve, although overall confidence in CKD care and project satisfaction was high. CPG adoption remains challenging.

HYPERACUTE RENAL FAILURE WITH COLLAPSING GLOMERULOPATHY AND UNUSUAL ELECTRON MICROSCOPIC FINDINGS IN CLASS II LUPUS NEPHRITIS

Pratik Dalal, Divyashree Varma, Dhruval Patel, Stephen Knohl
SUNY-Upstate Medical University Hospital, Syracuse, NY USA

Renal involvement in Systemic lupus erythematosis (SLE) is an important prognostic factor in the course of the disease.Renal lupus can present asymptomatically, with high-grade proteinuria and nephrotic syndrome (NS), or as a rapidly progressive glomerulonephritis. Membranous glomerulopathy with immune complex deposition in the mesangium, also known as Class V lupus nephritis is the most common mechanism. Typically, progression to renal failure (RF) is seen over years. Here is a case of hyperacute RF that developed over days, characterized by Collapsing Glomerulopathy(CG) on biopsy.

23 year old female with Class II lupus nephritis with sub-nephrotic proteinuria came with abdominal pain for which contrast enhanced CT abdomen was done.She reported occasional NSAID use. Within days, dialysis-requiring acute kidney injury developed with NS. As the etiology of RF was unclear, renal biopsy was performed revealing a collapsing glomerulopathy with chronic membranous glomerulopathy and mesangial deposits and acute tubular necrosis. Electron microscopy showed immune deposits that were not electron dense granular deposits but had the appearance of endocytic vesicles with “fuzzy coating” suggestive of clathrin coated pits. The patient was treated with prednisone with success.

CG, described by Weiss et.al. in 1986, is commonly found with HIV-associated nephropathy. Association with lupus is rare. Histopathological changes include segmental and global collapse of the glomerular capillaries, wrinkling and retraction of the glomerular basement membrane and hypertrophy and hyperplasia of podocytes.CG should be considered when patients with SLE develop NS and/or acute kidney injury as it responds to steroids started early.

SIMULATION OF REAL-TIME ULTRASOUND-GUIDED BIOPSY MAY IMPROVE CONFIDENCE OF TRAINEE OPERATORS AND REDUCE RENAL BIOPSY COMPLICATIONS

Dalia Dawoud[1], Will Lyndon[1], Sylvie Mrug[1], John J. Bissler[2] and Michal Mrug[1]

University of Alabama at Birmingham, Birmingham, AL; and [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH.

To improve procedural skill competence in real-time ultrasound-guided renal biopsy, we have developed an inexpensive simulation tool (a porcine kidney inserted under turkey breast) that mimics biopsy conditions in human patients in terms of kidney size, depth, tissue echogenicity and overall structural characteristics. To evaluate utility of this simulation tool for improving trainee's confidence in performing renal biopsy, we have quantitatively assessed confidence level of renal fellows before and after their initial renal biopsy simulation training. Subsequently, we determined the effect of this simulation training on trainees' procedural competence by comparing outcomes of clinical renal biopsies performed by a cohort of fellows that did vs did not participate in the simulation training. We show that the use of the renal biopsy simulation tool has improved the confidence level of trainees (31.8 pre-simulation to 70.5 post-simulation on a 0-100 scale; $p=0.001$; eta squared=0.66). In contrast, there was no overall effect of previous experience with ultrasound-guided renal biopsies on confidence (eta squared=0.03, $p=0.610$) and the simulation training increased trainees' confidence regardless of their prior experience performing renal biopsies (eta squared=0.15, $p=0.245$). Additionally, fellows who participated in the simulation training demonstrated improved competence in performing the renal biopsy procedure in patients; successful retrieval of renal tissue per pass was 99% (vs 75 % in fellows that did not participate in this simulation training; $p<0.001$). This was associated with reduced procedure-related blood loss as indicated by smaller post-biopsy vs pre-biopsy hematocrit decline (1.18 for fellows that did vs 2.68 for fellows that did not participated in such training; $p=0.049$). Together, these data suggest that renal biopsy simulation training improves trainees' confidence and reduces severity of biopsy-associated bleeding complications in patients.

THE PREVALENCE OF DEPRESSION AMONG HISPANICS WITH ESRD SECONDARY TO TYPE 2 DIABETES RECEIVING MAINTENACE HEMODIALYSIS

Subrata Debnath, Adan Gonzalez, Bermily Maldonado-Colon, Suvro Ghosh, Hanna Abboud, Tahira Alves, Pedro Delgado, University of Texas Health Science Center at San Antonio, San Antonio, TX.

Major depressive disorder (MDD) and depressive symptoms are the most frequent mental health problems in ESRD patients receiving maintenance HD. The prevalence of MDD among Caucasians and African Americans is as high as 44% in published surveys. MDD is an independent predictor of adverse health outcomes and poor quality of life in ESRD/HD patients. Prior studies have not reported MDD prevalence in Hispanic ESRD/HD patients.

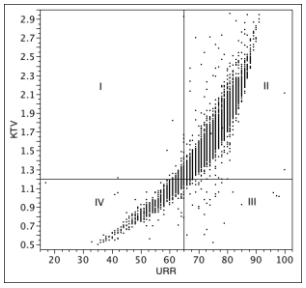
We report preliminary data on MDD and depressive symptom prevalence from a large cohort study of Hispanic ESRD/HD patients with type 2 Diabetes (T2D) without pre-HD history of psychiatric, neurologic, or cerebrovascular disease. The Beck Depression Inventory-II (BDI-II) was administered to 27 subjects, 11 males, 16 females, with a mean age of 55 ± 10 years and a median HD duration of 20 months. BDI-II scores ranged from 1 to 41 with a mean score of 21.6 ± 12.6. Sixty-seven percent of the patients had a score of ≥14, the validated cutoff score for the presence of MDD. MDD was similar among females and males, 69% vs 64% respectively, and not related to age or duration of HD treatment at the time of assessment.

In conclusion, the prevalence of MDD in Hispanic ESRD/HD patients with T2D was higher than in previous reports of MDD in other ethnic groups, possibly due to higher rates of T2D or cultural and/or sociodemographic factors. Future studies will investigate these factors as well as the efficacy of established MDD treatments.

URR AND KTV ARE COMPLEMENTARY MEASURES OF DIALYSIS ADEQUACY

Peter B. DeOreo, JoAnn Hozalski, Centers for Dialysis Care, Cleveland, Ohio.

The urea reduction ratio (URR) remains in the CMS Quality Incentive Payment (QIP) for 2012 performance for payment in 2014. We reviewed 19,280 kinetic modeling episodes from January 2011 through November 2011 to understand why treatments that delivered a Kt/V > 1.2 failed to deliver a URR of 65%. Our EMR calculates Kt/V using the Daugirdas II (DII) equation from treatment and lab data. We plotted the Kt/V (y axis) against the URR (x axis) to analyze the distribution. We divided the results into 4 quadrants (Q). (QI KTV >1.2, URR < 65; QII KTV ≥ 1.2, URR ≥ 65; QIII KTV <1.2, URR ≥ 65; QIV KTV < 1.2, URR < 65). We calculated the ultrafiltration rate (ml/kg/hr) (UFR) for each quadrant. QII (good) and QIV (bad) are the usual areas of QAPI. QIII results are errors in pre weight giving apparent weight gain and a negative UF term. A treatment can be in QI because the post weight is too low overvaluing the 2nd term, increasing the KTV, or because the UFR is excessive. Looking at UFR by Q (13, 7, -4, 5.7) adds an additional measure of adequacy. Prescribing dialysis by both URR (> 65) and UFR (< 10) eliminates treatments in QI. Targeting a Kt/V of 1.4 accomplishes the same goal. Comparing URR and KTV is a useful QAPI tool to ensure the quality of dialysis delivery and the process of dialysis adequacy measurement.



COGNITIVE IMPAIRMENT AMONG MEXICAN AMERICANS WITH ESRD SECONDARY TO TYPE 2 DIABETES WHO RECEIVE IN-CENTER THRICE WEEKLY HEMODIALYSIS

Adan Gonzalez, Subrata Debnath, Bermily Maldonado-Colon, Suvro Ghosh, Tahira Alves, University of Texas Health Science Center at San Antonio, San Antonio, TX.

Impairment in cognitive function is a major cause of morbidity and mortality. Prior studies demonstrated an increased risk of cognitive impairment among Caucasian and African American ESRD patients receiving hemodialysis (HD). However, the prevalence of cognitive impairment is unknown among Hispanic patients, an often understudied population, receiving HD.

We analyzed preliminary data of global cognitive function (assessed by the Modified Mini-Mental State Exam, 3MS) collected from an ongoing study of a large cohort of Mexican American adult patients with ESRD and type 2 Diabetes who receive HD and have no known history of neurologic, cerebrovascular, and psychiatric disorders. Subjects (n=27) had a mean age of 54.96 ± 9.87 years and a median duration on HD of 20 months. 74% of the study subjects had less than a high school education. The raw mean score of 3MS was 84.0 ± 7.77 and score ranged from 69 to 98. Impaired cognitive function, a 3MS score of <80, was present in 22% of the subjects. Factors associated with cognitive impairment, in the unadjusted model, were age (– 0.51, $p < 0.05$) and education (0.49, $p < 0.05$). No significant association was found between several modifiable factors (e.g., anemia, serum albumin, 25(OH) Vitamin D levels).

In conclusion, despite younger age, the prevalence of cognitive impairment is significantly higher among Mexican American patients receiving HD compared to other patient populations. Additional research is required to determine if diabetes is a significant contributory factor to the high prevalence of cognitive impairment among Mexican Americans.

SAFETY, TOLERABILITY AND PHARMACOKINETICS OF CTP-499 IN A MULTI-CENTER, DOUBLE-BLIND, TWO-ARM, PLACEBO-CONTROLLED, RANDOMIZED STUDY IN NON-DIALYSIS PATIENTS WITH STAGE 3 CHRONIC KIDNEY DISEASE

Philip Graham, LuAnn Sabounjian, James Shipley, Virginia Braman, Mark Harnett, David Turnquist, Changfu Cheng, Lijun Wu; Concert Pharmaceuticals, Lexington, MA, USA

CTP-499 is a deuterium-containing analog of 1-((*S*)-5-hydroxyhexyl)-3,7-dimethylxanthine (HDX), an active metabolite of pentoxifylline (PTX). It is being developed as a treatment for diabetic nephropathy (DN) based on previous evidence of beneficial effects with PTX in chronic kidney disease patients. CTP-499 retains the binding, potency and selectivity of HDX but appears to have an improved metabolic profile. Nonclinical studies have shown CTP-499 possesses anti-inflammatory, anti-fibrotic and anti-oxidative properties. In rats with streptozotocin-induced diabetes, CTP-499 significantly decreased kidney weight, reduced plasma cytokines, and showed a trend to lower urine albumin levels. CTP-499 is being developed as a novel treatment for DN which is expected to be additive to RAS blockade.

This double-blind, placebo-controlled study evaluated CTP-499 controlled release tablets (600 mg QD for 2 weeks and then 600 mg BID for 2 weeks) in non-dialysis patients with a diagnosis of moderate (Stage 3) CKD (eGFR 30-59 mL/min/1.73 m^2). Primary objectives were to assess the safety and tolerability of CTP-499, and to characterize the PK of CTP-499 and its metabolites, in CKD patients. A total of 33 patients were randomized (3:1 ratio) to CTP-499 or placebo, stratified by pre-treatment eGFR. Serial PK blood and urine samples were collected over a 24 hour period following the 1st dose and last dose at 4 weeks. Dosing in the study has completed. Preliminary blinded safety data indicate CTP-499 was well tolerated and no SAEs were observed. Pharmacokinetic data are being evaluated. These results support use of this CTP-499 dosing regimen (600 mg BID) in a planned Phase 2 study in diabetic nephropathy.

"MOVIN' ON UP": TRANSITIONING ADOLESCENT KIDNEY TRANSPLANT PATIENTS TO ADULT CARE

Pamela Grant, Primary Children's Hospital, Salt Lake City, Utah, USA
Jill Macfarlane, Primary Children's Hospital, Salt Lake City, Utah, USA

The purpose of the "Movin' on Up" adolescent transition program is to prepare our pediatric patients to move into adult medical care. Clinical data suggests that young adults are at risk of losing their transplanted kidney during this transition phase. We have become increasingly aware that many of our pediatric patients were not well prepared to take on the responsibilities of their illness.

In order to prepare our patients for transition to adult nephrology, we developed a series of tasks designed to help the patient achieve the skills needed to meet the responsibilities of lifelong chronic illness. These tasks included education and testing on renal transplant care. The program is introduced to the patient and their parents at age 12. Medical and psychosocial education is introduced and reinforced with a series of worksheets and quizzes. Interdisciplinaray teams including pediatric and adult physicians participate in the program.

Over the past year and one half, a group of patients have graduated from the program and transferred to adult care. Upon graduation, patients completed a survey and subjective responses indicated their readiness for independent care.

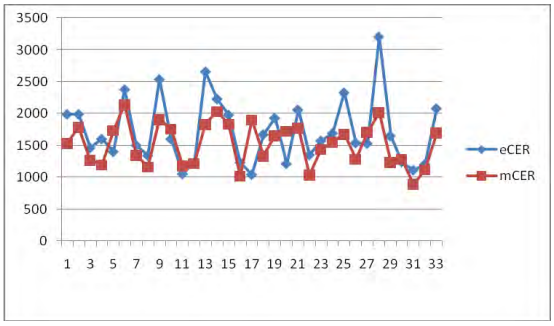
In conclusion, the Movin' On Up adolescent transition program provided teens with supportive education and skills development. The patients reported that this program prepared them for the responsibility of adult care.

CREATININE EXCRETION RTAE ESTIMATION IN AFRICAN AMERICAN FORMAR KIDNEY DONORS

Sunil Kumar Jain, John M Arthur, and Milos N Budisavljevic
Charleston, SC, USA.

Determination of completeness of urine collection is done by comparing an individual's measured creatinine excretion rate (CER) with expected CER calcualted by various equations published in the literature. Current clinical practice of an expected CER of 15-25 mg/kg per day in men, and 10-20 mg/kg per day in women does not account for many variables and may not be accurate in some settings. Moreover there are no data in African American (AA) former kidney donors.

Data were determined from a group of African American Donors at a regional acedemic medical center. A single 24 hour urine collection with total amount voided was recorded for each subject and urine creatinine was measured. CER was expressed in miligrams per day. Previously published equations were used for calculation of estimated CER. Pearson correlation coefficient was calculated.



There were a total of 33 AA living kidney donors (22 women & 11 men).

The mean measured CER was 1714. 84 mg / day (SD 515.32). The mean estimated CER was 1522.44 mg / day (SD 336.84). The median body weight and age were 89.5 kg (ranges 49.8 - 127) and 42 years (ranges 26 - 66) respectively. Pearson coefficeint was 0.6919.

In summary none of the published formulas for estimated CER are relaible for estimating creatinine excetion rate in AA formor kidney donors.

PROTEINURIA AND HYPERTENSION IN A PREGNANT PATIENT WITH DIABETES: WHEN TO BIOPSY?

Kelly Liang, Devon Ramaeker, Nirav Shah, Sheldon Bastacky, Arun Jeyabalan; University of Pittsburgh, Pittsburgh, PA, USA

BACKGROUND: Nephrotic range proteinuria, hypertension (HTN), and edema occurring at 20 weeks' gestation in the setting of longstanding diabetes mellitus (DM) has a wide differential diagnosis.

CASE PRESENTATION: A 40-year-old Caucasian female presented at 19 weeks' gestation with worsening HTN (blood pressure (BP) 170/64), increase in proteinuria (3+ on urinalysis, 24-h urine protein 5.7 g/day), and mild leg edema, in the setting of a history of chronic HTN, type 1 DM since age 10 (no retinopathy), and smoking. She had a history of preeclampsia 16 years ago. She was on an angiotensin converting enzyme inhibitor (ACE-I) and a statin but discontinued them during pregnancy. She was hospitalized with concern for preeclampsia versus new onset renal disease versus diabetic nephropathy. BP was controlled with labetalol and diltiazem CD. Extensive serologic work-up was negative, and there was no other end organ involvement suggestive of preeclampsia. With better BP control, her proteinuria decreased to 3.2 g/day. Given the uncertain diagnosis and risks of empiric steroid therapy and/or delivery, she underwent renal biopsy. It revealed 2 out of 10 sclerotic glomeruli and mild mesangial expansion, but no findings to suggest diabetic nephropathy or preeclampsia. Electron microscopy revealed diffuse foot process fusion, consistent with minimal change disease (MCD), though unsampled focal segmental glomerulosclerosis could not be excluded. Based on these findings, she plans to continue the pregnancy with close monitoring. After delivery, she will restart her ACE-I and statin and consider initiation of steroids for treatment of MCD.

