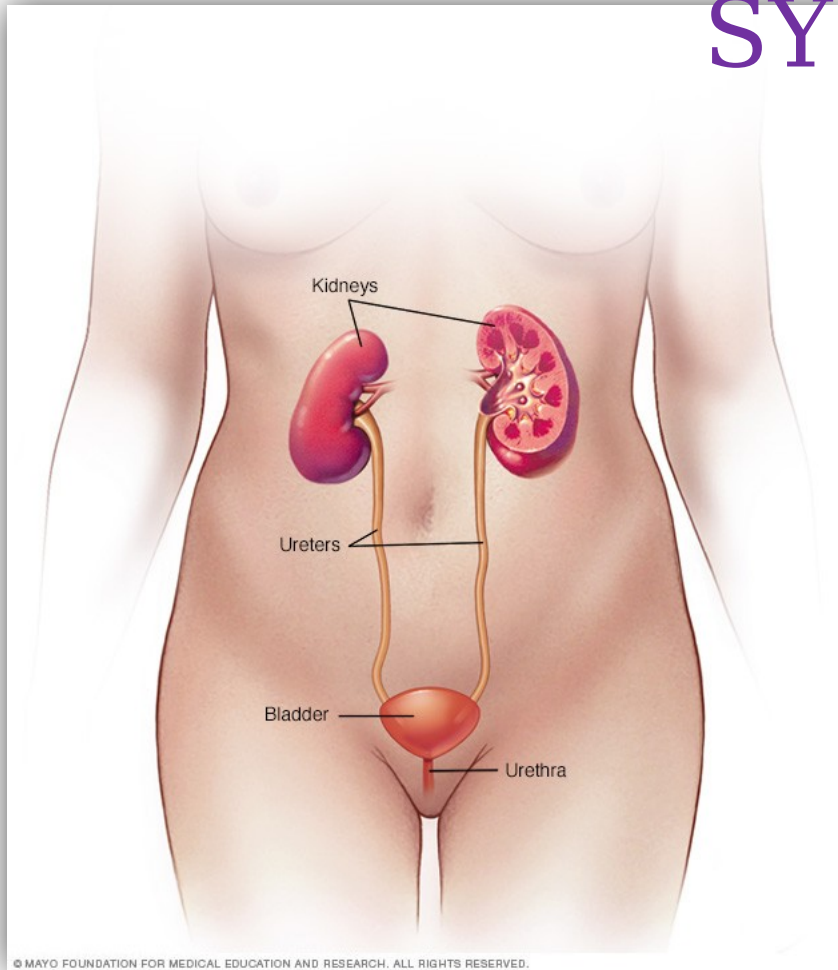
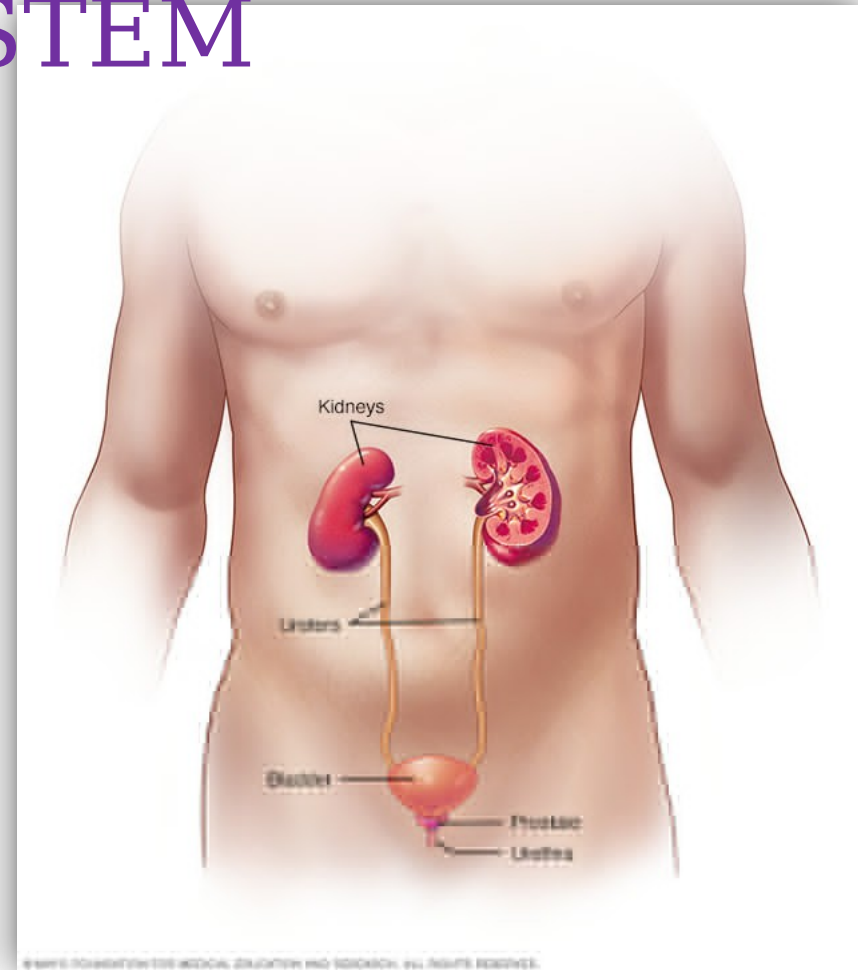
