



National
Kidney
Foundation®

CKDinform:
Renal Replacement
Therapy: What the PCP
Needs to Know

Learning Objectives

- Describe treatment options for renal replacement therapy to improve awareness and understanding.
- Explain evidence-based strategies to manage patients with kidney failure in need of renal replacement therapy to improve outcomes.
- Discuss management of patients receiving dialysis or living with a kidney transplant, from a primary care perspective.

Indications for Renal Replacement Therapy

- Hyperkalemia*
- Metabolic acidosis*
- Fluid overload (recurrent CHF admissions)*
- Uremic pericarditis (rub)
- Other non specific uremic symptoms: anorexia and nausea, impaired nutritional status, increased sleepiness, and decreased energy level, attentiveness, and cognitive tasking, etc.

Referral and Education for Patients with Progressive CKD

- Refer patients early, when eGFR <30 mL/min/1.73m².
- Education about types of renal replacement therapy:
 - Hemodialysis (vascular access + + +)
 - Peritoneal Dialysis (QOL advantage + + +)
 - Kidney Transplantation
 - Refer when eGFR <20 mL/min/1.73m²
 - Living kidney transplant (family, friends)
 - Build time on list before dialysis initiation
 - Even transplant before dialysis initiation (pre-emptive)
- No PICC lines for patients with eGFR <45 mL/min/1.73m².

Advantages of Timely Referral in Patients with Progressive CKD

- Improves patient preparation for RRT.
- Greater use of permanent vascular access.
- Avoidance of emergent hemodialysis initiation.
- Greater utilization of transplantation and self-care dialysis (i.e., peritoneal dialysis or home hemodialysis).
- Management of medications which may help to delay the need for RRT.
- Gives the nephrologist adequate time to counsel patients through this challenging transition in their lives.

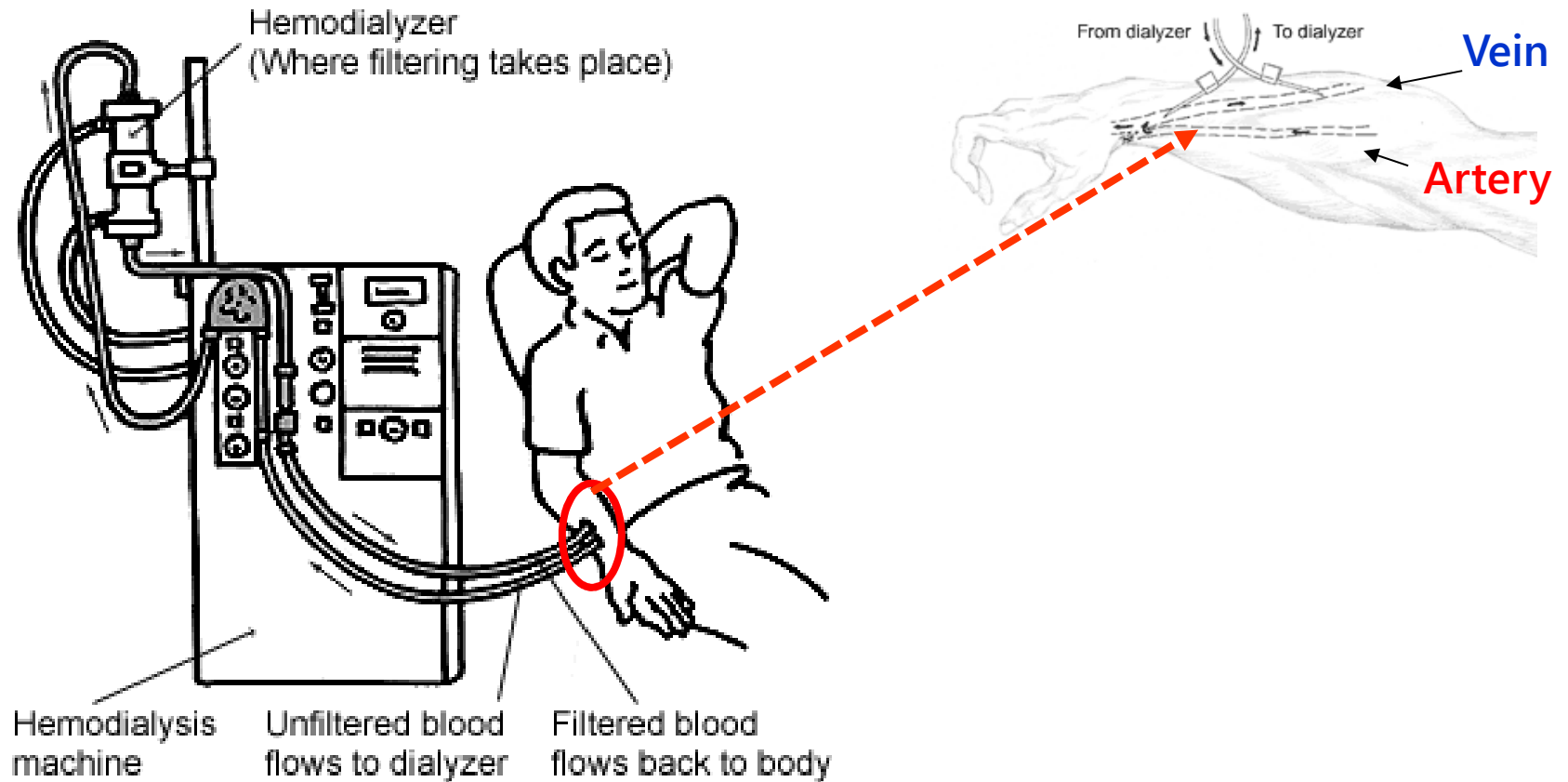
Medical Health and Wellness: Components of Multidisciplinary Care in Progressive CKD