DISCUSSION: Although proteinuria, HTN, and edema are hallmark findings of preeclampsia when presenting during the third trimester, the etiology is less clear at 20 weeks' gestation. Therefore, the potential benefits of a renal biopsy were felt to outweigh the risks.

CONCLUSION: The information from a renal biopsy performed during pregnancy may provide critical information to help guide treatment and assist in deciding whether to deliver prematurely, particularly when the etiology of nephrotic syndrome is unclear.

HEALTH-RELATED QUALITY OF LIFE AMONG HISPANICS WITH ESRD SECONDARY TO TYPE 2 DIABETES

Bermily Maldonado-Colon, Subrata Debnath, Adan Gonzalez, Suvro Ghosh, Claudia Hura, Hanna Abboud, Tahira Alves, University of Texas Health Science Center at San Antonio, San Antonio, TX.

Health-Related quality of life (HRQOL) is a measure of the well-being of hemodialysis (HD) patients and an independent predictor of health outcomes including death. Despite a disproportionately high burden of diabetes and ESRD, symptom burden and HRQOL are not known among Hispanics receiving HD treatment. We analyzed preliminary data (n=25, 11 males, 14 females) collected from an ongoing study of a large cohort of Hispanic patients with ESRD. HRQOL was assessed using the Kidney Disease Quality of Life Short Form (KDQOL-SF).

Symptom Burden and KDQOL-SF Scores

Components	*KDQOL-SF Scale*	*Mean ± SD*
Generic domains	Index of Well-being (IWB)	54.40 ± 22.19
	Physical component score	35.60 ± 9.25
	Mental Component score	45.06 ± 10.57
Dialysis targeted	Symptoms/problem list	70.29 ± 20.33
	Effects of kidney disease	58.17 ± 23.52
	Burden of kidney disease	32.50 ± 29.48
	Cognitive function	73.33 ± 22.69
	Quality of social interaction	77.07 ± 16.79
	Sleep	63.90 ± 21.72
	Social support	85.33 ± 21.69

Compared to other ethnic populations, Hispanic HD patients reported a substantially higher IWB, indicating better quality of life. All dialysis-targeted scores except cognitive function were better in Hispanics than reported scores in African Americans and Caucasians. Further research is needed to understand the dynamic social and biological factors, contributing to overall quality of life of Hispanic patients, an often underserved and understudied population. Identification of such factors may be translated to improve the HRQOL for all patients with ESRD receiving HD treatment.

PROFILE AND IMPACT OF PHYSICIAN ASSISTANTS IN NEPHROLOGY

Sheila Mauldin, Scott Arbet, Janet Lathrop, National Commission on Certification of Physician Assistants (NCCPA), Johns Creek, Ga., USA.

Prior to the introduction of its new Certificate of Added Qualifications program for certified PAs specializing in nephrology, the NCCPA conducted a practice analysis to study the knowledge and skills used by those PAs and the functions they perform within the specialty. This study presents the findings from that analysis, providing insight into the role that certified PAs are fulfilling in nephrology and into the demographic and practice characteristics of those PAs as compared to the larger population of certified PAs. This information will be useful to those considering incorporating PAs into a nephrology practice and to those concerned about workforce issues.

The practice analysis was conducted in 2010 as a two-stage process involving focus groups and an online survey distributed to all certified PAs (n=71,351); responses were received from 16,289 (23%).

The study illuminates characteristics such as employment setting, number of clinical hours worked, inter-specialty mobility, and a number of other practice profile factors. It also quantified the frequency and importance of the application of over 300 knowledge and skill areas.

By understanding the role certified PAs are currently fulfilling in nephrology and the demographic and professional profile of those PAs, employers, physicians and policymakers will be better positioned to influence the nephrology workforce and address current and future provider shortages.

URINARY ALBUMIN VS. URINARY NEPHRIN IN PREDICTING THE DEVELOPMENT OF PREECLAMPSIA

Swati Mehta, Andi Qipo, Shuchita Sharma, Anjali Acharya, Belinda Jim, Jacobi Medical Center, Bronx, New York, USA

Despite the high prevalence of preeclampsia, the ability to predict its occurrence is still problematic. There is evidence that alterations in the podocyte, a specialized visceral epithelial cell that lines the glomerular filtration barrier, may be linked to the pathogenesis of preeclampsia. We proposed to study whether markers of podocyte injury, in the form of urinary albumin and urinary nephrin, would be predictive of preeclampsia when measured early in pregnancy in obstetric patients who are at high risk of developing complications. We conducted a prospective study on 67 high risk obstetric patients (chronic hypertension, diabetes mellitus of any type, chronic kidney disease, SLE) and 14 healthy control obstetric patients in their 2^{nd} and 3^{rd} trimester of gestation. During the subjects' clinic visit, a 20 ml of urine sample was analyzed for random urine albumin and urine creatinine concentration using standard laboratory techniques. Urine nephrin concentration was measured using an enzyme-linked immunosorbent assay (Exocell Inc., Philadelphia, PA). Urine albumin-creatinine ratio (UACR) and urine nephrin-to-creatinine ratio (UNCR) were determined to control for the concentration of the urine. These subjects were followed until delivery. Unpaired parametric t-test analysis revealed that UACR in the 2^{nd} and 3^{rd} trimester were significantly higher for patients who developed preeclampsia as compared with those who didn't ($p=0.04$ and $p=0.006$ respectively). Similarly, UNCR in the 2^{nd} and 3^{rd} trimester also showed significantly higher levels ($p=0.01$ and $p=0.004$ respectively). When 2^{nd} and 3^{rd} trimester patients were combined, both UACR and UNCR continued to demonstrate significant differences between these two patients groups ($p=0.01$ and $p=0.0005$ respectively). We conclude that both UACR and UNCR are predictive of the development of preeclampsia when measured as early as the 2^{nd} trimester in pregnancy.

REDUCED USE OF ERYTHROPOIESIS-STIMULATING AGENTS AND INTRAVENOUS IRON WITH FERRIC CITRATE: A MEDICARE BUNDLE COST-OFFSET MODEL

Richard Mutell, Jaime Rubin, T. Christopher Bond, Tracy Mayne
Davita Clinical Research, Minneapolis, MN

The cost of end-stage renal disease (ESRD) care and injectable medications for these patients, such as erythropoiesis-stimulating agents (ESAs) and IV iron for anemia treatment, are reimbursed by Medicare under the bundled prospective payment system. Ferric citrate (FC) is currently in clinical development as a phosphate binder for the treatment of hyperphosphatemia in patients with ESRD. FC has provided improvements to patients' serum phosphorus levels as well as increases in serum ferritin and saturated transferrin (TSAT) in phase 2 trials. Increases in TSAT and ferritin levels have been linked to reduction in iron and ESA dosing, which could help minimize Medicare costs for ESRD treatment.

We created a Medicare bundle cost-offset model that considered annual costs of ESRD for patients treated with FC versus other phosphate binder medications (PBs). The model assumed equivalence in price and phosphorus-lowering efficacy between FC and other PBs. Inputs included the Medicare average sales price of iron and ESAs, proportion of patients receiving binder therapy, facility level cost, and Medicare reimbursement with case-mix adjusters (CMA). Margin to the facility was calculated as the difference between reimbursement and cost. We assessed the impact of FC to dialysis providers under the bundle payment system by comparing margin for patients on FC versus those taking other PBs.

Facility-level reductions in ESA and iron utilization were 9.60% and 11.9%, respectively, which translated into a facility cost savings of approximately 2.56% when considering their annual bundled reimbursement totals. These savings are on par with Medicare's quality improvement program that withholds up to 2% of reimbursement to facilities failing to meet quality thresholds. Two percent potential cost savings with FC use in patients taking PBs represents an important savings opportunity for dialysis providers.

REDUCED USE OF ERYTHROPOIESIS-STIMULATING AGENTS AND INTRAVENOUS IRON WITH FERRIC CITRATE: A MANAGED CARE COST-OFFSET MODEL

Richard Mutell, Jaime Rubin, T. Christopher Bond, Tracy Mayne
DaVita Clinical Research, Minneapolis, MN

The high monetary costs of kidney disease are paid by Medicare, commercial insurers and patients. The 2011 US Renal Data System annual report states that in 2009, 17% of all kidney disease patients received their first dialysis using private insurance coverage. Ferric citrate (FC) is a phosphate binder (PB) now in clinical development for the treatment of hyperphosphatemia in patients with end-stage renal disease (ESRD). ESRD patients receiving FC in clinical studies showed improvements in serum phosphorus and experienced increases in serum ferritin and saturated transferrin (TSAT). Increases in serum ferritin and TSAT have been linked to reductions in IV iron and ESA doses. FC-associated reductions in iron and ESA-use could help minimize costs of ESRD-treatment to managed-care payers.

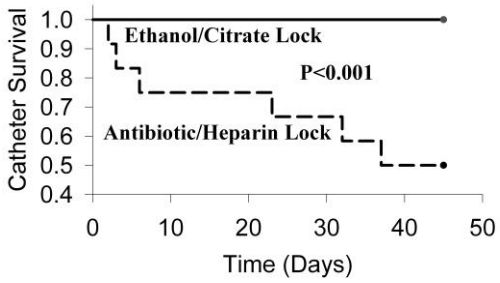
We created a managed care cost-offset model that considered annual treatment costs of ESRD treated with FC versus other PB medications for hyperphosphatemia. The model assumed equivalent efficacy and cost neutrality between FC and other PBs. Baseline input values were derived from published sources as well as a database analysis from a large US dialysis provider. A Monte Carlo simulation was conducted using varying key model inputs such as size of health plan, proportion of patients on binder therapy, number of dialysis sessions, and estimated cost for dialysis, ESA, and, iron from observed dose ranges. Results of the simulation were used to derive a 90% confidence interval for the potential annual cost savings with FC. Simulations show a 90% probability that a provider serving 500 dialysis patients could save between $389,000 and $829,000 annually with the use of FC. The model was most sensitive to the number of dialysis sessions per month, health plan size, ESA cost, and proportion of patients on phosphate binder therapy.

The use of FC in place of other PBs may provide significant cost savings and help to reduce the ever increasing economic burden of treating patients with ESRD.

A LITTLE ETHANOL GOES A LONG WAY IN THE TREATMENT OF CATHETER-RELATED BACTEREMIA

John Nguyen, Joshua Zaritsky, UCLA, Los Angeles, California.

Although the use of antibiotic (abx) locks in addition to systemic abxs is an acceptable treatment for hemodialysis (HD) catheter-related bacteremia (CRB), concerns remain about effectiveness and the potential for antimicrobial resistance. Thus we sought to compare abx locks with an alternative locking solution of 30% ethanol/4% trisodium citrate by reviewing the outcome of CRBs in a single center retrospective trial of pediatric HD patients. During the study period all CRBs were treated with systemic abxs, however from January 2010 to September 2010 (period 1), abx/heparin locks were used based on sensitivities of the bacterial isolates, while from October 2010 to September 2011 (period 2), ethanol/citrate locks were used. Treatment failure was defined by the persistence or recurrence of positive blood cultures, and resulted in catheter replacement. There were 18 CRBs in 8 children (4 male/4 female), with a mean age of 11.6±8.2 yr and dialysis vintage of 1.5±1.1 yr. There were 11 and 7 CRBs during periods 1 and 2, respectively. Only 45% of CRBs were successfully cleared using abx/heparin locks, compared to 100% of CRBs with 30% ethanol/4% citrate locks.



These findings suggest that ethanol/citrate locks are a superior alternative to abx locks. While prospective trials are needed to confirm these results, ethanol/citrate locks may provide a safe, convenient and cost effective adjuvant therapy for CRB.

TO ANTHROPOMETRICALLY COMPARE A SAMPLE OF PATIENTS FROM A SINGLE HAEMODIALYSIS UNIT IN IRELAND TO THOSE PATIENTS STUDIED IN THE HEMO STUDY Jennifer O'Neill, Halóg Mellett, Catherine Wall and George Mellotte, The Adelaide & Meath Hospital incorporating the National Children's Hospital, Dublin, Ireland.

Protein-energy malnutrition (PEM) and muscle wasting is common among patients with end stage renal disease (ESRD). Adverse changes in anthropometric measures are indicators of the onset of PEM in the haemodialysis (HD) population. The aim of this study was to measure the mid-arm circumference (MAC) and body mass index (BMI) of a sample of patients from a single Irish HD unit and to compare these measurements to results reported in the HEMO study. MAC and BMI were measured in 61 HD patients (31 male; 30 female). Measurements for MAC were taken on the non-access side of the patients' body post dialysis treatment. BMI was calculated based on the patients' dry weight. Patients were excluded if they were an inpatient or unable to participate due to active illness at the time of data collection. The majority of patients fell into the healthy (45% men; 50% women) and overweight (39% men; 40%women) BMI categories. The mean BMI for women did not differ significantly when compared to the results of the HEMO study (P=0.609). The mean BMI for men was significantly different (P=0.000 - 28.1kg/m^2 vs. 24.6kg/m^2). The mean MAC for both men (25.7cm vs. 29.2cm) and women (27.5cm vs. 29.8cm) were significantly different from the HEMO study (P=0.000 and P=0.009 respectively). The HEMO study had strict exclusion criteria (e.g. unstable angina and chronic pulmonary disease) that prevented the participation of many patients. In conclusion, the Irish patients assessed had less lean tissue than those in the HEMO study with BMI measurements similar in females, greater in males but MAC measurements reduced for both genders. A limitation of the comparisons made here is the different exclusion criteria used in the two studies. This study has prompted the introduction of regular anthropometric measurements in the HD unit studied, including hand grip dynamometry and tricep skinfold thickness measurements, to be taken at baseline and biannually thereafter to encourage early identification of muscle wasting and to allow targeted dietetic input.

MOTIVATIONAL INTERVIEWING STAFF TRAINING PROTOCOL REFINEMENT PROJECT

Leanne Peace, Cynthia Russell, Nikole Cronk, Michelle Matteson, Leonor Ponferrada, Norma Knowles, Kay Dye; University of Missouri-Columbia and Dialysis Clinics Inc, Columbia Missouri.

Motivational Interviewing (MI) has been well-documented as an effective tool for facilitating health-related behavior change among chronically ill patients. The initial research was to determine if MI conducted by staff improved patient adherence. Adequate staff training is paramount for effective delivery of MI. The purpose of this project was to develop and refine an MI hemodialysis staff training protocol. In the initial phase of this project, dialysis staff received a 9 hour MI training program (three, 3-hour sessions) followed by 2 months of coaching and counseling by an MI specialist. The staff then delivered MI to hemodialysis patients for 3 months. Staff evaluation of this training approach indicated that the concepts of MI were easy to understand, appropriate, and likeable, but they were not used regularly or effectively. Staff felt that they needed a longer training session with additional coaching and counseling.

Consequently, the MI delivery methods were refined for phase II. The revised protocol included a longer staff training session (four, 3 hour sessions with additional time between sessions 3 and 4 for reinforcement), more coaching, along with more frequent counseling sessions and extension of the MI delivery phase to 6 months. For continuity and consistency, a single MI expert provided the training and coaching sessions in both phases.

This project has produced a much needed protocol for training hemodialysis staff on the effective use of MI. Study protocol revisions indicates that sufficient MI training, feedback and follow up coaching may enhance MI competence and comfort in using the technique for long term use. Similar MI training protocols may be adapted for use by other facilities to improve patient and staff interactions.

OUTCOME AT 90 DAYS OF DIALYSIS

Prakash R, Sheth H, Bender FH, Burr R, Piraino B. University of Pittsburgh Medical Center, Pittsburgh, PA

USRDS data are based on information obtained from dialysis units typically 90days after initiation of dialysis. We aim to determine the proportion of patients continuing dialysis to the 90 day mark at a single center and look for modifiable factors that may increase this number.

We performed a retrospective analysis of a prospective database of patients initiating dialysis from 1/1/1999 to 4/30/2011 at a single outpatient dialysis unit. Pts were selected on the basis of dialysis modality on day one of dialysis at our outpatient unit and were followed through 90 days. Outcomes were compared using the Chi square or t test.

131 PD and 304 HD pts satisfied inclusion criteria over this time period. Demographics of the study groups PD and HD respectively were similar for gender, diabetes, CCI but were significantly different for age (53.6 yrs, 55.3yrs p=0.02), race (African American 16%, 53%, p<0.0001), initial mean albumin (mg/dl 3.5, 3.2,p<0.0001) and frequency of prior transplants (8.4%, 20,4%, p=0.002). There was more HTN-related ESRD in the HD group (12.9%, 22.4% p=0.02).

