Understanding the Therapeutic Diet: Renal

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Overview

- Define: Renal
- What is renal function?
- Renal disorders
- Treatment of Renal disorders
- Goals of the therapeutic diet

Define Renal:

- Kidneys or the surrounding regions.
- The kidneys are two fist sized organs that lie behind the lining of the abdominal cavity.

Define Renal cont:

- Each kidney is made up of a complex capillary network and up to a million units called nephrons.
  - A nephron is a microscopic unit made up of a glomerulus and a tubule.
  - A glomerulus is a network (tuft) of capillaries and is responsible for the filtering of the blood.
  - The tubule is responsible for either reabsorption or secretion of the blood.

What is Renal Function?

- Refers to how well kidneys filter blood
- Through the filtering of the blood the kidneys maintain homeostasis by controlling the body's: fluid, electrolyte balance, blood pressure, excretion of metabolic end-products and foreign substances, and production of enzymes and hormones.

Renal Disorders:

- Chronic Kidney Disease (CKD)- The gradual and irreversible loss of kidney function as a result of kidney damage.

Renal Disorders cont:

- Signs and symptoms include:
  - Edema
  - Metabolic acidosis
  - Hyperkalemia
  - Anemia
  - Hypertension
  - Bone and mineral disorders

Treatment of Renal disorder

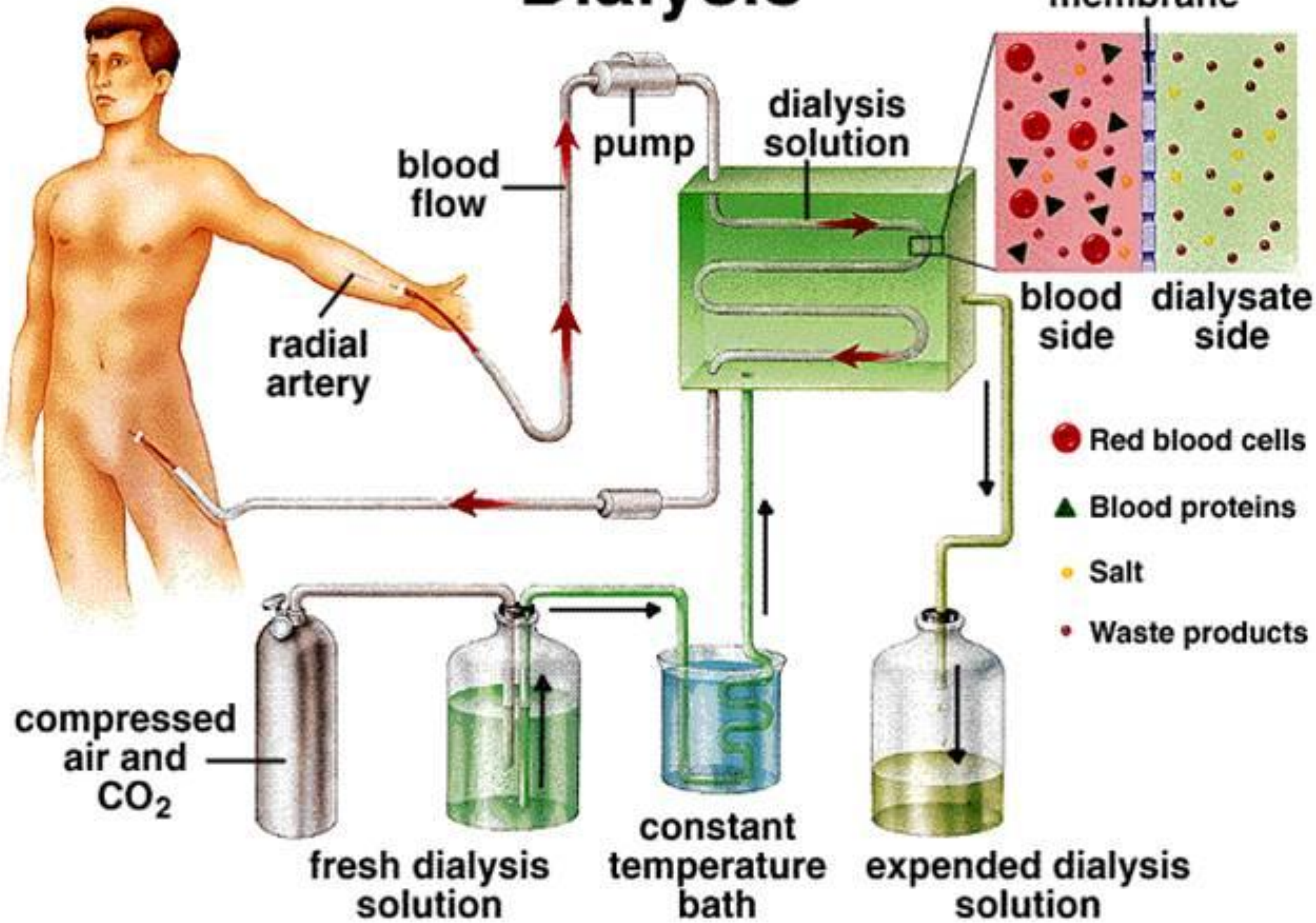
- Medical and nutritional management is used to delay progression of the disease
- Treatments include:
  - Hemodialysis
  - Peritoneal dialysis
  - Kidney dialysis

