KEY POINTS IN THE TREATMENT OF CHRONIC KIDNEY DISEASE

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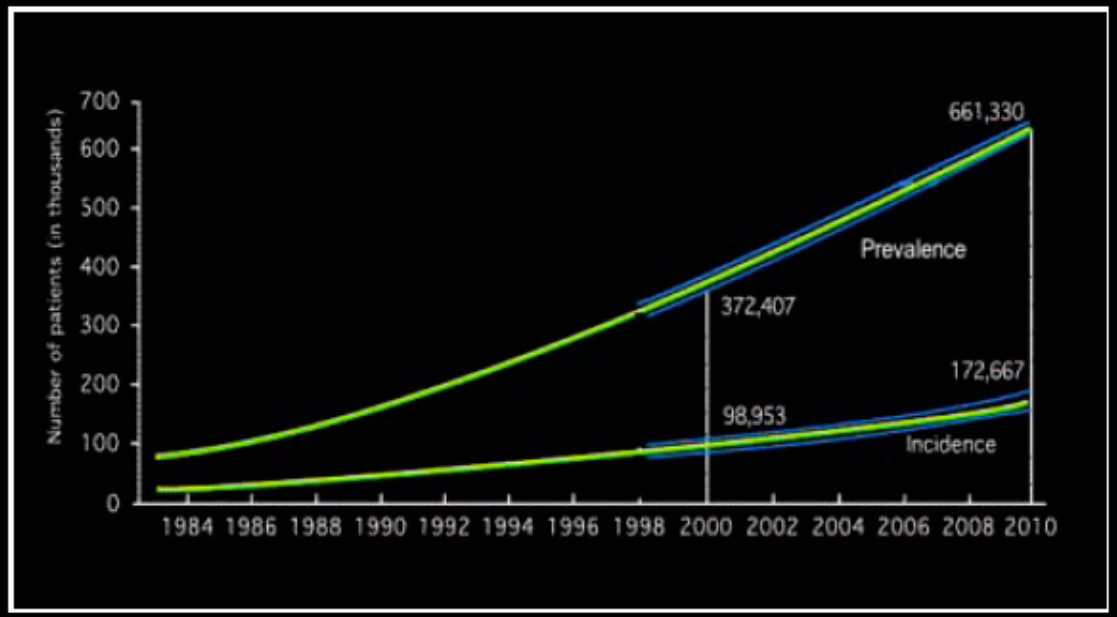
Background

NKDEP

Kidney Failure is a Rapidly Growing Problem



USRDS, 2000

The Burden of CKD

- CKD affects 26 million Americans
- Prevalence is 11-13%
- It consumes 28% of the Medicare Budget
  - This was 6.9% in 1993
  - Costs for 2013 were $42 Billion dollars
- DM+ CKD increases mortality rate 6 fold
- CKD disproportionally affects African Americans and Hispanics

http://usrds.org

Who is At Risk for CKD

- Hypertension
- Diabetes
- CAD
- Family History CKD
- African American
- Elderly
- Morbid Obesity