	PD (%)	HD (%)	p
Total pts	131	304	
Death	1 (0.8)	5 (1.6)	0.47
Recovery	2 (1.5)	8 (2.6)	0.48
Modality change	5 (3.8)	9 (3.0)	0.64
Transplant	5 (3.8)	2 (0.7)	0.02
Transfer unit	0 (0)	14 (4.6)	0.012
Total 90d	13 (9.9)	38 (12.2)	0.44

In conclusion, more patients in the PD group were transplanted as compared to the HD group, similar to USRDS data. Otherwise, outcomes are similar except PD patients are less likely to transfer to other units. Mortality in the first 90 days at our unit was extremely low.

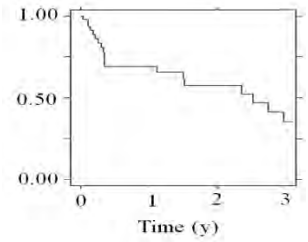
SURVIVAL ON HD AFTER NON RENAL SOLID ORGAN TRANSPLANT (SOT) IS POOR

Prakash R, Sheth H, Bender FH, Burr R, Piraino B. University of Pittsburgh School of Medicine, Pittsburgh, PA

Very little data have been published regarding outcomes for patients (pts) on HD who had prior solid organ transplants. We analyzed survival in this population at a single center.

We performed a retrospective analysis of a prospective IRB approved registry of pts on HD who had received SOT from 1/1/1999 to 10/01/2011 at a single outpt dialysis unit. Those with KT or KPT were excluded. A multivariate analysis was done (CCI, race, gender, age and initial serum albumin).

49 patients with SOT started outpt HD: n(%) OLT 24(49), OHT 11 (23), OLuT 7(14), SmBT 1(2), Multivisceral 5(10), OHT+OLuT 1(2). 22% were Afr Am, mean age 46.5y (range 19y-73y), 35% CNI toxicity as cause of ESRD. From start of outpt dialysis, survival was 69% at 6 mo and 66% at 1 y. Six mo survival for OLT was 61% and for OHT was 100%. None of the variables predicted survival. Kaplan-Meier survival curve is below.



Time	0mo	6mo	1y	2y	3y
Pts at risk (n)	49	25	21	13	7

Survival on HD for Solid Organ Transplant Pts

Transplant Key: OLT-liver, OHT-heart, OLuT-lung, SmBT-small bowel.

Recipients of non renal SOT have high mortality within 6 months of starting HD but mortality decreases thereafter. Pts with OHT on HD have the best survival but this needs to be further tested on a larger database.

RENAL INFARCTION SECONDARY TO RENAL ARTERY ANOMALY – A CASE REPORT

Ajith Puram, Neshatian Leila, Naheed Ansari, Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, NY

Renal infarction is rarely seen, in one study it is 0.007% of hospital admissions. Its diagnosis is often missed or delayed due to its rarity and non specific symptoms. Most of renal infarcts are due to atheroembolic disease like atrial fibrillation, LV thrombus etc. We report a case of renal infarction secondary to renal artery ectasia.

A 45 yr old male with no past medical history presented to ER with sudden onset of left flank pain for 1 day. Physical exam in ER was significant for T: 101.4F, BP: 150/105mm Hg, left upper quadrant and costovertebral angle tenderness. Laboratory tests showed leukocytosis, Creatinine 1.4mg/dl, high LDH, UA with small blood with no protein. Urine toxicology screen was negative any cocaine metabolites. CT abdomen revealed wedged hypodensities in left kidney compatible with infarction and focal nonenhancing regions within left renal artery suspicious for thrombus (Fig 1). Subsequent work-up showed negative blood and urine cultures, negative hepatitis serologies, negative hypercoagulable and vasculitis work up, normal sinus rhythm on holter, negative TEE. Renal angiogram demonstrated bilateral irregular renal arteries with multiple areas of ectasia and aneurysm(Fig 2 with arrows). A nephrogram defect of the superior pole of kidney suggested renal infarction. He was referred to vascular surgery for vascular intervention.

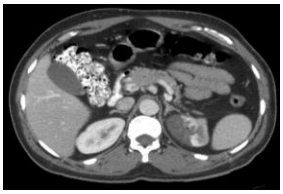


Fig 1- CT Abdomen

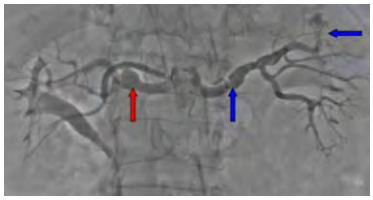


Fig 2- Renal Angiogram both sides

In conclusion acute renal infarct is mostly due to atheroembolic disease but other causes like renal artery ectasia /aneurysm as in our patient should also be considered in the differential diagnosis. Renal artery ectasia is not well reported in literature.

ACCURACY OF BLOOD CULTURE RESULTS FROM THE HEMODIALYSIS CIRCULATION AS COMPARED TO THE GOLD STANDARD FOR DIAGNOSING CATHETER-RELATED BLOOD STREAM INFECTIONS

F. Quittnat Pelletier[1,2], M. Joarder[1], C. E. Lok[1,2]
[1]Toronto General Hospital and [2]University of Toronto, Toronto, Ontario, Canada.

Background: Most hemodialysis (HD) units diagnose HD catheter-related bloodstream infections (CRBSI) by obtaining blood cultures (BC) from the HD bloodline concurrent with clinical exclusion of other sources of infections.

The guidelines from the Infectious Diseases Society of America (IDSA) recommend making the diagnosis of CRBSI by cultivating the same organism from a peripheral vein and from the catheter hub, meeting criteria for differential time to positivity. The IDSA criteria for CRBSI have not been validated in HD patients.

Hypothesis: is that a BC taken from a peripheral vein during HD will yield the same result as a BC taken from the dialysis circulation.

Methods: Four adult sets of BC (from a peripheral vein, both catheter hubs and the HD bloodline) were obtained from patients who were suspected of having a CRBSI. Sensitivity, specificity and accuracy were calculated using 2X2 tables.

Results: To date, 52 patients with suspected CRBSI have been enrolled. Bacteremia was found in 36% of these patients and all BC consistently grew the same bacteria from all culture sites, with 97% specificity, 90% sensitivity and 98% accuracy. In 64% with undetectable bacteremia, all BC were negative for bacterial growth.

Conclusion: 100% of organisms identified in peripheral vein samples were identical to those obtained from the HD bloodline, suggesting that the current standard of practice of obtaining BC from the HD bloodline concurrent with clinical exclusion of other sources of infections is a valid method of diagnosing CRBSI.

FLOATING KIDNEY AND NOCTURNAL POLYURIA

Ankit Sakhuja, Jiwan Thapa, Richard Fatica. Cleveland Clinic, Cleveland, OH, USA

Nephroptosis or floating kidney is abnormal condition in which the kidney drops down into the pelvis when the patient stands up. It can be seen in upto 20% population with female preponderance, however it rarely causes symptoms. When present primary, symptom is a dragging sensation in the flank, low abdominal or groin pain with most severe presentation being Dietl's crisis (define this). We present a case of nephroptosis with the principal complaint of persistent nocturnal polyuria.

A 68yo Caucasian female with history of non proteinuric stage III CKD with baseline Cr 1.1mg/dL, with a history of nocturnal polyuria for 2 years was recently diagnosed right nephroptosis on supine and standing renal ultrasound. She presented for a second opinion. She reported occasional pain on right flank but her main complaint remained significant nocturnal polyuria. An intravenous pyelogram showed the right kidney descended by 6.5 cm in the upright position; a MAG3 scan showed 43.4% of total renal function to be contributed by right kidney. Patient underwent nephropexy of her right kidney. Post procedure, her nocturnal polyuria showed dramatic improvement.

A case of nocturnal polyuria associated with nephroptosis with resolution following nephropexy has been described in literature in 1967. We report only second such case since. The reason for nocturnal polyuria is unclear though relative ischemia during upright position may play a role. It has been demonstrated that GFR may decrease in patients with nephroptosis in upright position.

PERIODONTITIS AND VITAMIN D DIFFICIENCY ARE STRONGLY ASSOCIATED IN CHRONIC KIDNEY DISEASE FEMALE PATIENTS

W. Samson, H. Swede, G. Fares, E. Ioannidou
University of Connecticut Health Center, Farmington, CT
Bay State Medical Center, Springfield, MA

Given the existing evidence on the high prevalence of periodontitis in chronic kidney disease (CKD) subjects, we hypothesized that 25-Hydroxy vitamin D deficiency (VDD) may be a predictor of periodontitis in CKD patients. Using the National Health and Nutrition Examination Survey 1988-1994 (NHANES III) dataset and the American Academy of Periodontology (AAP)/ Center of Disease Control and Prevention (CDC) case definition for periodontitis, we included 2155 patients with CKD. CKD was defined using cystatin C based eGFR<60ml/min/1.73m^2 and/or albuminuria≥30mg/g. VDD was defined based on the cutoff point of 20ng/ml. The prevalence of VDD was 18.7%. Among the subjects with VDD, 5.2% were diagnosed with periodontitis compared to 1.2% in the non-VDD cohort (p=0.001). In a univariate analysis, vitamin D was significantly associated with periodontitis (OR=5.27 95% CI 1.87-15.32). The fully adjusted logistic regression model, which included all potential confounders, revealed a significant association between VDD and periodontitis only for women (OR=5.45 95% CI 1.73-17.86). Menopause emerged as a significant confounder in this association. In conclusion, post-menopausal status and VDD appears to significantly potentiate the likelihood of periodontitis in women with CKD. Estrogen has long been recognized as having an important role in periodontal disease in the general population. Further studies will be required to elucidate the role of estrogen and vitamin D in CKD patients with periodontal disease.

NEPHROTALK: COMMUNICATION SKILLS FOR NEPHROLOGY FELLOWS

Jane Schell, Jamie Green, and Robert Arnold.
Duke University, Durham, North Carolina, and the University of Pittsburgh, Pittsburgh, Pennsylvania.

Nephrology fellows are often faced with difficult conversations about dialysis initiation or withdrawal. However they are frequently unprepared to have these discussions. Despite evidence that communication skills are teachable, few nephrology training programs include this type of training within their fellowships. We developed and implemented a communication skills workshop for nephrology fellows (NephroTalk) focused on communication skills in delivering bad news and helping patients define care goals including end of life preferences. This 4-hour workshop involved a combination of didactics and role-playing with standardized patients. Participants were 1st, 2nd and 3rd year nephrology fellows at the University of Pittsburgh and Duke University (N=22). We collected anonymous pre- and post-workshop surveys to evaluate the efficacy of the curriculum. We used a paired t-test to assess changes in fellow perceived preparedness based on the workshop training. Overall, 23% of the fellows were white and 50% were male. Less than 1/3 (27%) reported prior training in palliative care. Only 36% (8/22) and 38% (8/21) of respondents had received structured training in how to conduct discussions for dialysis initiation or withdrawal, respectively. All (19/19) felt that communication skills were either “important” or “very important” to being a great nephrologist. Mean level of preparedness increased by 0.50 to 1.14 points (5-point Likert scale) with $p<0.01$ for all skills including delivering bad news, expressing empathy; and discussions of dialysis initiation and withdrawal. 100% (21/21) said they would recommend this training to other fellows and 95% (20/21) said the curriculum should be required of all nephrology fellows. NephroTalk represents a successful teaching model for improving nephrology fellow preparedness in having difficult conversations about kidney care.

SEVERE THROMBOCYTOPENIA ASSOCIATED WITH USE OF E-BEAM STERILIZED POLYSULFONE DIALYZER ON A PATIENT WITH A COMPLICATED PREGNANCY

Jun Sohn, Madhavi Katikaneni, Hugo Villanueva, Lin Lwin, Jinil Yoo
Nephrology, Montefiore Medical Center-North, Bronx, NY, USA

Hemodialysis (HD)-related thrombocytopenia has mostly been recognized as a complication induced by heparin use. A recent study identifies significant thrombocytopenias associated with use of e-beam sterilized (e-beam) dialyzer. We present a case of a thrombocytopenia caused by e-beam polysulfone (PSF) dialyzer on HD.

This case is a 25-year old lady in 26th week of pregnancy who was admitted with nausea and blurry vision, and found to have BP 171/81mmHg, hemoglobin (Hb) 8.5g/dL, platelet count (PLT) 110K/uL, and serum creatinine 7.4mg/dL. Her kidney function didn't improve even after the immediate delivery under diagnosis of impending eclampsia. HD was initiated using e-beam PSF dialyzer. PLT dropped to 54K/uL after 2 sessions of HD. Heparin was not used and hematologic evaluation didn't yield the cause of thrombocytopenia. The dialyzer was changed to cellulose diacetate sterilized with ethylene oxide. PLT rose to her baseline, then to normal range in 1 week.

When her PLT remained up to 300K/uL, the dialyzer was switched to e-beam PSF with the patient's consent to confirm the recurrence of thrombocytopenia. The followings are obtained. Pre-HD Hb 9.4g/dL, PLT 214K/uL and post-HD Hb 11.3 g/dL, PLT 185K/uL. Considering HD-induced hemoconcentration, her PLT dropped by 34%.

It is known that previously, use of cuprophane membrane was shown to induce complement activation and thrombocytopenia. However, e-beam PSF was not incriminated to thrombocytopenia not until recently. We believe that patients with baseline thrombocytopenia and/or HD-related thrombocytopenia should be observed carefully on use of e-beam PSF.

PERCEPTIONS AND ROLES OF THE NEPHROLOGY SOCIAL WORKER WITHIN THE SUICIDE CONTINUUM OF CARE: A NATIONAL SURVEY

Jane Kwatcher[1], Andrea Mora[1], Jena Rendon Muhr[1], Matt Stricherz[2, 3]
1.DaVita, Inc, Denver, CO 2.Cheyenne River Sioux Tribe, Eagle Butte, SD 3.Sanford Health, Sioux Falls, SD

The Nephrology Social Worker (NSW) is relied upon when patients present with suicidal ideation (SI) and other mental (MH) health concerns within the dialysis setting. A 20-question Survey Monkey instrument, with some multiple component questions, was presented to all participants in the Council of Nephrology Social Workers listserv and to all DaVita social workers. The questions addressed roles assumed within the dialysis clinic, available resources, NSW confidence and skill level in assessment, and intervention within the continuum of SI-plan-attempt. Knowledge of physical and MH conditions that contribute to patient SI was also investigated.

Statistical Package for the Social Sciences software was utilized to analyze data of 528 respondents from 46 states and 2 territories. Findings include: 60% of NSWs surveyed were licensed; 39% were in practice for 16 or more years; 50% work in only 1 clinic (range 1-5); and being respected by coworkers demonstrates the highest component within job-satisfaction questions. NSWs' self-perceptions included being a value to their organization, being the "go to" person in MH crisis management above and beyond all others within the patients' care system. NSWs interact with patients wanting to die without mention of suicide; and NSWs identified working with patients who have SI with or without a plan. Greater numbers of NSWs report care to patients who have attempted suicide than have received MH care. At or beyond the 6th year, NSWs' knowledge and skills are crystallized in identifying and intervening when patients have SI/ideation with a plan. The gaps in NSWs' level of understanding and confidence varied by years of service.

NSWs are the experts on suicidal and MH issues within the dialysis clinic. Data suggest the NSWs' knowledge, skills, and confidence vary within the years of service. Training for newly hired NSWs and those serving within internship settings is indicated. Best practice knowledge is identified and a significant knowledge gap is likely.

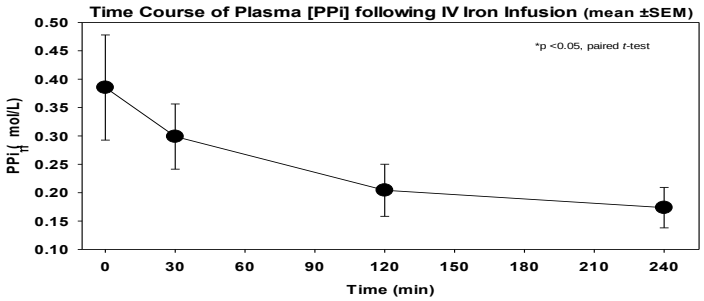
INTRAVENOUS (IV) IRON CHELATES INORGANIC PYROPHASPATE (PPi) AND ACUTELY DECREASES PLASMA PPi LEVEL

Ramin Tolouian[1], Sean Connery[1], Ajay Gupta[2]
[1]Division of Nephrology and Hypertension, Paul L. Foster School of Medicine, TTUHSC El Paso, Texas [2]Rockwell Medical, Wixom, MI

IV iron administration has been causally linked to calciphylaxis, but the mechanism is not known. Iron is a strong chelator of PPi. PPi is a potent inhibitor of vascular calcification (VC). We have investigated the hypothesis that labile iron present in IV iron chelates plasma PPi and examined the acute effect of IV iron on plasma PPi levels in patients on chronic hemodialysis.