- Education and counseling about different RRT modalities, transplant options, and vascular access surgery.
- Protocols for laboratory and clinic visits; with attention to CKD and CVD-associated comorbidities (e.g., high blood pressure).
- Ethical, psychological, and social care (e.g., social bereavement, depression, anxiety).
- Dietary counseling and education on other lifestyle modifications (e.g., exercise, smoking cessation).
- Vaccination program.

High Blood Pressure

- Common in both dialysis and transplant populations.
- Target blood pressure:
 - Dialysis:
 - Predialysis: <140/90 mm Hg
 - Postdialysis: <130/80 mm Hg
 - Transplantation: <130/80 mm Hg
- Managing high blood pressure in dialysis requires attention to fluid status and antihypertensive medications, while minimizing intradialytic fluid accumulation.
- Can be impacted by certain immunosuppressants in kidney transplantation recipients. Monitor for adverse effects and drug–drug interactions.

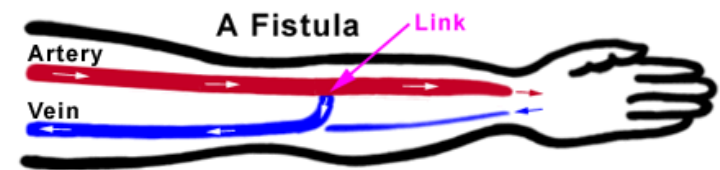
Principle of Hemodialysis



Dialysis Access

- AV Fistula

- Vein cross-cut, attached end-to-side to artery.
- High-pressure flow dilates and thickens vein.
- Best alternative:
 - Lowest infectious risk.
 - Longest lasting with least thromboses.
- Drawbacks:
 - Takes 2-4 months to mature.
 - Only about 50% ever mature.
- Goal for all dialysis patients.