Two Screening Tests

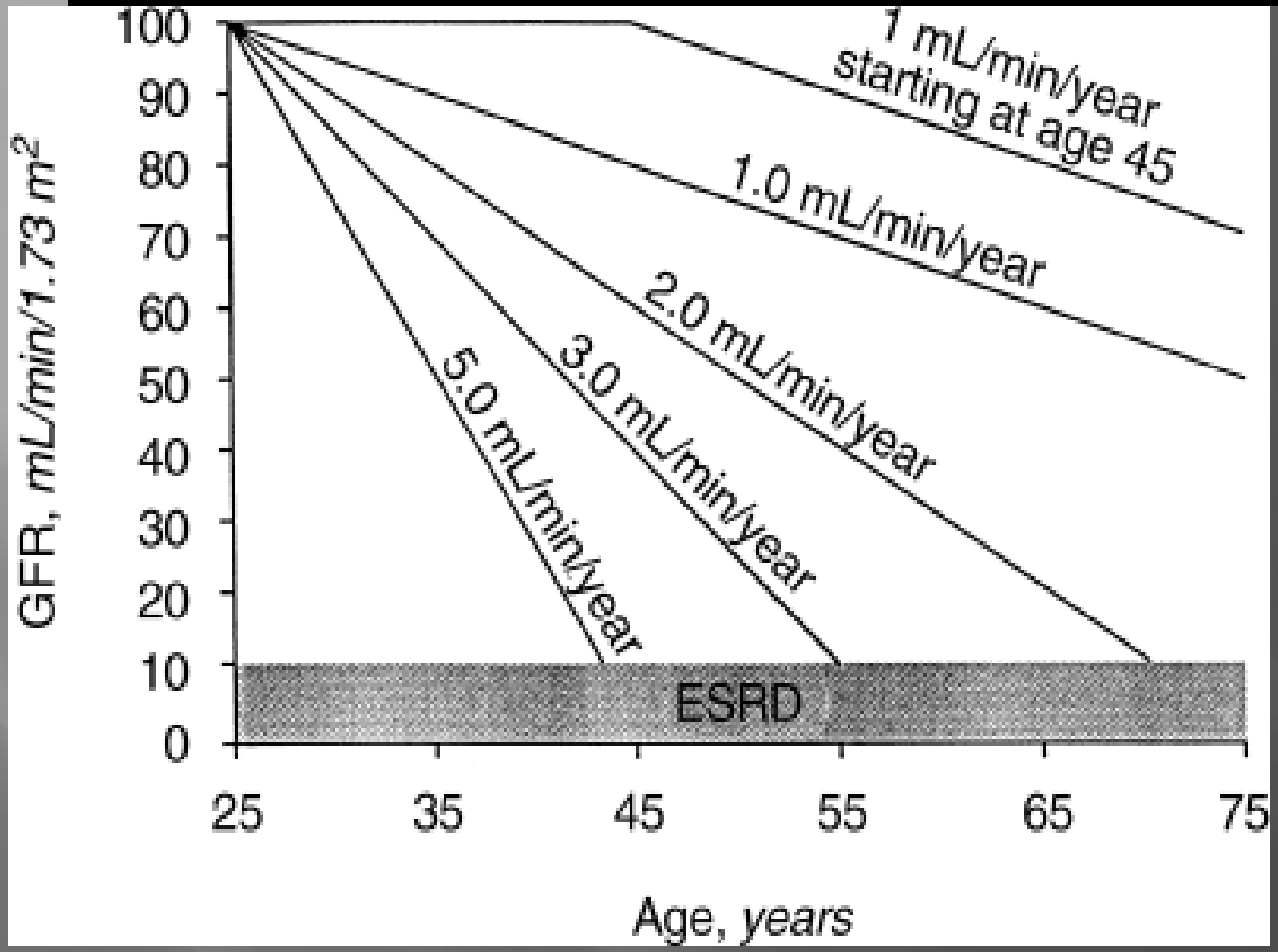
- eGFR

- ACR
  - Albumin/ Creatinine ratio

Classification of CKD

		Albuminuria Stage		
Kidney Function Stage	GFR (mL/min/1.73m 2)	Normal (urine ACR mg/mmol) Male: < 2.5 Female: < 3.5	Microalbuminuria (urine ACR mg/mmol) Male: 2.5-25 Female: 3.5-35	Macroalbuminuria (urine ACR mg/mmol) Male: > 25 Female: > 35
1	≥90	*Not CKD unless haematuria, structural or pathological abnormalities present*		
2	60-89			
3a	45-59			
3b	30-44			
4	15-29			
5	<15 or on dialysis			