Plasma PPi was measured in four patients on chronic hemodialysis; 30-70 yrs of age, 3 females, all 4 diabetics. Platelet free plasma (PFP) was collected at the beginning of hemodialysis session; patients were then administered 200 mg ferrous gluconate, followed by collection of PFP at 20, 120 and 240 minutes. PFP was obtained during high flux HD by stopping dialysate flow and collecting the ultrafiltrate.

The baseline pre-dialysis plasma PPi level was 0.39 ±0.185 (mean ±SD) µmol/L. Following IV iron administration; there was a trend towards progressive time-dependent decline in PPi level with maximum decrease of about 44% observed at 4 hours.



Plasma PPi is a known potent inhibitor of vascular calcification. IV iron administration acutely decreases plasma PPi likely by chelation, suggesting potential causative role of PPi depletion in aggravation/causation of VC by IV iron.

EVALUATION OF TRANSPLANT EDUCATION IN 500 DIALYSIS CENTERS IN 21 STATES: ARE DIALYSIS PATIENTS MAKING INFORMED TREATMENT CHOICES?

Amy Waterman, Christina Goalby, Emily Herrington, Shelley Hyland, Washington University, Saint Louis, Missouri

Dialysis centers are mandated by the Centers for Medicare and Medicaid Services to provide evidence that patients are informed of their transplant options. The purpose of this study was to understand the specific transplant education practices commonly occurring in dialysis centers nationwide. We surveyed 509 dialysis providers responsible for transplant education for approximately 32,000 patients in 551 dialysis centers serving 21 states. Transplant educators were primarily social workers (33%), nurses (32%), nurse managers/facility administrators (19%) and dialysis technicians (11%) who had been working with dialysis patients, on average, for 12 years. Though 92% agreed that educating patients about transplant was a priority (25% somewhat agreed, 67% strongly agreed), only 33% had a formal transplant education program in operation in their dialysis centers. Providers had poor knowledge about transplant (answering 6 of 12 general transplant knowledge questions incorrectly). Educators admitted that their transplant knowledge was inadequate for answering their patients' questions (53%) and felt their transplant education materials were poor (39%). When asked about their specific educational practices, most (93%) provided patient education at least once to all transplant-eligible patients, with less (78%) repeating this education every year. Their education primarily consisted of recommending that patients be evaluated for transplant (84%), recommending that patients learn more about transplant (80%), and referring patients to an education program at a transplant center or kidney organization (59%). Educators rarely had detailed discussions about the risks and benefits of deceased (25%) or living donation (25%). While dialysis educators are generally informing patients that the option of transplant exists, few are providing patients with true transplant education. To enable more dialysis patients to make informed transplant choices, we must educate more dialysis providers about transplant and provide them with adequate transplant resources to disseminate to patients.

PERFORMANCE OF CT-GUIDED PERCUTANEOUS KIDNEY BIOPSY BY NEPHROLOGISTS WITH 100% TISSUE DIAGNOSIS AND NO BLOOD TRANSFUSION OVER 10-YEAR PERIOD.

Jinil Yoo[1], Roger Carvajal [2], Nipresh Pradhan[2], Lin Lwin[1], Hugo Villanueva[1]

[1] Nephrology, Montefiore Medical Center North Bronx, NY, USA and
[2] Renal Service, Metropolitan Hospital Center, New York, NY, USA

The use of ultrasonography has helped nephrologists to obtain adequate kidney biopsy tissue, but some may hesitate limiting its frequency because of less consistent success rate. CT-guided kidney biopsy is performed mostly for technically challenging biopsies by interventional radiologists.

The Nephrology Division[1] introduced a CT-guided percutaneous kidney biopsy with automated 18-gauge (G), biopsy-cut needle and "matched" 17-G guide-needle from 1999. The biopsies were performed primarily by nephrology fellows under the supervision of an experienced nephrologist. First, a 17-G guide needle is introduced, and position confirmed by CT-scanning. Then an 18-G biopsy needle is passed through the guide-needle to obtain 2 cores of tissue, followed by post biopsy scanning.

During the 11-year period, 107 biopsies were performed, 56 out of 107 were performed on outpatient (OP) basis (discharged after 6-hour observation), and 51 were done for in-hospital patients (IP). All 107 biopsies yielded enough tissue for light-, immunohistology, and electron microscopy. 3 out of 107 experienced gross hematuria (2 from IP, 1 from OP); not requiring transfusion, but one from the OP required overnight observation. No other complications related to the procedure were observed. The average (avg) age was: 46 years (range 20 to 87), the avg counts of glomeruli on each biopsy: 22 (3 to 67 glomeruli), and serum creatinine level: avg 3.1 mg/dL (OP: avg 2.1 mg/dL with range of 0.6 to 8.4, IP: avg 4.2 with range of 0.7 to 12.8 mg/dL).

The CT-guided percutaneous kidney biopsy technique described above can enable nephrologists to obtain adequate kidney tissue consistently with less post biopsy complications, not only for technically challenging cases, but for all other cases, greatly improving tissue diagnosis of more kidney diseases.

ADENOIRUS INFECTION IN POST KIDNEY TRANSPLANT PATIENTS: REPORT OF 2 CASES

Abhishek Agarwal, Richa Pandey, Sundararaman Swaminathan, University of Arkansas for Medical Sciences

Bilateral Diaphragmatic Paralysis: Four weeks after a live donor-related kidney transplant, a 42-year-old Vietnamese man developed dyspnea markedly worse in supine position. He had low-grade fevers along with vomiting, diarrhea and hematuria. He had paradoxical breathing and supine pulmonary function tests were suggestive of diaphragmatic dysfunction. Electromyogram revealed bilateral diaphragmatic paralysis due to demyelinating phrenic neuropathies with complete conduction block. Work up revealed positive adenovirus PCR with 7500 copies/ml. The paralysis improved spontaneously over a few weeks, consistent with a viral etiology. There are previous reports of adenovirus neuropathy involving the myentric plexus and anterior horn cells. We did not find any report of reversible, isolated bilateral phrenic neuropathies.

Hemorrhagic pyelonephritis: Two years post transplant**,** a 27-year-old Caucasian man came with fevers and hematuria. Nephrolithiasis and infection was ruled out. MAG 3 renogram curve was compatible with grade 3 graft dysfunction. Renal biopsy showed mild focal tubular atrophy and was negative for rejection. PCR for CMV and BK viruses was negative. With persistent high grade fever, he was treated with broad spectrum antibiotics and antifungal agent. Cystoscopy showed a blood clot at the orifice of the transplant kidney with no hemorrhagic cystitis. A white cell scan and CT abdomen showed pyelonephritis in the superior pole of the transplanted kidney. As his fevers subsided after 3 weeks, adenovirus PCR came back positive as 50,000 copies/ml. Together with blood noticed from the transplanted kidney, this was felt to be a case of hemorrhagic pyelonephritis due to adenovirus. Gross hematuria and rising serum creatinine are classic signs of acute rejection, obstruction, or bacterial pyelonephritis in renal transplant recipients. Once these are ruled out viral etiologies such as adenovirus should be considered early in the course.

DO WE NEED TO WAIT 2 YEARS BEFORE ALLOWING KIDNEY TRANSPLANT IN PATIENTS WITH PROSTATE CANCER?

Vivek Agarwal, Thet Zaw, Irtza Sharif, Sadanand Palekar, Shaista Hussain
Department of Renal Transplant, Newark Beth Israel Medical Center, Newark, NJ

Patients who are awaiting a kidney transplant (KT) have a high mortality rate in the US. The United States Renal Data System data from 2000-2009 shows annual mortality of 21.4% for patients aged 46 to 78 years undergoing hemodialysis (HD). Over two years this is 38.2%. Patients on HD must have a two-year cancer free period immediately preceding transplant. The purpose of this study is to determine if some patients with prostate cancer would be better served by undergoing KT rather than waiting for two years to be declared disease-free. We compared the two-year mortality of patients awaiting KT with that of patients incidentally diagnosed with prostate cancer within 6 months of transplant. We assume patients incidentally diagnosed with prostate cancer within 6 months most likely had prostate cancer pre KT.

We conducted a retrospective analysis of the United Network of Organ Sharing multi-center study data to determine the outcome of prostate cancer in KT recipients. Renal transplant patients diagnosed with prostate cancer within 6 months after KT from 2000 to June of 2009 were included in this study. 39 patients with the diagnosis of prostate cancer within 6 months after KT were identified. 2 patients who were treated with radiation before KT had recurrent prostate cancer. 7 patients were excluded secondary to insufficient data. The study is limited by the unavailability of histopathological staging.

32 male patients (aged 46 to 78 yrs) met the eligibility criteria. The outcome revealed 13 patients were alive and free of tumor, 18 were alive with tumor, and 1 patient died as a result of the tumor within the first two years post transplant. The two-year mortality is 3.13% (0.08% to 16.2% [95% confidence interval by Clopper-Pearson exact method].

Using the upper limit of the mortality estimate, only 16.2% of patients would die within two years. This is well below the estimated 38.2% that would die while on HD. We, therefore, conclude that there is a survival benefit for early KT in patients with prostate cancer.

A COST COMPARISON BETWEEN KIDNEY ALLOGRAFT BIOPSIES PERFORMED BY NEPHROLOGISTS AND INTERVENTIONAL RADIOLOGISTS

Irfan Ahmed, Hiral Desai, Sandeep Aggarwal, Dimal Shah, Alden Doyle, Karthik Ranganna, Ziauddin Ahmed.
Drexel University College of Medicine, Philadelphia

There is an increasing national focus on managing costs and maximizing the value of medical care. Striking the right balance between costs and care is particularly difficult in areas where a wide range of technology is available. We sought to compare the costs, efficacy, and safety of kidney transplant biopsies performed with a relatively low-technology approach utilized by nephrologist and a comparatively high-technology approach used by interventional radiologists. In our institution, kidney biopsies are generally performed either a nephrologist at bedside (at a cost of approximately $200 per procedure) or by an interventional radiologist in a specialized IR procedural suite (with a cost of approximately $3000 per procedure).

We reviewed 378 consecutive kidney allograft biopsies done at our institution between September 2008 and June 2011. A Total of 240 biopsies were done at bedside with US guidance by nephrology team and 138 were done by IR in radiology department. All biopsies were done with 18-g needle. Most common complication was gross hematuria which occurred in 1.59% of patients and was cleared within 24 hours without the need for either an intervention or a blood transfusion. The average number of glomeruli obtained at bedside and in radiology suite was 9.09% and 19.97% respectively; both were considered adequate by the pathologist. Both approaches, therefore, seemed to be reasonably safe and efficacious. We calculated a theoretical cost difference of a cost savings of $944,244 if all 378 biopsies were done by the nephrologists at the bedside.

We conclude that bedside kidney allograft biopsy is a very cost effective procedure with similar rate of complications and tissue yield compared to those done by Interventional Radiologists within a specialized IR suite.

A COMPARISON BETWEEN KIDNEY ALLOGRAFT BIOPSIES PERFORMED BY NEPHROLOGISTS AND INTERVENTIONAL RADIOLOGISTS

Irfan Ahmed, Dimal Shah, Hiral Desai, Sandeep Aggarwal, M. W. Khattak, Karthik Ranganna, Alden Doyle, Ziauddin Ahmed.
Drexel University College of Medicine, Philadelphia

Kidney allograft biopsies are an important part of post-transplant care, but carry some risk of complications. These biopsies are generally either performed by a nephrologist or by an interventional radiologist (IR) using somewhat different techniques. We retrospectively examined the success rates and complication rates of kidney allograft biopsies performed at our institution by these two different specialties. The study reviewed 378 consecutive biopsies between September 2008 and June 2011. We collected the data regarding indication of biopsy, post biopsy complications, number of cores and number of glomeruli obtained. Total of 240 biopsies were done at bedside with US guidance by nephrology team and 138 were done by IR. All biopsies were done with 18-g needle. Mean age was 53+-14.2 yrs, 65% were males, 56 % were AA. Most common indication of biopsy was to rule out rejection (59 % cases), followed by allograft surveillance (29%). Gross hematuria was the most common complication and occurred in 6 patients (1.59%) patients and all of them required hospitalization but none of these patients required any PRBC transfusion or any intervention. The average number of glomeruli obtained at bedside and in radiology suite was 9.09% and 19.97% respectively; both were considered adequate. IR approach achieved 2.42±1.26 cores with 2.60±1.17 attempt for each core. Bedside group got 1.57±1.05 cores with 2.00 attempts. All the differences were statistically significant. Complication rates were no different.

In conclusion, US-guidance kidney allograft biopsies can be safely done at bedside and yield an adequate tissue sample with complication rate similar to those done by IR.

PEER MENTORING TO INCREASE DECEASED ORGAN DONATION AMONG ESRD PATIENTS

Ann Andrews[1], Holly Jenkins-Riley[3], Allyce Haney[1], Remonia Chapman[4], Jerry Yee[2, 3], Ken Resnicow[5]
NKF of Michigan[1], Ann Arbor , MI, USA, Henry Ford Health System[2], Detroit, MI, USA, Greenfield Health Systems[3], Bingham Farms, MI USA, Gift of Life Michigan[4], Ann Arbor, MI, USA, School of Public Health, University of Michigan[5], Ann Arbor, MI, USA

The organ donor waiting list continues to expand. Patients with End Stage Renal Disease (ESRD) are not typically viewed, by themselves or their health care team, as potential donors after death. However, ESRD patients are eligible to donate and may obtain a sense of empowerment in knowing they can give back. The objective of this study is to evaluate if peer mentoring will increase enrollment on the Michigan Organ Donor Registry among ESRD patients.

This cluster randomized design controlled intervention study is conducted in collaboration with the National Kidney Foundation of Michigan (NKFM), Greenfield Health Systems (GHS), Henry Ford Health System, Gift of Life Michigan, and the University of Michigan. Staff at twelve GHS dialysis units in Southeast Michigan will receive training in organ donation. Dialysis units will then be randomized to an intervention or control group. ESRD patients in intervention units will be assigned peer mentors and meet 7 times over a 4 month period utilizing a mix of in-person and phone contacts. Peer mentor-patient meetings will cover coping with chronic illness and leaving a legacy in relation to deceased organ donation and signing up on the Donor Registry. Patients in comparison units receive mailings about donation and the Donor Registry.

The primary outcome is registrations on the Donor Registry via mail and internet. In addition, surveys will be used to evaluate feasibility, change in organ donation knowledge and attitudes, self-reported donation status, hope (Hope Scale) and quality of life (KDQOL).

To date, over 60 Greenfield staff and 11 peer mentors have been trained in donation, and 92 patients have been recruited in 3 units.

IMPORTANCE OF AMBULATORY BLOOD PRESSURE MONITORING IN PEDIATRIC RENAL TRANSPLANT RECIPIENTS

Elizabeth Anyaegbu, Paul Hmiel, Michael Seifert. Washington University in St Louis, Missouri, USA

Hypertension (HTN) is a well known complication following renal transplantation (tx) and an important risk factor for allograft dysfunction (AD) and cardiovascular morbidity (CVM). ABPM is superior to casual blood pressure measurement (CBPM) in the assessment of HTN. It has the advantage of documenting circadian variability of blood pressure (BP) over a 24-hour period and calculating the blood pressure load (BPL), both of which correlate to cardiovascular risk in the general hypertensive population.

To define the role of ABPM in PRTRs and determine if ambulatory HTN, elevated BPL and abnormal nocturnal dipping (ND) are associated with chronic allograft injury.

ABPM data is being systematically collected from 40 PRTRs aged between 3 years and 18 years (yrs) who have completed at least 6 months follow-up. Patients had iothalamate GFR (iGFR) at 1 and 3 yrs post transplant.

Data is available from 6 patients at this time. The mean age was 12 ± 5.7 (3- 18) years and 67% were male. 33% received a living donor transplant. 50% were receiving antihypertensives at the time of ABPM. 33% had HTN based on CBPM and ABPM criteria of elevated systolic and diastolic means and BP loads. There was good correlation between CBPM and daytime ABPM (SBP: r= 0.69; DBP: r= 0.73). 3/6 patients had BP loads greater than 50% and 83% were nocturnal nondippers.