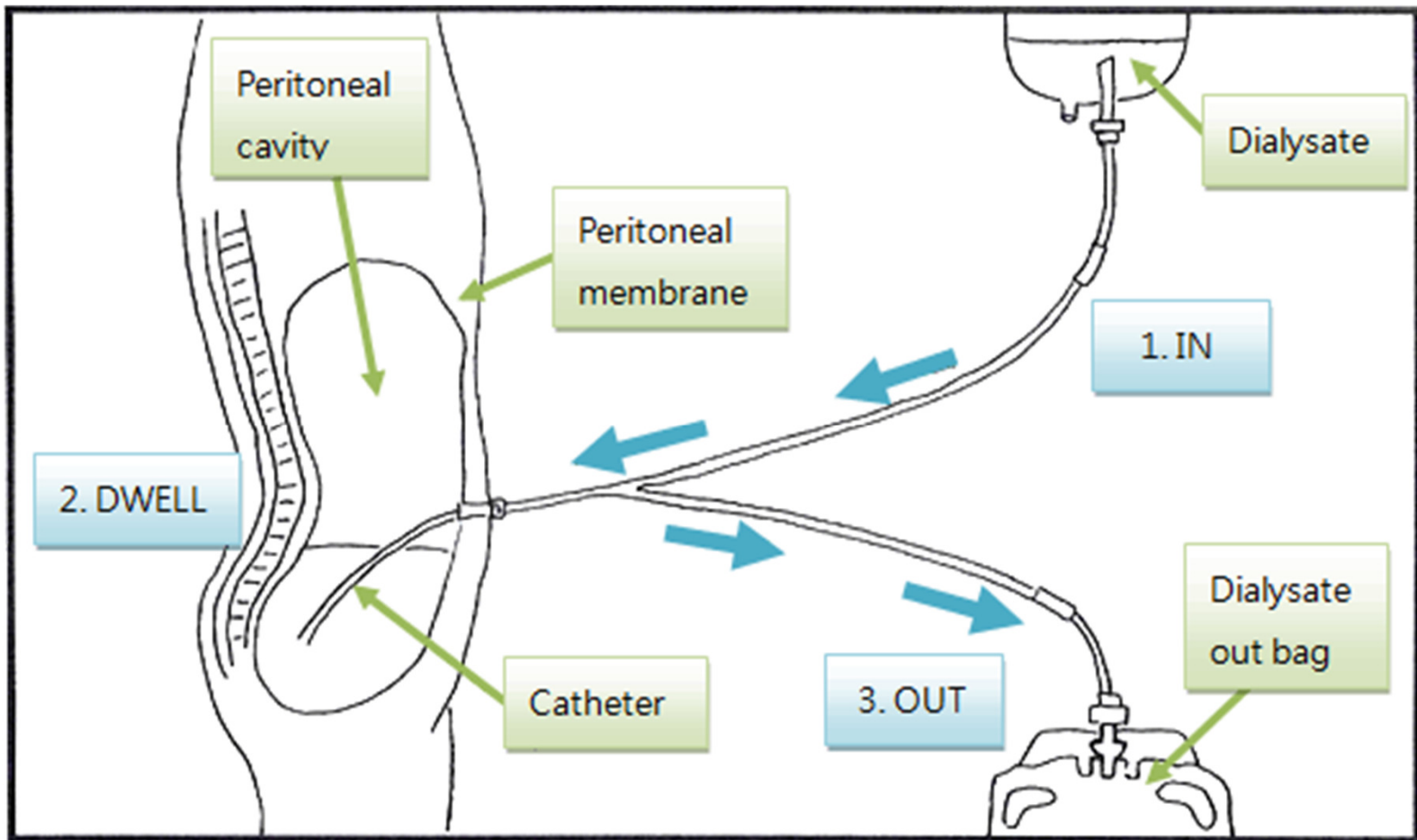


SAVE the Non-Dominant ARM for Vascular Access

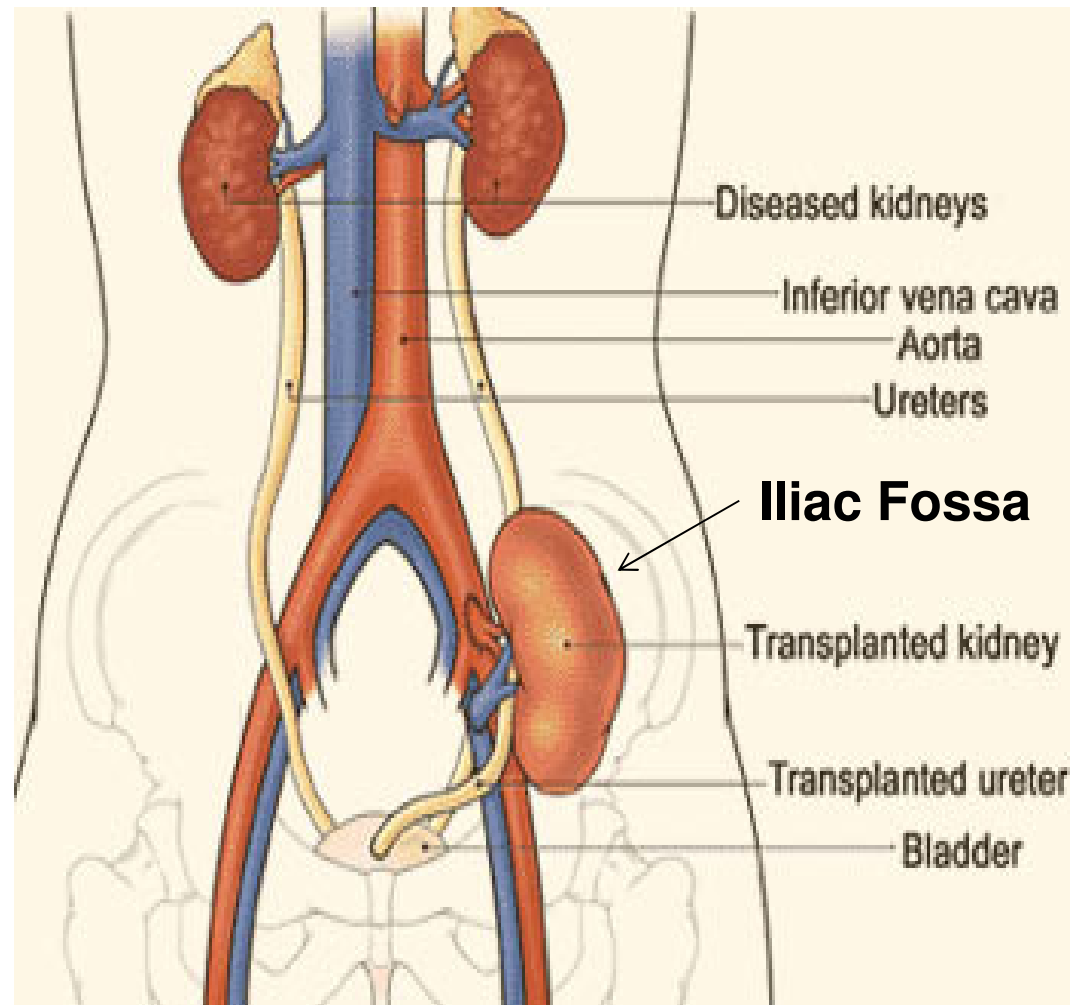
- When GFR <30 mL/min/1.73m²
 - No BP measurement
 - No IV
 - No Blood Draws
- Place vascular access within a year of hemodialysis anticipation...

***On Non-Dominant
Arm***

Principle of PD Treatment



Principle of Kidney Transplantation



Key Concepts

- Kidney transplantation is the most cost-effective modality of renal replacement.
- Transplanted patients have a longer life and better quality of life.
- Early transplantation (before [pre-emptive] or within 1 year of dialysis initiation) yields the best results.
- Living donor kidney outcomes are superior to deceased donor kidney outcomes.
- Early transplantation is more likely to occur in patients that are referred early to nephrologists.
- Refer for transplant evaluation when eGFR ≤ 20 mL/min/1.73m².



Key Concepts

- The most common cause of transplant loss is death with a functional transplant due to:
 - Heart disease +++
 - Infections
 - Malignancies
- Immunosuppressants are essential to prevent immunological loss of the transplant, but side effects can also lead to potential loss of transplant.