SMALL CHANGES MAKE A BIG DIFFERENCE

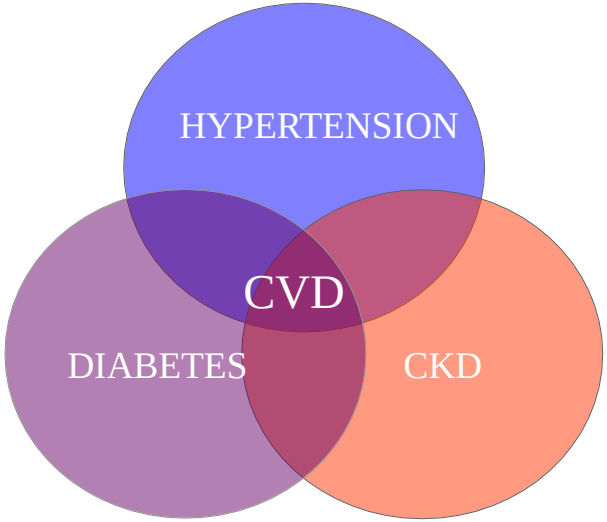


- **A GFR loss of > 1 mL/min/year beginning at age 25 can result in end-stage renal disease within a normal lifespan.**

Lee A Hebert et al. *Kidney International* (2001) **59**, 1211–1226

The Link Between Heart Disease, Diabetes, and CKD

HTN AND DM ARE THE LEADING CAUSE OF CKD



CKD IS A CORONARY DISEASE EQUIVALENT

- Two New England Journal publications indicate that Cardiovascular survival is directly related to a patient's kidney function!!

NS Anavekar, et al. N Engl J Med 2004;351:1285-95
AS Go, et al. N Engl J Med 2004;351:1295-305

THE KIDNEY COMPASS
"Get Your Bearings on Kidney Disease"

HYPERTENSION

BONE DISEASE

ANEMIA

DIABETES

PROTEINURIA

SAVE YOUR KIDNEYS AND SAVE YOUR HEART

KEY POINTS IN:

- Diagnosis
- Recognition of Complications
- Medication Safety
- Treatment
- Preparation for Vascular Access
- When to Refer

Case Vignette

- GD is a 63 year old African American female with poorly controlled HTN, DM, increased lipids, obesity, GERD , gout, and sleep apnea. She has not had an MI (yet) She smokes ½ PPD
- Meds include Amlodipine 10 qd, HCTZ 25 qd, Clonidine 0.3 bid, Atorvastatin 10, Metoprolol 100 bid, Insulin glargine 30 at HS, Metformin 1000 po bid, Allopurinol 300 qd, L, Omeparazole 20 qd, and CPAP at 12 cm (Note: she is not on an ACE)

Case Continued

- BP is 150/86;
- Labs: HbA1C is 10.4; Hb is 9.5, HDL is 35, LDL is 115, triglycerides are 295; Ca is 9.8; Microalbumin/creatinine ratio is 54.5; Creatinine is 1.7: GFR = 39
- GD has stage 3 CKD and most of it's complications.
- What should we do for this patient?

DIAGNOSIS

- Microalbumin/Creatinine >30
- GFR < 60
- GD has Stage 3B;A2 CKD
- This puts her at moderately high risk