ABPM identified abnormal BP parameters in all patients. ABPM is shown to be a better assessment of actual BP variability and would ensure adequate BP control and reduce CVM.

DOES ATHEROSCLEROSIS FOUND IN THE CT ANGIOGRAM OF ABDOMEN AND PELVIS HAVE ANY DIAGNOSTIC VALUE FOR CORONARY ATHEROSCLEROTIC DISEASE?

Samer Bani-Hani, MD*[1,] Maung Mya, MD, FASN[1, 2,] .[1]Nephrology, &[2]Transplant Institute, UTHSC, Memphis, TN.

Atherosclerosis (AS) is a systemic disease. Aim of this study to investigate if the presence of AS in intra-abdomen (IA) vessels will predict the presence of the coronary artery disease (CAD).

The CT angiograms of the abdomen and pelvis (CTA), coronary angiograms (CA), cardiac stress tests (ST), of the kidney or combined kidney/pancreas transplant recipients from 2005 to 2009 in our center were reviewed. These tests were done as part of pre-transplant evaluation. The sensitivity (SI), specificity (SP), positive predictive values (PPV) and negative predictive values (NPV) of IA for CAD were calculated. CAD was diagnosed by CA. We also compared the diagnostic values of IA AS and ST by performing Youden Indexes.

Among 482 patients (pts) who received transplantation, 95 pts had CA. 2 pts who had Coronary Artery stent placements were excluded. 93 pts were included. 78 pts had ST and 75 pts had CTA.29 pts had positive ST and 37 pts had AS in the CTA. SI, SP, PPV and NPV were shown in the table. Youden Indexes was not significantly different (P >0.5)

	Sensitivity	Specificity	PPV	NPV	P value
ST	36	70.6	31.03	75	0.61
CTA	55	47.27	27.5	74.3	1

Conclusions: Compare to ST, AS in the CTA was more sensitive but less specific for CAD.

ABO INCOMPATIBLE LIVE DONOR KIDNEY TRANSPLANTATION: SUCCESS WITH A MINIMIZED PRETREATMENT PROTOCOL

Madhu Bhaskaran, Fouad Boctor, Mohini Alexander, Qasi Nuaman Masood, Daniel Ross, Kellie Calderon, Mala Sachdeva, Susana Hong, Kenar Jhaveri, Joseph Mattana, Michael Schwartz, Michael Kleeman, Ernesto Molmenti

North Shore-Long Island Jewish Health System, Manhasset, New York, United States.

We present the short term results of a series of ABO incompatible kidney transplantation. Most ABO incompatible protocols report splenectomy, rituximab, removal of anti ABO antibodies using special columns and frequent episodes of antibody mediated rejection.

The patients received a combination of Apheresis and or IV Ig; and basiliximab. All received live donor kidney transplants. HLA mismatches ranged from 3 to 6. Transplants were performed when Anti ABO titres (IgG) were 8 or below.

Table: Anti ABO IgG antibody titres at pre /intra and post op:

	Preop Max Titer	Day of transplant	Post op Max Titer
Patient 1	16	8	32
Patient 2	32	8	16
Patient 3	16	4	2

All 3 recovered and maintained without any delayed graft function or rejection. Patients 1 and 2 received post transplant plasmapheresis and. Patient 2 also received IV Ig pre op for donor specific HLA antibodies. Patients are at 1 to 12 months post transplant at present. The average serum creatinine is 1.4 mg/dl.

Protocol comprised of Basiliximab induction and pre-transplant and selective post transplant plasmapheresis and careful monitoring of anti ABO titres can achieve excellent outcome in the short term.

RENAL ALLOGRAFT TRANSFER INDEX (ATI) AND TRANSLATIONAL INDEX (TLI): POTENTIAL PREDICTIVE TOOLS FOR MEASURING QUALITY OF PERIOPERATIVE AND LONG TERM MEDICAL MANAGEMENT OF KIDNEY RECIPIENTS

Madhu Bhaskaran, Sreevidya Kusuma, Kelly Benedict, Sonal Bajaj, Mala Sachdeva, Kenar Jhaveri, Kellie Calderon, Mercy Babu, Donna Dalton, Edwin Goncharuk, Lara Fishbane, Robert Metzler, Branson Sparks, Michael Schwartz, Joseph Mattana, Gene Coppa, Ernesto Molmenti
North Shore-Long Island Jewish Health System, Manhasset, New York, United States.

Clinically measurable determinants of early allograft function (EGFR, recipient glomerular filtration rate at 4 weeks) include donor age, donor body weight, recipient body weight, donor glomerular filtration rate (GFR), donor kidney weight and percentage of fibrosis in post perfusion biopsy. Another determinant is operative techniques in case of both donor and recipient and perioperative care of recipient including immunosuppression and medical management. We developed Allograft Transfer Index (ATI) which is calculated as (GFR of transplanted kidney/donor kidney weight) X (recipient body weight/donor body weight) The index average values ranged from 0.2-0.8. A negative value of 0.01 was added for each year above the donor age of 50 and for each 1% fibrosis on post perfusion biopsy. Translational Index (TLI) was calculated by current recipient GFR/ (EGFR X ATI).

A product of ATI with donor GFR appears to correlate positively with early recipient GFR at 4 weeks (EGFR). TLI appears to correlate positively with improved compliance for follow up, lack of rejection episodes, lack of BKV and better control of hypertension and metabolic factors, all potential surrogates for improved quality of medical management in the long term.

Clinically measurable composite indices may provide insight into overall quality of early and long term care in kidney allograft recipients.

SINGLE DOSE THYMOGLOBULIN FOR EARLY ACUTE REJECTION IN KIDNEY TRANSPLANTATION

Madhu Bhaskaran, Mala Sachdeva, Kenar Jhaveri, Fouad Boctor, Kellie Calderon, Asaph Levy, Crystal Kyaw, Fiore Mastroianni, Alexander Blood, Edwin Goncharuk, Lara Fishbane, Donna Dalton, Kavin Shah, Juan Pablo Idrovo, Joseph Mattana, Alessandro Bellucci, Jeffrey Nicastro, Gene Coppa, Ernesto Molmenti
North Shore-Long Island Jewish Health System, Manhasset, New York, United States.

EAR (early acute rejection) is often steroid resistant. Most EAR are severe and cause increase in length of stay and suboptimal allograft outcome. Though single dose thymoglobulin for induction therapy is described in literature, single dose therapy of EAR has not been reported.

Clinicopathological and follow up data on three consecutive recipients with EAR treated with SDT (single dose thymoglobulin) are presented.

All three episodes of EAR occurred within the first week after transplantation during the hospitalization. Two of the three had donor specific antibodies pre-transplant but all had negative CDC (complement dependent cytotoxicity) and flow cytometric crossmatch. All received basiliximab induction. One had cPRA of 29% but the other two had below10%. Rejection was suspected when serum creatinine rose after initial nadir and no alternative explanations were available. Clinicopathological data confirmed acute rejection with no evidence of DSA (donor specific antibodies) or C4d in all. One biopsy revealed histology suspicious for antibody mediated rejection but C4d was negative. All three responded to the treatment with 2mg/Kg SDT infusion with follow up creatinine values reaching the nadir. Standard triple drug immunosuppression comprising of prednisone, tacrolimus and mycophenolate were continued in all three. All three had an average length of stay of 3-4 days longer than recipients without allograft rejection. Follow up data of 7-30 days are available at the time of submission.

Single dose thymoglobulin may be a viable alternative in managing EAR with close follow up monitoring of allograft function.

TRANSFERRED OR LOST IN TRANSLATION: DONOR CHARACTERISTICS AND ACHIEVED RECIPIENT GLOMERULAR FILTRATION RATE (GFR)

Madhu Bhaskaran, Kelly Benedict, Sreevidya Kusuma, Mercy Babu, Kellie Calderon, Sonal Bajaj, Fouad Boctor, Donna Dalton, Mala Sachdeva, Lara Fishbane, Ujwal Gautam, Christina Scelfo, Dana Bregman, Alan Gandler, Alessandro Bellucci, Joseph Mattana, Jeffrey Nicastro, Gene Coppa, Ernesto Molmenti
North Shore-Long Island Jewish Health System, Manhasset, New York, United States.

To evaluate the determinants of early (4weeks) glomerular filtration rate (GFR) in live donor kidney recipients. One of the major determinants of GFR is the amount of functioning kidney tissue and the renal blood flow. Cardiac output influences renal blood flow. One of the readily available indicator of cardiac output in healthy donors may be their total body weight.

Review of prospectively collected sequential living kidney donor and corresponding recipient data including donor age, body weight, GFR, donor kidney volume and donor kidney weight at the time of transplantation; recipient weight and recipient GFR 1 month post transplant were analyzed. Post perfusion biopsies were reviewed for fibrosis and postoperative anatomic data reviewed for anomalies that cause ischemic tissue loss. Donors are not accepted at the transplant program if their BMI is above 35 and recipients excluded at or above BMI of 40.

Donor body weight, donor kidney weight, and donor GFR tended to positively correlate with recipient GFR. Recipient body weight also showed trend for positive correlation with achieved GFR. Donor age and percentage of fibrosis in post perfusion biopsy tended to have negative impact. Donor kidney volume did not correlate with recipient or donor GFR.

Predictive tools for recipient GFR may be constructed from simple clinical data in living donor kidney transplantation. These tools can be used to evaluate quality of operative and perioperative care as well as to counsel potential living donors and recipients regarding short term allograft function

RECOMMENDATIONS FOR DIALYSIS TEAM MEMBERS TO HELP REDUCE KIDNEY TRANSPLANT DISPARITIES

Teri Browne[1], Avrum Gillespie[2], Megan Urbanski[2] & Heather Hammer[2]

[1]University of South Carolina, Columbia, SC, USA; [2]Temple University, Philadelphia, PA, USA

Research suggests that black dialysis patients are significantly less likely than their white peers to be evaluated and listed for a kidney transplant. We present the findings of two research studies that survey black dialysis patients in two different locations (Chicago and Philadelphia) about their attitudes and knowledge related to kidney transplantation, and use these findings to make recommendations to the interdisciplinary dialysis team members that may help reduce kidney transplant disparities. In the Chicago study, 94% of patients surveyed were interested in a kidney transplant, only 36% had been evaluated at a transplant center, and even less, 9% active on a transplant waiting list. Insurance was not a barrier, as 98% had insurance that would pay for a kidney transplant. In the Philadelphia study, the majority (80%) of patients were interested in a kidney transplant, (71.6%) had been evaluated, yet only 39% were on the transplant waiting list. Moreover, of the patients being evaluated 52.9% incorrectly believed they were on the kidney transplant waiting list. In the Chicago study the barrier was access to transplant, in the Philadelphia study patients had difficulty navigating the transplant system. In both studies, black patients had poor knowledge and understanding about the process related to getting a kidney transplant. These findings suggest that barriers to kidney transplantation are complex and multidimensional. Furthermore, dialysis professionals can augment their standard course of patient care to identify and attend to this lack of knowledge and understanding.

RENAL BIOMARKERS FOR ASSESSMENT OF KIDNEY FUNCTION IN RENAL TRANSPLANT RECIPIENTS: HOW DO THEY COMPARE?

Ahmed Chaaban[1], Samra Abouchacra[1], Yousef Boobes[1], Raafat Hakim[1], Nicole Gebran[1], Hanan El-Jack[1], Faiz Rashid[1], Amna Muhairi[1], Nico Negelkerke[2]

[1] Tawam Hospital, [2]Faculty of Medicine &Health Sciences; UAE.

Accurate assessment of renal function is crucial given its strong association with morbidity and mortality. However, gold standard measures are cumbersome and serum creatinine itself is an insensitive predictor; especially in renal transplant recipients. Though GFR estimating formulae have been relied upon, they do have their own limitations. Nevertheless renal biomarkers such as NGAL (Neutrophil Gelatinase Associated Lipocalin) and Cystatin C are now emerging as potentially useful indicators of GFR. We aimed to evaluate the diagnostic performance of NGAL vs Cystatin C and eGFR using CKD-Epi, MDRD and Cystatin C in renal transplant recipients.

72 patients were evaluated (M:F 44:28), mean age 44.58 ±14.25 yrs, 54.43± 42.92 months post transplant with mean serum creatinine 105.94± 51.77 µmol/l. Mean NGAL was 91.32±71.73 ng/ml with Cystatin C levels 1.27 ± 0.65 mg/l corresponding to $eGFR_{CKD\ Epi}$ 76.18 ± 23.45, GFR_{MDRD} 69.29 ± 21.36 and $eGFR_{Cystatinc}$ 60.14 ± 24.66 ml/min/1.73m^2.

Using univariate analysis, there was significant correlation between NGAL and serum creatinine (r=0.77), Cystatin C (r=0.76) and eGFR ($r_{Cystatin\ C}$= 0.79, r_{CKDEpi} = 0.59, r_{MDRD} =0.42). These parameters including age were also strong predictors of serum NGAL levels by multiple regressions. However, performance of NGAL based on Receiver Operating Characteristic (ROC) curve was inferior to that of the reference tests.

It appears that in renal transplant recipients, NGAL correlates well with Cystatin C and eGFR; most strongly with Cystatin- based formula. Though this suggests potential for the use of NGAL as a screening test, its weaker diagnostic performance on ROC raises some concern with its clinical usefulness. Larger studies are needed to explore this further.

Adherence in Pediatric Renal Transplant Recipients: A Systematic Review of the Literature

Bethany Coyne, University of Virginia Health System, Charlottesville, VA, USA

Research on medication adherence in the pediatric kidney transplant population is limited. A systematic review of the literature on medication adherence in pediatric renal transplant recipients was conducted. The results were combined and analyzed. Twenty-two articles met inclusion criteria. The primary purpose of 17 of the articles was to study non-adherence. There were no randomized controlled trials and only one intervention study that met inclusion criteria. The weighted mean rate of non-adherence was 58.93 ± 21.7% with a range of 10 to 78%. The majority (59%) of studies did not differentiate between adherence and non-adherence. In this analysis, factors found to affect medication adherence were, 1) co-morbid psychosocial issues and/or emotional conflict, 2) medication issues, 2) parental supervision/family support, 3) transplant factors, 4) parental supervision/family support, 5) functioning skills, 6) knowledge of medication, 7) age, 8) forgetfulness, 9) socioeconomic status, 10) gender, and 11) transfer of care. Non-adherence in the pediatric population remains a significant issue in transplantation. More research is critical in regards to the appropriate dose needed for medication adherence, the measurement of medication adherence, and interventions to improve medication adherence. Specifically, future studies are needed to determine at what point medication NA impacts on graft outcomes. Studies also should evaluate measures of NA, include objective outcomes, and should focus specifically on the adolescent population.

SKIN RASH NINE YEARS AFTER RENAL TRANSPLANTATION

Jacques Daoud, Vera Marie Rosado-Odom, Asif Sharfuddin, Raymond Johnson, Indiana University School of Medicine, Indianapolis, Indiana, USA

A 42-year-old woman presented with a skin rash that started with a tender, warm, and erythematous nodule on her left thigh, and enlarged over the next 2 weeks, associated with night sweats and a mild dry cough. She denied any recent travel, animal or bird exposure or new sexual encounters. Her past medical history was significant for bronchial asthma and congenital dysmorphic kidneys. Having received a deceased donor kidney transplant 9 years ago, her induction therapy consisted of anti-thymocyte globulin, and her early post-transplant period was remarkable for two rejection episodes. Her maintenance immunosuppression (IS) was cyclosporine, mycophenolate mofetil and prednisone. Physical examination revealed a low grade fever, clear breath sounds, and mild graft tenderness to deep palpation. An erythematous, nodular rash was noted on the thighs, knees, and right forearm. The hospital course was complicated with shortness of breath and hypoxia that responded to oxygenation and bronchodilators. Plain chest radiograph was unremarkable, while a chest CT revealed numerous subcentimeter mediastinal nodes. A punch-skin biopsy from one of the newer migratory lesions revealed yeast forms in the dermis suggestive of Histoplasma, confirmed by a positive urinary Histoplasma antigen. The immuknow ATP assay value was very low in favor of profound immunosuppression. Intravenous voriconazole was started followed by oral itraconazole. Three months later, all cutaneous lesions had disappeared, and the cough had resolved.

Skin lesions are a very rare form of initial presentation of disseminated histoplasmosis. Such manifestation may lead to misdiagnosis of a potentially fatal, otherwise treatable disease. The skin biopsy helped quickly diagnose this disease, while IS was maximally reduced, and adequate levels of antifungals ensured.