Dialysis

- Dialysis replaces part of the function of your kidneys.
- Procedure that uses a machine to removes toxic by products from the blood and replaces filtering function of the kidney .

- Indications for dialysis include:
  - Pericarditis
  - Uncontrollable fluid overload
  - Pulmonary edema
  - Uncontrollable and repeated hyperkalemia
  - Coma
  - Lethargy
- Azotemia, nausea, and vomiting are subjective

Dialysis


semipermeable membrane
pump
dialysis solution
blood flow
radial artery
blood side
dialysate side
Red blood cells
Blood proteins
Salt
Waste products
compressed air and CO_2
fresh dialysis solution
constant temperature bath
expended dialysis solution

Types of dialysis

- Hemodialysis
  - uses a machine to temporarily rid your body of harmful wastes, extra salt, and extra water
  - Special filter called a dialyzer that acts as an artificial kidney
  - Access to the blood stream is created and is carried from body to the dialyzer and back
  - helps your body keep the proper balance of important chemicals such as potassium, sodium, calcium, and bicarbonate.

- **Peritoneal Dialysis**
  - uses the lining of your abdomen to filter your blood.
  - Dialysis solution– a mixture of minerals and sugar dissolved in water travels from a catheter into your abdomen.
  - After several hours the solution is drained from abdomen taking the wastes from blood with it.

Kidney Transplantation

- Blood type must be compatible with donors
- Your cells carry six important HLAs (Human leukocyte antigens) that match donor
- Cross match test-mix blood of donor and patient if not reaction occurs then procedure can be done

  -These tests help predict whether your body's immune system will accept the new kidney or reject it. often patient must wait years for a donor that matches to become available.

Goals of the Therapeutic Diet

- Keep potassium low
- Low sodium
- Malnutrition is common in patients with CKD as well as (P.E.M.) Protein energy malnutrition because protein is lost through dialysis.
- avoiding foods high in phosphorus, potassium, and sodium.
- too much protein can be bad for kidneys and speed the progression of CKD.
- Protein foods like meat and dairy products break down into nitrogen and creatinine which build up in blood because kidneys aren't cleansing them out and can be toxic

- Two 3 oz of meat/ day
- less than 1,500 milligrams of salt per day

- Keep potassium levels normal by switching to low potassium fruits and vegetables
  - Low potassium foods:
    - Apples, blackberries, blueberries, lemons, cranberries, carrots, cabbage, lettuce, mushrooms, onions, radishes, green beans, alfalfa.

- High potassium foods:
  - Avocados, bananas, dates, figs, kiwi, melons, raisins, watermelon Keep phosphorus levels in check- meat, dairy, and fish
- Limit fluids and watch for swelling in eyes or in your legs, arms, or abdomen

- http://kidney.niddk.nih.gov/kudiseases/pubs/choosingtreatment/
- http://lpi.oregonstate.edu/infocenter/minerals/phosphorus/