She also has all the complications

HYPERTENSION

ANEMIA

BONE LOSS

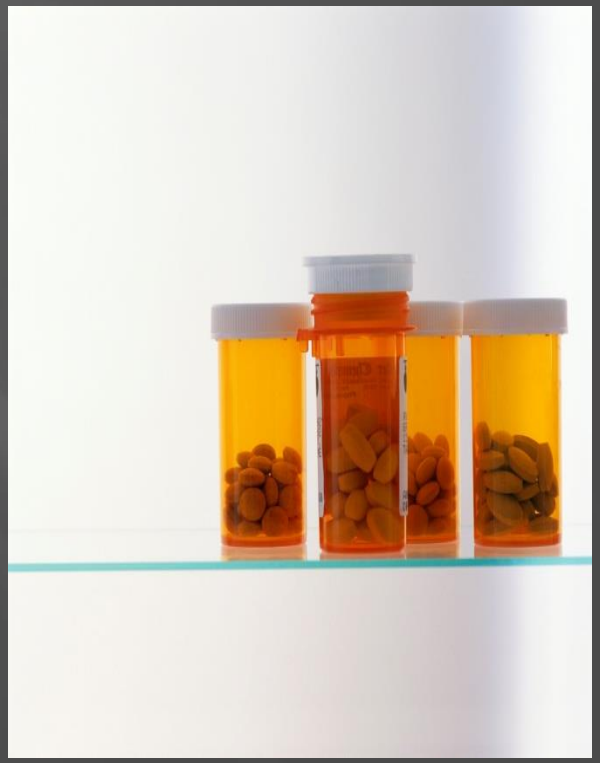
DIABETES

PROTEINURIA

HYPERLIPIDEMIA

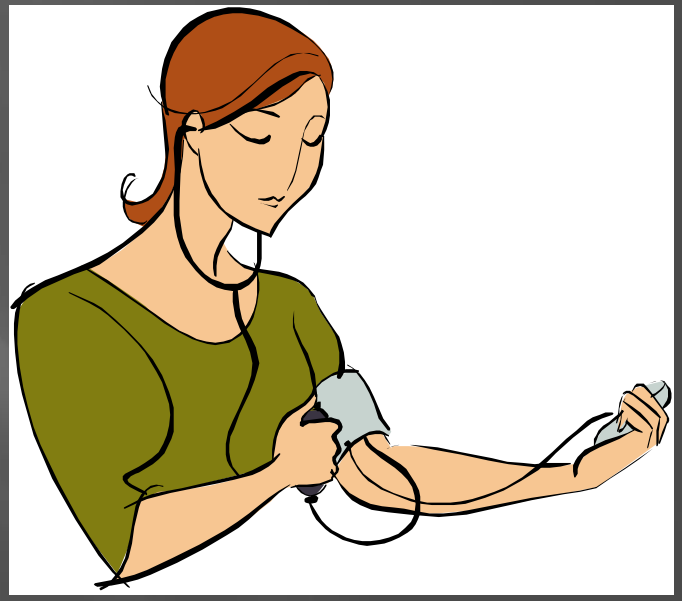
MEDICATION REVIEW

- There are meds that are dangerous to her: We stop them or modify dose
- GD is taking OTC NSAIDS for her back pain
  - We stop this and all NSAIDS and Cox-2
- Metformin can cause lactic acidosis. We stop if GFR < 30
- We reduce her Allopurinol
- We avoid Bisphosphonates



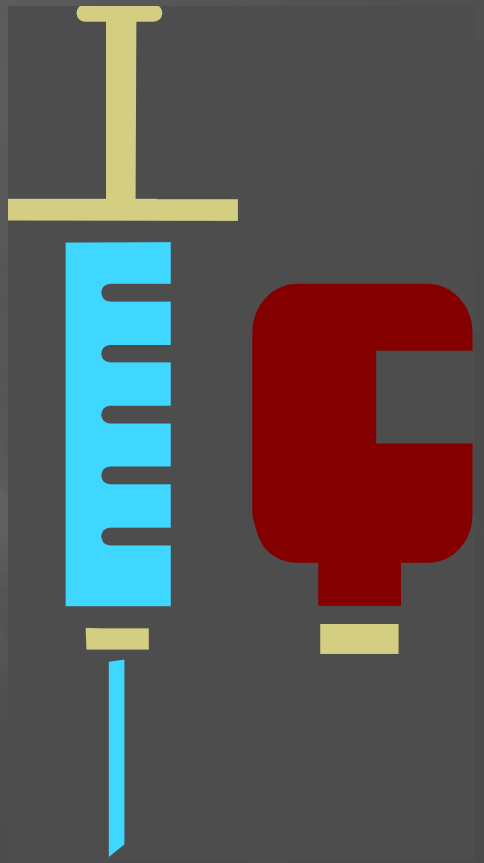
What should we do for the Hypertension?