CARDIOVASCULAR RISK IN THE KIDNEY TRANSPLANT POPULATION

Rowena Delos Santos[*], Jagdeep Obhrai[*], Douglas Norman[*], Suzanne Watnick[#]
Oregon Health and Science University[*], Portland VA Medical Center[#], Portland, Oregon

Kidney transplantation improves quality of life and life expectancy in the ESRD population. Like patients on dialysis, the post-transplant population continues to have significant morbidity and mortality from cardiovascular disease. We aimed to identify baseline characteristics that were predictive of cardiovascular outcomes for renal transplant recipients. Candidate baseline characteristics included a combination of traditional risk factors for cardiac disease and renal specific risk factors. We conducted a retrospective review of 679 patients who underwent kidney transplant and were followed for two years. The events included in the composite outcome were: new myocardial infarction, acute coronary syndrome, stroke, arrhythmias and cardiac death. We used a logistic regression to evaluate eleven characteristics for their contribution to cardiovascular outcomes.

Of the 679 patients followed in this study, 72 patients experienced a post transplant cardiovascular event. The multivariable logistic regression showed that age (OR 1.04, $p = 0.001$), diabetes (OR 2.17, $p = 0.005$), and previous cardiac disease (OR 2.66, $p = 0.019$) predicted post-transplant cardiovascular outcomes. Renal specific factors, such as dialysis vintage, were not predictive. Studies investigating other tools and methods of better identifying pre-kidney transplant patients who are at higher risk are warranted, including direct comparisons of currently used methods.

ACUTE ANTIBODY MEDIATED REJECTION IN DSA NEGATIVE ANTI MICA AB POSITIVE PATIENT

Hiral Desai, Matthew Dwight, Alden Doyle, Karthik Rangana,
Drexel University, Philadelphia,Pennsylvania

Acute antibody mediated rejection(ABMR) is usually, but not always associated with donor specific antibodies(DSA) for HLA antigens. Herein, we report a case of severe ABMR post transplant that was associated with an antibody against Major Histocompatibility Complex Class 1 related Chain A(MICA) antigens. These MICA antibodies are missed in the cross-match because they are not expressed by the B or T cells used for this procedure.`

A 40 year old man received a second kidney transplant with immediate graft function. The creatinine decreased from 10 to 2 by pod 3.He presented 1 week later with vomiting, oliguria and increasing creatinine to 3.5. His immunosnosuppresant levels were therapeutic and renal ultrasound showed increased resistive indices without obstruction. He required dialysis support. A renal biopsy showed neutrophillic infiltration in the glomerulus, peritubular capiliritis, interstitial infiltration, intimal arteritis, and tubulitis highly suggestive of ABMR. His DSA were negative but anti MICA Ab were positive. He received IVIG and plasmapheresis(PP) with improving urine output. His creatinine now at 5 month follow up visit is 1.48 and a follow up biopsy shows histologic improvement. His acute kidney failure with biopsy suggesting ABMR, responding to PP and IVIG with negative DSA leads us to believe that anti-MICA Ab could be the cause of rejection.

Anti-MICA antibodies have been associated with allograft dysfunction but their role in acute ABMR remains unclear. We suggest that non-HLA ab be considered in cases of DSA-negative ABMR especially those that are not detected on standard cross match studies.

RISK FACTORS FOR HYPERURICEMIA AND GOUT IN AFRICAN AMERICAN RENAL TRANSPLANT RECIPIENTS.

candace grant, mary mallappallil, amarpali brar, moro salifu, fasika tedla,and melissa rampal, SUNY Downstate Medical Center, Brooklyn, NY, United States.

Cyclosporine immunosuppressive therapy is a risk factor for development of gout in kidney transplant recipients, but whether other factors play a role is not clear.

We retrospectively reviewed 208 renal transplant patients who had documented serum uric acid (UA) levels and information on clinical gout. Patients who had hyperuricemia defined as UA level over 7 mg/dL were divided into two groups (Gout vs. No Gout) to assess risk factors for development of gout. Of the 208 patients, 128 (61.5%) had elevated serum UA levels (>7mg/dl) and 80 (38.5%) had normal serum UA levels (≤7mg/dl). Of the 128 patients with elevated serum UA levels, 21 (16.4%) had gout and 107 (83.6%) had no evidence of gout. Mean age, gender, race, BMI, calcineurin inhibitor use, cholesterol levels, diabetes, 6 month and 1 year serum creatinines, delayed graft function, acute rejection or mycophenolate use were not significantly different between the groups. Using logistic regression, there were no independent predictors of gout.

While there are risk factors for gout in the general population, demographics and clinical characteristics including calcineurin inhibitor use, did not predict the development of hyperuricemia or gout in our kidney transplant recipients. The prevalence of hyperuricemia remains high post transplant and empiric therapy to lower uric acid levels may be needed to prevent gout since no reliable predictors can be ascertained in our study.

EXAMINING SURVIVAL GAIN OF THE ELDERLY KIDNEY TRANSPLANT RECIPIENTS COMPARED TO GENERAL POPULATION IN THE US

Parta Hatamizadeh, Miklos Z Molnar, Elani Streja, Mahesh Krishnan, Csaba P Kovesdy, and Kamyar Kalantar-Zadeh.
Harold Simmons Center, Harbor-UCLA, Torrance, CA, Salem VAMC, Salem, VA, DaVita, Denver, CO, CA.

Individuals older than 65 years constitute the fastest growing population group in US. Similarly, the median age of kidney transplant recipients (KTR) has increased. The survival benefit of the elderly from kidney transplantation has not been clearly quantified. We compared the mortality rates and ratios across 3 age groups (15-<65, 65-<75 and ≥75 years old) between the KTRs (derived from the Scientific Registry of Transplant Recipients 2001-2006) and the general population (GP) using US population in 2005 (derived from the National Vital Statistics System). After calculating the crude mortality rates in KTRs and the GPs across 3 age groups, the relative risk (RR) of death was calculated for the 2 elderly groups compared to 15-<65 years (reference). Additionally, the ratio of mortality each RR for KTR to GP was estimated in each group. In our study the KTRs (n=155,005) were 45±16 years old and included 40% women and 19% diabetics. Even though kidney transplanted patients aged 65-<75 years and ≥75 years had a 75% and 96% higher mortality risk, respectively, than 15-<65 year-old group, the age-related rise in mortality was substantially lower across KTR than GP (see Table):

AGE GROUP	**15-<65**	**65-<75**	**≥75**
Kidney Transplant Recipients (KTR) (2001-06) (n=155,005)			
Crude death rates multiplied by 1000	157 (155-159)	274 (267-281)	307 (282-332)
RR	1.00	1.75 (1.72-1.77)	1.96 (1.82-2.09)
General Population (GP) (2005)			
Crude death rates multiplied by 1000	3.1 (2.9-3.3)	21.4 (20.7-22.1)	76.6 (75.4-77.8)
RR	1.00	6.9 (6.7-7.1)	24.7 (23.6-26.0)
RR ratio KTR:GP	***1.00***	***0.25 (0.24-0.26)***	***0.08 (0.07-0.09)***

Compared to GP, elderly KTR 65-<75 and ≥75 years exhibit 75% and 92% survival gain, respectively. The survival gains of kidney transplantation in the elderly warrant additional studies.

FALSELY ELEVATED WHOLE-BLOOD TACROLIMUS LEVELS IN A KIDNEY TRANSPLANT PATIENT

Nabeel Imam, Nour Khouzam, Usman Rahmat, Amir Rashidi, Michelle Zuccato, Chanigan Nilubol, Serban Dragoi
Georgetown University Hospital, Washington, DC

Tacrolimus is a widely used calcineurin inhibitor in maintenance immunosuppression after kidney transplant. Accurate measurement of tacrolimus blood level is critical. Antibody–conjugated magnetic immunoassay (AMIA) is a commonly used method for the measurement of tacrolimus. Few cases of falsely elevated whole-blood tacrolimus levels using AMIA method have been reported.

A 68-year-old Caucasian female underwent a deceased donor kidney transplant for end stage kidney disease and was maintained on tacrolimus therapy. One year later, patient presented with vomiting and fatigue. On admission, tacrolimus blood level was 10.9 ng/mL using AMIA and immune function assay (IFA) was 5 ng/mL. A diagnosis of CMV gastritis and duodenitis was made and tacrolimus was held. A daily measurement of tacrolimus blood level did not show a drop below 8 ng/mL even after 10 days of stopping tacrolimus. Meanwhile, serum creatinine remained stable at 0.8 mg/dL and the IFA was improving. Other serology workup was within the normal range. Blood samples were sent for analysis using the gold standard Liquid chromatography coupled with mass spectrometry, which showed undetectable levels of tacrolimus. After restarting tacrolimus, blood levels were monitored using both methods. A discrepancy in the results was still noted.

We conclude that when high tacrolimus levels are observed in transplant patients for no apparent reason when the AMIA method is used, these should be reassessed immediately using the LC/MS technique to rule out falsely elevated results before making unnecessary adjustments to the tacrolimus dose.

RISK OF RENAL ALLOGRAFT FAILURE DUE TO RECURRENT GLOMERULAR DISEASES

Usman Rahmat[1], Laura Flisnik[2], Jennifer Verbesey[3] and Basit Javaid[3].
[1]Division of Nephrology, Department of Medicine, [2]Georgetown University School of Medicine and [3]Department of Surgery, Georgetown Transplant Institute, Georgetown University Hospital, Washington, DC.

Objective: The primary objective of this study was to assess the risk of graft loss due to recurrent glomerular diseases compared with other causes of graft failure in the UNOS kidney transplant cohort.

Methods: All patients in the UNOS database who underwent a kidney transplant were considered for analysis. Cox proportional hazards regression modeling technique was used to determine the risk of graft failure due to disease recurrence compared with other causes of graft loss, with adjustment for confounders as applicable.

Results: We identified 276,089 patients who underwent a kidney transplant in the United States between 10/01/1987 and 05/22/2009. Living donation accounted for 95,479 (34.6%) of transplants, with male gender dominating the recipient cohort (n=165,983; 60.1%). Recurrent disease was responsible for a significant proportion of graft failures in patients with FSGS (493/3869; 12.7%), membranous nephropathy (144/1386; 10.4%), MPGN I (36/343; 10.5%), MPGN II (12/49; 24.5%), and IgA nephropathy (209/2159; 9.7%). Patients with FSGS (unadjusted HR=1.29, 95%CI=1.17-1.42, $p<0.01$; adjusted HR=1.47, 95%CI=1.31-1.65, $p<0.01$); membranous nephropathy (unadjusted HR=1.23, 95% CI=1.04-1.47, $p=0.02$; adjusted HR=1.74, 95%CI=1.43-2.13, $p<0.01$); and MPGN I (unadjusted HR=1.48, 95%CI=1.05-2.10, $p=0.03$; adjusted HR=1.92, 95%CI=1.28-2.87, $p<0.01$) were more likely to have graft failure due to recurrent disease compared with all other causes of graft failure. The risk of graft failure due to disease recurrence was comparable for patients with kidney failure due to MPGN II, IgA nephropathy, SLE, post-infectious glomerulonephritis, Wegener's, and Goodpasteur's disease.

Conclusions: Recurrence of glomerular diseases remains a significant cause of kidney transplant failure. Patients with FSGS, membranous nephropathy and MPGN I are more likely to develop graft failure due to disease recurrence and should be counseled accordingly.

ADENOSINE TRI PHOSPHATE (ATP) LEVELS AT THE TIME OF KIDNEY TRANSPLAN EVALUATION

Muhammad W Khattak , Jacques Abi Rached , Sandeep Aggarwal , Irfan Ahmed, Gregory Malat , Karthik Ranganna , Stephen Guy , Alden Doyle. Transplant Nephrology, Hahnemann University Hospital, Drexel College of Medicine, Philadelphia, USA.

In the literature there is some association of low ATP levels with increased infections and possibly a lower risk of allograft rejection. Typically, this test is used to monitor the intensity of immunosuppression but clearly accounts for non-pharmacologic factors related to concomitant medical conditions and, perhaps, the robustness of these patients.

We retrospectively reviewed 115 consecutive kidney transplant candidates evaluated at our center between 1/20/11 and 7/30/11.We sought to associate pre-transplant ATP levels with the clinical and demographic characteristics of the patients different (duration on dialysis, gender, race, age, BMI, HIV status, HCV status) as well as the probability of being listed for transplant, the time to be listed (status 7) and the time to be activated on the list (status 1). These factors were also analyzed for associations with the Charlson Comorbidity Index).

We found that both pre-transplant ATP and the Charlson Comorbidity index scores had no association with time to be listed and/or activated on the list. We also found that there was no statistically significant difference between gender, age, sex, or race between start of dialysis and time to the first evaluation for transplant. The dialysis and time on being dialysis also had no correlation with ATP levels. Interestingly, the ATP levels in HIV+ and HIV - patients were not statistically different. Although we had only five patients with HCV, their ATP levels were quite low (0/5 p 0.028, Fisher Exact Test) . Not surprisingly, the patients on immunosuppression for previous (non kidney) transplants also had low ATP levels.

PRE TRANSPLANT ADENOSINE TRI PHOSPHATE (ATP) LEVEL IN PATIENTS EVALUATED FOR KIDNEY TRANSPLANT

Khattak W Muhammad, Abi Rached Jacques, Ahmed Ziauddin, Malat Greg, Ahmed Irfan, Aggarwal Sandeep, Ranganna Karthik, Doyle Alden

In the literature low ATP is associated with increased infections and possibly a lower risk of allograft rejection. We collected the data on 115 patients evaluated in our transplant clinic. We looked for pre transplant ATP levels association with different factors: time to be listed (status 7) and activated on the list (status 1) , duration on dialysis , gender , race , age, BMI, HIV status , HCV and comorbidities (charlson comorbidity index).

We found that pre transplant ATP has no association with time to be listed and activated on the list. There was no statistically significant difference between gender, age, sex, or race between start of dialysis and time to the first evaluation for transplant. The dialysis and time being on dialysis had no correlation with ATP levels. Similarly the ATP levels in HIV and non HIV patients were not statistically different. Although we had only five patients with HCV but interestingly their ATP levels were low (0/5 p 0.028, Fisher Exact Test) . We also calculated the charlson comorbidity index and tried to correlate with ATP and found that higher burden of disease has no relationship with ATP levels. The patients on immunosuppression due to previous transplant and HCV patients had low ATP levels. The patients with higher BMI were on dialysis for longer time before transplant evaluation. These findings can open up ways for further studies

ESTIMATED GLOMERULAR FILTRATION RATE AT RE-INITIATION OF DIALYSIS AND MORTALITY IN FAILED KIDNEY TRANSPLANT RECIPIENTS

Miklos Z Molnar, Elani Streja, Csaba P Kovesdy, Junichi Hoshino, Richard Glassock, Akinlolu Ojo and Kamyar Kalantar-Zadeh
Harold Simmons Center, Harbor-UCLA, Torrance, CA, Salem VAMC, Salem, VA, David Geffen School of Medicine at UCLA, Los Angeles, CA; Department of Medicine, University of Michigan

Recent observational studies and a controlled trial suggest more favorable outcomes upon later dialysis initiation in chronic kidney disease patients. The role of estimated GFR in predicting outcome at re-initiation of dialysis in failed kidney transplant recipients is unclear. Five-year data in a large dialysis organization was linked to the national database (SRTR) to identify 747 failed kidney transplant patients with CKD Stage-5 (eGFR<15 ml/min/1.73m^2), who had re-started dialysis therapy. A propensity score (PS) for early (eGFR>10.5 ml/min/1.73m^2) vs. late re-initiation of dialysis was fit by logistic regression. The mortality hazard ratio (HR) was then estimated using tertiles of the fitted PS. Patients were 44±14 years old and included 42% women. Male gender (odds ratio [OR], (95%CI): 1.82(1.22-2.73)), presence of diabetes (OR:1.75(1.14-2.68)) and peripheral vascular disease (OR:3.55(1.17-10.77)) were associated with higher odds of early initiation of dialysis. Each ml/min/1.73m^2 higher eGFR was associated with 6% higher death risk in unadjusted model (HR:1.06(1.01-1.11)), and same trends were observed in fully adjusted models, which was more prominent in women and younger patients. Table shows the death HR of eGFR across lowest to highest tertiles of propensity score of early dialysis initiation, indicating a trend between higher eGFR at dialysis re-initiation and death risk in the healthiest subgroups. Hence, re-initiation of dialysis at higher eGFR levels in failed kidney transplant patients was not associated with greater survival.

Likelihood of dialysis re-initiation at higher eGFR (in PS tertiles)	Unadjusted model	Adjusted model	Fully Adjusted model
	HR (95% CI)	HR (95% CI)	HR (95% CI)
Lowest tertile	1.05 (0.94-1.17)	1.09 (0.98-1.22)	1.10 (0.98-1.24)
Middle tertile	1.01 (0.92-1.11)	1.02 (0.93-1.12)	1.00 (0.91-1.10)
Highest tertile	1.02 (0.95-1.09)	1.00 (0.93-1.08)	0.99 (0.92-1.07)

EARLY POST TRANSPLANT NEPHROPTOSIS- A DIAGNOSTIC CHALLENGE

Divya Monga, Deepa Malieckal, Ernesto Molmenti, Madhu Bhaskaran, Kenar D Jhaveri, and Mala Sachdeva
Hofstra North Shore-LIJ School of Medicine, Great Neck, New York

Nephroptosis refers to movement of the transplanted kidney in relation to posture, sometimes resulting in obstructive uropathy. We describe a 46 year-old male who underwent a living unrelated renal transplant and developed nephroptosis early in his transplant course leading to acute allograft failure.

This is a patient with known history of hypertension and diabetes mellitus type 1 who underwent successful preemptive kidney transplantation. He was treated with basiliximab induction and standard steroid based triple maintenance immunosuppression. Subsequently, he developed biopsy proven acute cellular and antibody mediated rejection that was treated with IVIG, plasmapheresis, thymoglobulin, and steroids. Renal function did not improve despite improvement on the repeat kidney biopsies. A sonogram and a diuretic scan did not reveal any obstruction. After he was discharged, he complained of increased urine output during night time, and less during the day. In addition, his creatinine was noted to fluctuate repeatedly. A suspicion for floating transplant kidney was raised. As a result, a percutaneous nephrostomy tube and an internal ureteral stent were placed. This resulted in increasing urine output and downtrending creatinine. The patient is now stable with improved renal function.

Nephroptosis should be included in the differential diagnosis of a transplant patient with unexplained fluctuating creatinine and nocturia. Diuretic urography with images in both supine and erect positions can confirm the diagnosis. This case highlights the importance of high index of suspicion required to diagnose post transplant ureteric obstruction as one of the causes of deteriorating renal function.

KIDNEY RELATED OUTCOMES IN OBESE KIDNEY DONORS: A META-ANALYSIS

Kalyani Murthy[1], Kavya Mekala[1], Monica Grafals[1], Ethan Balk[2]
[1]Lahey Clinic, Burlington MA; [2]Tufts Medical Center, Boston MA

Due to long wait times for deceased donor kidneys and to facilitate more living kidney donor (LKD) transplants, the pool has been expanded to include overweight (body mass index [BMI] 25-30 kg/m^2) and obese (BMI ≥30 kg/m^2) donors. Higher BMI is an independent risk factor for development and progression of chronic kidney disease (CKD). Random-effects model meta-analyses of changes in kidney function i.e. glomerular filtration rate (GFR) and serum creatinine (S_{cr}) in obese donors for studies with ≤1 year follow-up (F/U) were performed and presented below. Data was scant and not uniformly reported. Extensive literature search yielded 5 retrospective and 4 prospective studies. F/U ranged from 2 months to 10 years. Kidney function worsened over the first year post-donation.

Figure 1: GFR:

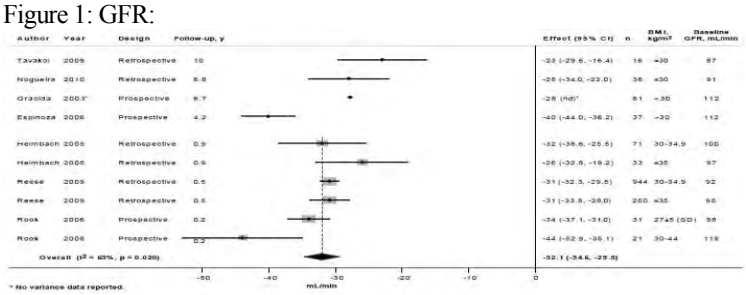
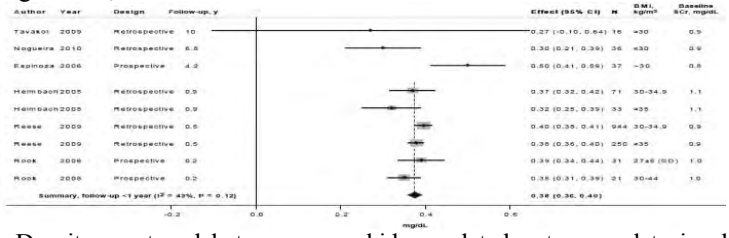


Figure 2: S_{cr}:



Despite scant and heterogeneous kidney-related outcomes data in obese donors, our preliminary results indicate declining kidney function over the first year that may be maintained up to 10 years post-donation. Future analyses are planned to compare obese and non-obese donors.

PROGRESSIVE RENAL FAILURE IN HEART TRANSPLANT RECIPIENTS : THINKING BEYOND CALCIUNEURIN INHIBITOR TOXICITY

Richa Pandey, Adam Woodruff, Sameh Abul-Ezz
University of Arkansas for Medical Sciences, Little Rock, Arkansas.

Chronic renal failure affects 16.5% of non-renal solid organ transplant (NRSOT) recipients, leading to end stage renal disease in 30% of these patients. Calcineurin inhibitor (CNI) toxicity is presumed the main etiology along with other contributors like hypertension, diabetes, and peri-operative acute renal failure. Polyomavirus nephropathy (PVAN) is a well established cause of graft loss in renal transplant recipients. However, PVAN in native kidneys of NRSOT recipients has not been systematically studied. We report a case of PVAN in a 78 years old heart transplant recipient. He developed worsening renal function over a period of few months, 12 years post transplant. He was on standard immunosuppression (Tacrolimus 3 mg twice daily and Mycophenolate mofetil 1 gram daily) and his renal failure was attributed to CNI toxicity. Immunosuppression was reduced, but his renal function continued to decline. Laboratory testing showed high levels of BK viremia and viruria (plasma: 2 million copies/ml, urine: 1.1 x 10*9 copies/ml). Imaging revealed bilateral ureteric obstruction. Bilateral percutaneous nephrostomy tubes were placed and immunosuppression was further reduced. His renal function temporarily improved and he became independent of dialysis. PVAN in heart transplant recipients has been sporadically reported but the association of BK virus reactivation and renal dysfunction may have been underestimated. This may be due to the fact that most of the patients with renal insufficiency are presumed secondary to CNI toxicity. Also, other manifestations of polyoma virus infection such as ureteric strictures have not been studied. Ultrasound imaging in all NRSOT recipients with renal failure would be helpful to look for obstructive features of PVAN. We feel that earlier screening for Polyoma viruria and viremia should be instituted in all NRSOT recipients with abnormal renal function.

KIDNEY DONATION & ANXIETY: COMPARISON BETWEEN COUNSELED & NON-COUNSELED KIDNEY DONORS

Sujata Rajapurkar, Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India.

Psychological evaluation of the kidney donors lays ground work for post transplant follow-up. It is noted that donors do face psychological problems especially when graft fails.

The present study is aimed at finding out the efficacy of counselling by measuring the anxiety. Kidney donors were divided into 2 groups (Counselled donors(C) n=30 and Non-Counselled donors (NC)n=30) during the three phases of kidney donation namely: At the time of registration, prior to kidney donation, six months after kidney donation.

Anxiety was assessed by Comprehensive Anxiety Test (CA Test) Sharma, Bharadwaj & Bhargav (1992). This 90 item inventory explores the factors responsible for anxiety, broadly into 3 categories i.e. biological, psychological & sociological correlates of anxiety.

CA score:Comparison between Counselled & Noncounselled kidney donors

Table: 1

At the time of registration

	n	Mean	SD	SEM	t	p
Counseled (C)	30	33.4	10.5	1.92	1.39	0.08
Non-counselled NC)	30	37.2	10.6	1.93		

Table: 2

Prior to kidney donation operation

	n	Mean	SD	SEM	t	p
Counseled (C)	30	30.1	10.2	1.86	2.72	0.004
Non-counselled NC)	30	37.2	10.1	1.84		

Table: 3

Six months after kidney donation

	n	Mean	SD	SEM	t	p
Counseled (C)	30	29.8	11.1	2.02	2.78	0.003
Non-counselled NC)	30	37.1	9.2	1.68		

The above results show that the ‘t’ & ‘p’ values were significant prior to kidney donation & six months after kidney donation. Effective counselling helps reduce anxiety in kidney donors and better prepares them psychologically to face post-operative consequences.

POST-KIDNEY TRANSPLANTATION SELF-REPORTED HEALTH IS INDEPEPENDENT OF ALLOGRAFT FUNCTION

Sridhar K Reddy, Swati Rao, Tapan Patel, Heather Hammer, Megan Urbanski, Nicole Sifontis, Serban Constantinescu, Patricio Silva, Iris Lee, Andreas Karachristos, Manoj Maloo, Ashokkumar Jain, Avrum Gillespie. Temple University Hospital, Philadelphia, PA, USA.

Allograft dysfunction, common in an inner city population, may erode both patient satisfaction with transplantation and self-reported health. The purpose of this study is to examine the association between self-reported health, disease burden, treatment satisfaction and clinical markers in an inner city population of kidney transplant recipients.

Fifty-four patients completed a survey specifically designed for this study. The survey data was merged with common laboratory test data and analyzed in SPSS, version 18. The mean age of participants was 56.7 years, males and females were equally represented and mean serum creatinine was 1.65 mg/dl. Respondents were 64.1% African American, 18.9% Hispanic and 17% Caucasian.

Most patients (77.4%) were satisfied with their transplantation experience. Yet, only 49.1% reported that they were not at all burdened by their current kidney disease. Serum creatinine was not correlated with disease burden, self-reported health or satisfaction with treatment. Patients indicating some level of disease burden were more likely to report poorer health (Pearson .395, $p=.003$), less likely to be satisfied with their current treatment (Pearson .475, $p<.001$), and they also had lower serum albumin (Pearson -.304, $p=.027$) compared to those who reported no burden. Patients who reported more disease burden had shorter allograft vintage (Pearson -.468, $p=.001$). Interestingly, burden-free patients were more likely to be African American or Hispanic (Chi-Square 7.711, $p=0.021$).

In conclusion, post-kidney transplantation self-reported health, disease burden, and satisfaction with treatment are not correlated with allograft function. Patients who reported any kidney disease burden have poorer self-reported general health, less satisfaction with current treatment, shorter allograft vintage, and lower serum albumin. Lastly, African Americans and Hispanics are more likely to be burden-free from their kidney disease.

OBESITY AS A BARRIER TO LIVING KIDNEY DONATION- A CENTER BASED ANALYSIS. Mala Sachdeva, Ezra Israel, Donna Tropepe, Ernesto Molmenti, Madhu Bhaskaran, and Joseph Mattana
Hofstra North Shore-LIJ School of Medicine, Great Neck, New York

Obesity is a major epidemic in the U.S. and may present a significant barrier to living kidney donation. Morbidly obese patients are generally excluded as donors given the increased risk of perioperative complications and development of comorbid chronic conditions. The purpose of our study was to determine the frequency of obesity as an exclusion factor in our donor population and further analyze how often such patients successfully lose weight and become donors.

We performed a single center, retrospective analysis of 104 potential living kidney donors between 2008 -2011 and stratified them according to body mass index (BMI). We then looked at the outcomes of those with BMI over 35 kg/m^2 (morbid obesity) who are excluded according to our policy. After exclusion, they are referred to the transplant nutritionist who creates an individualized diet and lifestyle modification regimen and then follows up with them.

Of the 104 donors, 19 (18%) had a normal BMI of less than 25. Eighty five of the 104 (82%) donors spanned the overweight to morbidly obese classifications. Thirty eight (37%) were overweight (BMI 25-29.9). Twenty four (23%) were categorized as class I obesity (BMI 30-34.9), 17 (16%) as class II obesity (BMI 35-39.9), and 6 (6%) as class III obesity (BMI greater than 40). Of the total of 23 (22%) who were considered morbidly obese (BMI greater than 35), only 3 (13%) succeeded at losing weight and donating. Seven (30%) were not able to lose weight but were trying, six (26%) changed their minds to donate, three (13%) were lost to follow up, two (9%) were declined for medical reasons, one declined for social reasons, and one declined due to recipient death.

Morbid obesity is a frequent barrier to living kidney donation. Weight loss leading to donation through diet and lifestyle modification appears to be unsuccessful, despite the fact that a considerable fraction of morbidly obese patients do report attempts at losing weight. Improved strategies to address obesity in the donor population may benefit not only their own health but might substantially expand the living donor pool for kidney transplantation.

CRYSTALS FROM FAT: UNCOMMON CAUSE OF EARLY RENAL ALLOGRAFT LOSS

Maria Nieva Salazar, Elizabeth Chua, Beje Thomas
Medical University of South Carolina, Charleston, SC

We present two cases of early renal graft loss from oxalate nephropathy in patients with remote history of gastric bypass surgery. Induction in both cases was done with Thymoglobulin and immunosuppression included prograf, mycophenolate mofetil and prednisone. *Case 1.* 69 y.o Caucasian male with history of gastric bypass 8 yrs ago, lost 200 lbs, end stage renal disease (ESRD) due to hypertension s/p cadaveric renal transplant (CRT) with post transplant creatinine 1.4-1.8mg/dl. Creatinine increased to 3.5 -4.2mg/dL. Failed graft 11 months after transplant, Biopsy showed calcium oxalate deposition in tubules and moderate to severe chronic changes. *Case 2.* 70 y.o Caucasian male, h/o gastric bypass 8 yrs prior to CRT, lost 350 lbs, ESRD secondary to hypertension, s/p CRT presented with volume overload and acute kidney injury. Creatinine on admission was 5.9 mg/dl from baseline of 2.3 mg/dl. Biopsy showed extensive calcium oxalate deposition in tubules and acute tubule injury. Graft failed four months post surgery.

Bariatric surgeries are increasingly used to manage obesity. Roux en Y gastric bypass has been associated with renal failure from oxalate nephropathy. Hypocitraturia, hyperoxaluria and calcium oxalate neprolithiasis has been documented in these patients. Enteric hyperoxaluria from gastric bypass leading to early renal graft loss has not been reported in the literature to our knowledge.

Our cases emphasize the importance of increased awareness of this complication because it is a preventable cause of graft loss. Early diagnosis is extremely important as dietary modification is required to prevent progression. Urinary oxalate and citrate should be included as part of evaluation in pts with history of gastric bypass, and biopsy may be required to confirm diagnosis.

CONCLUSION: Oxalate nephropathy from gastric bypass surgery can cause early renal allograft loss. Dietary modifications including adequate hydration, decrease dietary oxalate and calcium supplementation should be emphasized early and consistently.

ANGIOSARCOMA IN A RENAL TRANSPLANT RECIPIENT.

Syed J Sher and Asif Sharfuddin. Indiana University, Indianapolis, IN.

Angiosarcomas (AS) are extremely rare malignant tumors of endothelial origin compromising less than 1% of sarcomas. A total of only 16 cases have been reported in the literature of post-kidney transplant AS. Case: A 63 year old male who had received a kidney transplant 1 year earlier, and had an uncomplicated transplant course, presented with right leg swelling, which was diagnosed with deep venous thrombosis (DVT) and treated with anti-coagulation. He was also found to be hypercalcemic with high PTH levels, which responded well to cinacalcet therapy. Nine months later, he developed right lower extremity lesions which had developed abruptly and rapidly progressed to a large dusky, erythematous, purplish, violaceous lesion along the entire circumference of the calf and shin. A skin biopsy showed nodular atypical cells lining the vascular spaces which were strongly positive for CD31 and Factor VIII, consistent with AS. His immunosuppression was immediately stopped and he was started on chemotherapy with Docetaxel. Sirolimus, which is useful for vascular tumors such as Kaposi tumors was also attempted but with no response. A total body PET/CT showed extensive regional and local lymphadenopathy, with possible pulmonary metastasis. Eventually within 3months due massive growth of the tumor and regional metastasis he required an above the knee amputation to the hip level. The patient eventually died within 7 months of initial presentation from complications of the wound and sepsis. AS are extremely rare in renal transplant recipients and only 16 cases have been described, with 9 patients having developed it at the site of an arteriovenous fistula (AVF), 3 cases of intrabdominal AS, and 3 cases with cutaneous involvement. Only 2 cases have been reported involving the lower extremity. Despite cessation of immunosuppression, multi-modal therapy and the use of anti-angiogenesis agents such as sirolimus, these tumors are usually ultimately rapidly fatal in renal transplant recipients. AS has been associated with lymphedema in non-transplant cases. To our knowledge this case appears to be the first associated with lower extremity DVT in a renal transplant recipient on immunosuppression. Lesions evolving at the site of DVTs should prompt an urgent biopsy.