- ACE is added to reduce proteinuria and delay CKD progression.
  - GFR decreases to 32 but stays there. Creat is 2.1
  - K+ is good at 4.0
  - We leave her on the ACE
- Her BP goes down to 130/70
- We stop her clonidine as it is no longer need



For Her Diabetes

- She starts a diet and exercise program
  - We encourage patient centered goal setting (Motivational Interviewing)
- We intensify her insulin regimen
- We add Sitagliptin, liraglutide, or glypizide to her insulin
- Her HbA1C drops to 6.8 over 6 months



We Protect her Heart

- We increase her statin to Atorvastatin 40 mg qd
- We start ASA 81 mg qd
- We give her the ACS quit smoking line number
- She quits smoking, Her HDL is now 43, LDL 68 and Triglycerides 130

For Her Anemia

- Colonoscopy is normal
- MCV is nl at 85
- Fe is 50; TIBC is 200 for a saturation of 25%
- We start Erythropoieitin 20,000 units q 2 weeks
- We start oral iron
- √CBC ,Fe/TIBC monthly. We hold EPO if Hb > 11.5
- Hb rises to 11.5 and she feels much better
- Transferrin saturations stay normal at above 20%

We Check for Bone Disease

- We √ Ca^{++}; $PO_4^{=}$; and PTH and 25 OH Vit D levels
- Ca^{++} is 9.8 (nl)
- $PO_4^{=}$ is 3.1 (nl)
- PTH is 60 (nl)
- Vit D is 7 (low)
- We start her on Ergocalciferol 50,000 units once per month or Chlecalciferol 1,000-2,000 units daily
- We follow these labs yearly and refer if PTH > 100 or $PO_4^{=}$ rises above 4.5

We Preserve her Blood Vessels

- We remember “Fistulas first and Catheters Kill”
- We tell her to to use the back of her hand for blood draws (save the veins)
- We refuse to allow any PICC lines to be put in when GFR < 45.
- We refer her to nephrology when GFR < 30
- If the GFR <20; we refer for transplant evaluation even before she needs dialysis

Our Patient Does Well

- She does not have a heart attack
- She lost 30 pounds
- Her kidney disease stabilizes
- She feels better and has more energy
- We delay the need for dialysis
- She does not get a hip fracture
- If she does progress, she will be referred early

Most Important Points Evidence Based

- Use GFR, Urine Microalbumin to diagnose CKD
- If GFR < 60 or Microalbumin/creat > 30 start ACE (If cough on ACE, start ARB)
- Avoid NSAIDS
- Refer to Nephrology for GFR < 30
- Refer for Transplant evaluation for GFR < 20
- Promote smoking cessation
- Keep BP < 140/90
- Keep HbA1C < 7.0 (can individualize upward in the elderly
- Keep LDL < 100
- Avoid PICC lines for GFR < 45

Other Important Points Strong Consensus based

- Check Calcium, Phosphorous, PTH, and Vit D yearly
- Check Hemoglobin yearly
- If iron is normal, start erythropoietin if Hb< 10 or refer to Nephrology
- Refer to Nephrology for Phosphorous >4.5 or PTH > 100

Referral Guidelines

- GFR< 30
- Rapidly deteriorating kidney function
- Marked proteinuria
- Difficult-to-control hypertension
- PTH > 100 or Phosphate > 4.5
- GFR < 20; Refer for Transplant evaluation

Understanding eGFR

eGFR	What to do
>60 and microalbumin< 30	• Yearly surveillance with GFR (for hypertensive patients) and both GFR and microalbumin (for diabetic patients)
>60 and microalbumin > 30	• ACE or ARB. Avoid NSAIDS
>45 and < 60*	• ACE or ARB • Discontinue NSAIDS • Check hemoglobin • Check Calcium, Phosphorous, PTH and Vitamin D yearly
>30 and < 45	• The above plus • ? off Metformin** • No PICC lines • All blood draws from dominant arm (Save an Arm)
< 30	• Refer to Nephrologist • Stop NSAIDS
< 20	• ***Refer for transplant evaluation***

Notes on eGFR table

- * **Need 2 consecutive GFR <60 at least 3 months apart to diagnose CKD.** If the patient does not have risk factors of hypertension, diabetes, family history or coronary disease, this might be a false positive test.
- *Treat hypertension, diabetes, and hyperlipidemia the same way you would treat a diabetic patient.
- **Metformin does not cause progression of CKD, but it increases the risk of lactic acidosis.

Questions??


The End!