OUTCOME OF SECOND KIDENY ALLOGRAFT TRANSPLANTS VS PRIMARY TRANSPLANT FROM PAIRED DONORS

Syed Jawad Sher, Asif Sharfuddin, Muhammad Mujtaba, Indiana University School of Medicine , Indianapolis, IN

Second kidney transplants have traditionally been considered at a high immunologic risk. We carried a retrospective study to compare the kidney outcomes of 2nd kidney transplant (RTR) with those receiving a first transplant (PTR) from paired donor kidney to assess transplant success and complication rates. We identified 38 deceased donors who donated one kidney to a RTR and mate kidney to a PTR.

RTR were sensitized versus PTR based upon % panel reactive antibodies (p=0.05), there was significant difference in the patient age, more PTR were diabetics, the was no significant difference in the delayed graft function, biopsy proven rejections, time to rejection and serum creatinine levels at 1 and 5 years. The renal allograft survival at one and 5 years was not significantly different in the PTR and the RTR. We did not see a higher incidence of bacterial and viral infections in RTR. We conclude that 2nd renal transplant is not associated with higher risk of rejection, time to rejection or inferior graft quality and survival compared with primary transplant.

Variable	Primary transplant	2nd transplant	P value
Age(years)	49±12	42±11	0.017
Diabetics	18	4	0.000
Steroids	9	17	0.089
# of rejection	10	8	0.345
Rejection(days)	187±307	79±78	0.451
1 yr sCr (mg/dl)	1.51±0.50	1.44±0.58	0.699
5 yr sCr(mg/dl)	1.33±0.65	1.86±1.1	0.457

NUCLEAR STRESS MYOCARDIAL IMAGING IN CARDIAC EVALUATION BEFORE RENAL TRANSPLANTATION AMONG MINORITY INNER CITY POPULATION.

Segun Simon, Sadanand Palekar, Sana Akbar, Purna B. Nandigam.
Newark Beth Israel Medical Center, Newark, New Jersey.

The prevalence of atherosclerotic coronary artery disease (CAD) in the ESRD population is believed to be significantly greater than age-matched controls. This has led to interest in screening patients for CAD before renal transplantation. We present data from a predominantly minority population transplant center that utilizes nuclear stress myocardial imaging as it pertains to pre-transplant CAD screening.

536 patients were evaluated in our center for kidney transplantation between the years 2008 and 2010. 289 of these patients were eventually listed. Of the listed patients, 182 (63%) were males, 107(37%) were females. 164(56.7%) were African Americans, 81(28%) were Hispanics, 27(9%) were Caucasians, and 17(5.8%) were classified as other. 143 (50%) had diabetes. 252(87%) of listed patients underwent nuclear stress imaging of which 22(7.6%) returned positive for evidence of ischemia. 9(41%) of the positive results had established history of coronary artery disease. All patients with positive test results subsequently had left heart catheterization, 8(36%) of which had no evidence of significant obstructive CAD, thus only 14(5.5%) of the 252 patients screened had significant obstructive CAD by nuclear stress myocardial imaging.

The reported accuracy of non-invasive stress myocardial imaging as a screening tool for CAD remains poor with some authors suggesting it is not much better than a mere coin toss. Our results echo the same and may reflect the fact non-obstructive CAD is responsible for the majority of cardiovascular mortality among ESRD population. The practice of routine nuclear stress myocardial imaging for CAD screening prior to kidney transplantation as currently done among most transplant centers therefore needs to be reviewed, as it may amount to a waste of resources.

A MULTI-DISCIPLINARY APPROACH TO WEIGHT LOSS IN OBESE RENAL TRANSPLANT CANDIDATES: IDENTIFYING AND OVERCOMING BARRIERS TO SUCCESS

Nicole Siparsky[a], Susan Indilicato[a], Jean Colaneri[a], Angeliki Kolios[a], Regina Ryan-Gaule[a], Jessica DeCrosta[a], Michael Gallichio[a], David Conti[a]

[a]Department of Surgery, Section of Transplantation, Albany Medical College, Albany, New York, USA

Obesity is associated with complications and poor outcomes in renal transplant recipients. Our program's obese renal transplant candidates (ORTC) are placed on the waiting list for transplantation (status 7) while they undergo mandatory weight loss to BMI≤35.

We performed an IRB-approved, single-center, prospective analysis of 19 of 70 ORTC at Albany Medical Center invited to undergo evaluation and treatment for obesity. Screening tools, interview, examination, and cardio-respiratory testing were used to prescribe diet, exercise, education, and counseling referral.

Seventy ORTC were invited to participate in a three-month study; 19 enrolled. The average start BMI was 38 (35 to 43); the average number of barriers was 3.5 (1 to 7), the most common being previous failed attempts (79%) and unhealthy eating behaviors (68%). 11 of 19 (58%) patients were referred for counseling for depression. All (19 of 19; 100%) patients had a daily activity level below predicted capacity at the start of the study; 14 of 19 (74%) patients maintained a daily activity capacity of at least 5 METs at the end of the study. The average monthly weight loss was 1.5kg. 13 of 15 (87%) of patients lost weight during the study period; 4 of 19 (21%) failed to follow-up.

Multiple barriers to successful weight loss were identified in our ORTC. The prevalence of untreated/undertreated depression and self-reported unhealthy eating behaviors is high in ORTC. Our study demonstrated the success of a multi-disciplinary approach to weight loss.

DONOR DERIVED ADENOVIRUS RELATED HEMORRHAGIC CYSTITIS FOLLOWING RENAL TRANSPLANTATION

Thejas Swamy, Fernando Ottino, Jeffrey Stoff, Ashfaq Balla
University of Massachusetts Medical School, MA, USA

Adenovirus related hemorrhagic cystitis can be seen in immunosuppressed individuals. We hereby present two cases with kidney transplant who developed adenovirus related hemorrhagic cystitis and were found to be recipients from same organ donor. Both recipients underwent deceased donor kidney transplantation for underlying diabetic nephropathy and were induced with alemtumuzab and steroids. Maintenance immunosuppression was MMF/Tac/Pred and both had stable allograft function with acceptable tacrolimus levels. Patients had no physical contact with each other and presented on separate days with dysuria and gross hematuria at 5 to 6 mos from transplant. Imaging of native and allograft kidneys was unremarkable. Cystoscopy showed hemorrhagic cystitis and serum adenovirus PCR titers returned positive. Immunosuppression was reduced with resolution of hematuria over several days. Serum PCR for polyoma and cytomegalovirus were negative. Adenovirus levels became undetectable in 3-4 weeks. Incidentally, common organ donor was identified for both patients, requiring organ bank notification.

Adenovirus infection can present as transient hematuria in kidney transplant recipients and usually responds to reduction in immunosupression. The infection can be donor derived and organ bank needs to be notified, non kidney organ recipients can have more serious infection.

EFFECT OF MAINTENANCE STEROIDS ON GRAFT OUTCOMES IN DECEASED DONOR KIDNEY TRANSPLANT RECIPIENTS WHO EXPERIENCED DELAYED GRAFT FUNCTION

Bhargavi Tangirala, Richard J. Marcus, Sabiha M. Hussain, Kalathil K. Sureshkumar

Renal Division, Allegheny General Hospital, Pittsburgh, PA, USA

In renal transplantation, delayed graft function (DGF) is an independent risk factor for poor long-term graft and patient survival. The aim of our study was to explore the beneficial effects of maintenance steroids on graft survival in deceased donor kidney transplant (DDKT) recipients with DGF.

Using OPTN/UNOS database, we identified patients,(≥18 years) who developed DGF (need for dialysis within the first week of transplantation) following DDKT performed between January 2000 and December 2008. Patients received induction with rabbit-antithymocyte globulin (r-ATG), alemtuzumab or an IL-2 receptor blocker (IL-2B) and were discharged on a calcineurin inhibitor (CNI) / mycophenolate (MMF) based immunosuppression with or without maintenance steroids. Adjusted graft survivals were compared between maintenance steroids and no steroid groups for each induction modality after adjusting for the confounding variables in a multivariate model.

Median follow-up was 29.6 months (range 10.7-60.1). A total of 10,058 patients with DGF were identified, with 5624 patients in r-ATG (steroid= 4569, no steroid= 1055), 819 in alemtuzumab (steroid= 301, no steroid=518) and 3615 in IL-2R (steroid= 3380, no steroid =235) induction groups. Influence of maintenance steroids compared to no steroids on graft survival based on induction type is shown in the table.

Induction type	Hazard Ratio	95% CI	p-value
r-ATG	0.98	0.85 – 1.13	0.746
Alemtuzumab	0.88	0.65 – 1.19	0.410
IL-2B	1.01	0.78 – 1.30	0.961

In Conclusion, our study found no significant benefits to graft survival from the addition of maintenance steroids to a CNI/MMF based regimen regardless of induction type in patients who developed DGF following DDKT. This may be related to the significant early allograft damage resulting from DGF with long-term consequences that are unaltered by steroids.

PANCREATIC ANASTOMOSIS LEAK 15 YEARS AFTER SIMULTANEOUS PANCREAS-KIDNEY TRANSPLANTATION FROM LATE-ONSET ALLOGRAFT CYTOMEGALOVIRUS DUODENAL ULCERS PRESENTING WITH GROSS HEMATURIA

Ekamol Tantisattamo, Roland C. K. Ng, Heath Chung, MD, Manami Okado University of Hawaii, Honolulu, Hawaii

Cytomegalovirus (CMV) infection is one of the most important causes of mortality and mortality in solid organ transplantation. To our knowledge, our patient is the first reported case of very late onset invasive CMV disease causing duodenal graft ulcers 15 years after bladder-drained SPK transplantation. Negative CMV viremia may not correlate with, and delay, diagnosis of tissue invasive disease.

A 70-year-old man with bladder-drained SPK transplantation in 1995 presented with recurrent gross hematuria for 1 month. Cystoscopy revealed bleeding from the duodenovesical orifice. He was admitted with septic shock and peritonitis from pancreatic ascites leaking from the duodenocystostomy suture line. Continued leakage of pancreatic fluid necessitated explantation of the functioning pancreatic graft. Pathology revealed ulcers at the duodenal graft segment. He developed acute kidney injury from tacrolimus toxicity; transplant kidney biopsy showed no evidence of rejection. Serum quantitative PCR for CMV and BK virus were negative. The hospital course was complicated by disseminated candidiasis, pulmonary aspergillosis, and *Clostridium difficile* colitis. To reduce immunosuppression, tacrolimus was discontinued. Insulin and hemodialysis were started. Despite our efforts, he expired due to uncontrolled sepsis. Postmortem duodenal graft staining for CMV was positive and revealed the cause of the inciting ulcers.

Invasive CMV duodenal graft ulcers 15 years after SPK transplantation in our patient is unique, as previously reported cases of posttransplant CMV disease occurred only as late as 18 months. The absence of correlation between CMV viremia and CMV-infected duodenal allograft in SPK transplant has not been reported. Our case demonstrates that CMV viral load is unreliable to diagnose invasive CMV disease, and tissue biopsy should be obtained. Presumptive treatment for CMV disease in a SPK recipient presenting with recurrent hematuria should be considered in this at-risk population.

RITUXIMAB IN TREATING HEPATITIS C ASSOCIATED CRYOGLOBULINEMIC MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS IN A PATIENT WITH COMBINED LIVER AND KIDNEY TRANSPLANT

Vijay Thumma, Abdul Moiz, Jorge Garces
Ochsner Clinic Foundation, New Orleans, LA, United States.

A 64 year old caucasian male with hepatitis C virus (HCV) and cirrhosis underwent a combined liver-kidney transplant and was maintained on tacrolimus and mycophenolate mofetil. One year later he developed recurrence of HCV and was treated with peginterferon and ribavirin with sustained virologic response (SVR) within 6 months. Two years later, he was hospitalized with weakness, lower extremity skin ulcers, palpable purpuric rash, anasarca and AKI. Workup was significant for positive cryocrit, hypocomplementemia, neuropathy and nephrotic syndrome (>7 mg/mg). Kidney biopsy revealed a membranoproliferative pattern of GN with diffuse and global endocapillary proliferation along with diffuse GBM splitting on LM and intraluminal plugs staining strongly for IgG and IgM by IF along with subendothelial deposits on EM consistent with cryoglobulinemic vasculitis with MPGN. He was treated with solumedrol (1g/d x 3days) and plasma exchange with no improvement. He was then treated with two doses of rituximab 375 mg/m2, one week apart. Within 3 months his proteinuria improved to <2 gm/day and hypocomplementemia resolved. At 14 month clinic visit following rituximab therapy, he had minimal proteinuria (0.40 mg/mg) with significantly improved skin ulcers, rash, neuropathy and serological markers and has remained free of any opportunistic infections.

Rituximab has been used in renal transplant patients with cryoglobulinemic MPGN with or without hepatitis C, however its use in recipients of combined liver-kidney transplant has been rarely reported. This case illustrates the potential role of rituximab and its safety profile in treating HCV-associated cryoglobulinemic MPGN in a patient with a combined liver-kidney transplant.

SOCIAL MEDIA AND LIVING KIDNEY DONOR SOLICITATION.

Hang Turner, Emily Anderson, David Shoham, Susan Hou, Alex Chang, Loyola Univ Medical Center, Maywood, Illinois.

Social media enables users to share and disseminate information rapidly to a wide array of friends, family, and strangers. Numerous news stories have documented the use of Facebook in successfully finding living kidney donors.

We systematically examined the use of social media in soliciting living kidney donors by searching publicly available pages on Facebook. We included 144 Facebook pages in the English language whose stated purpose was finding a living kidney donor for a particular individual. Public information from each page was used to ascertain characteristics of potential kidney recipients, offers, and successes of kidney donation.

Of pages for which relationships between page creator and patient could be determined, 37% were created by patients, 31% by their children, and 32% by other family or friends. Details about the potential recipient ranged from a one sentence request for a living kidney donor to family photos, explicit medical histories and personal contact information. Potential recipients included both sexes (45% male), all racial/ethnic backgrounds, all age groups (11-65 years), and nearly all UNOS regions. The most common blood type reported was type O (50%), followed by types B (29%), A (14%), and AB (7%). Risks of kidney donation were mentioned by 5% of the pages, and only 11% mentioned associated costs. Although we were unable to determine the contribution of Facebook in soliciting donors, 30% had donors tested, and 12% received a kidney transplant. However, offers to sell kidneys were posted on 3% of pages.

Social media is increasingly being used in the solicitation of living kidney donors. While this may be a new, influential tool to expand living kidney donation, associated risks to the donor and recipient need to be explored cautiously.

TRANSPLANT RATES IN FREQUENT HEMODIALYSIS AND MATCHED THRICE-WEEKLY HEMODIALYSIS PATIENTS

Eric Weinhandl, Jiannong Liu, David Gilbertson, Thomas Arneson, Allan Collins; Chronic Disease Research Group, Minneapolis, MN.

Relative rates of kidney transplant in frequent hemodialysis (HD) and thrice-weekly HD patients are unknown. We compared cumulative incidence of transplant in daily home HD (DHHD) and matched thrice-weekly in-center HD (3xIHD) patients in a retrospective cohort. DHHD patients included new users of NxStage System One in 2005-2007. We linked DHHD patients to the US Renal Data System (USRDS) registry to collect covariates and outcomes. For each patient who began DHHD on date *d*, we identified from the USRDS registry 5 controls who were treated with 3xIHD on date *d*. Controls were matched according to an ordered set of 17 covariates regarding demographics, comorbidity, and socioeconomic status. We followed patients to the earliest of transplant, death, or December 31, 2008, and used Fine-Gray regression to account for influence of the competing risk of death. The cohort included 1873 DHHD patients (cumulative transplants, 263) and 9365 controls (1165). Transplant incidence was higher with DHHD (relative incidence, 1.13; $P = 0.07$), but relative incidence varied by waitlist status at the start of follow-up. In patients listed at the start of follow-up, relative incidence was 0.90 ($P = 0.21$); in patients not listed, relative incidence was 2.21 ($P < 0.01$). DHHD was associated with higher incidence of transplant, particularly in patients not on the waitlist at DHHD initiation. Further study is necessary to identify mechanisms underlying these patterns.