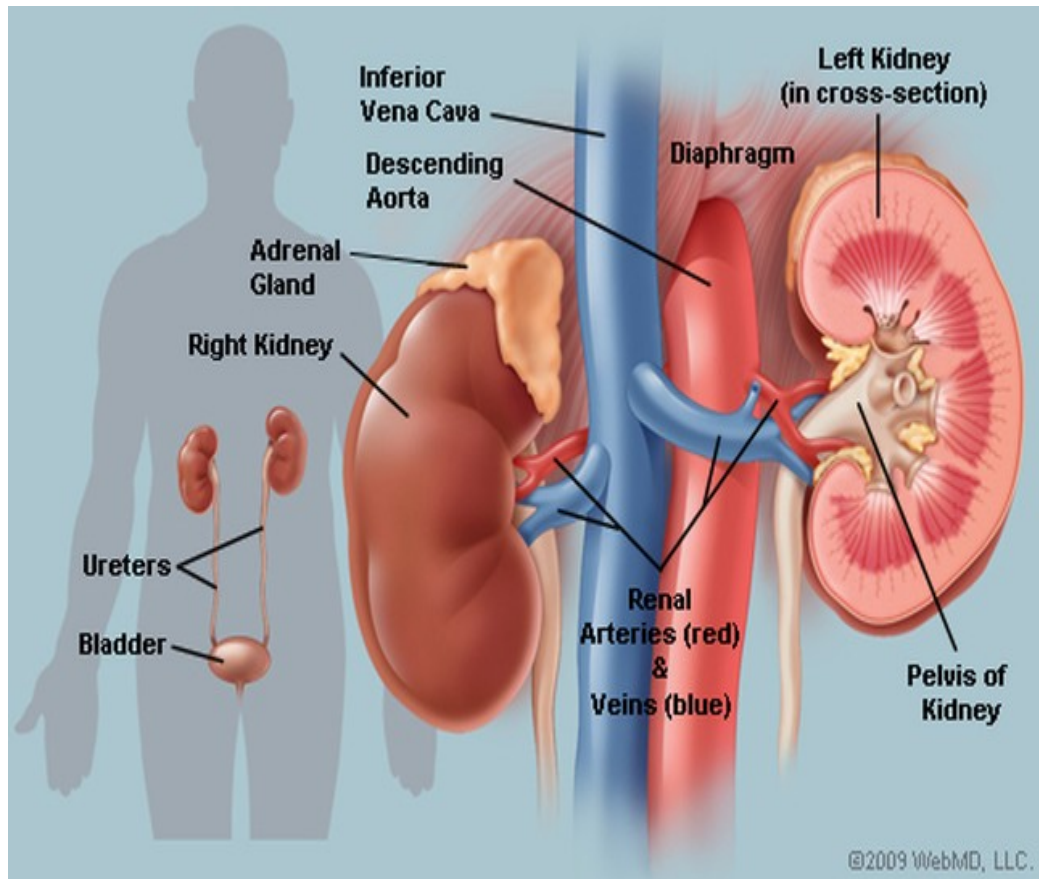
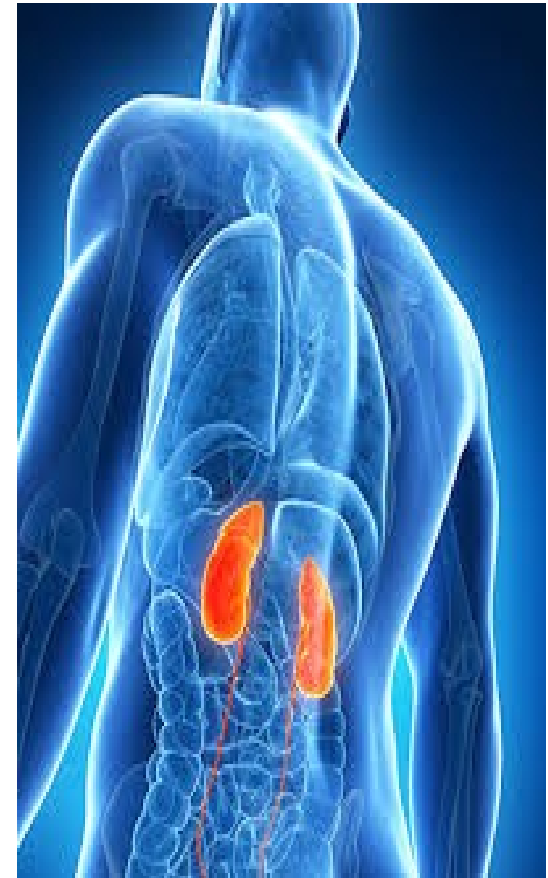


GENITO URINARY SYSTEM

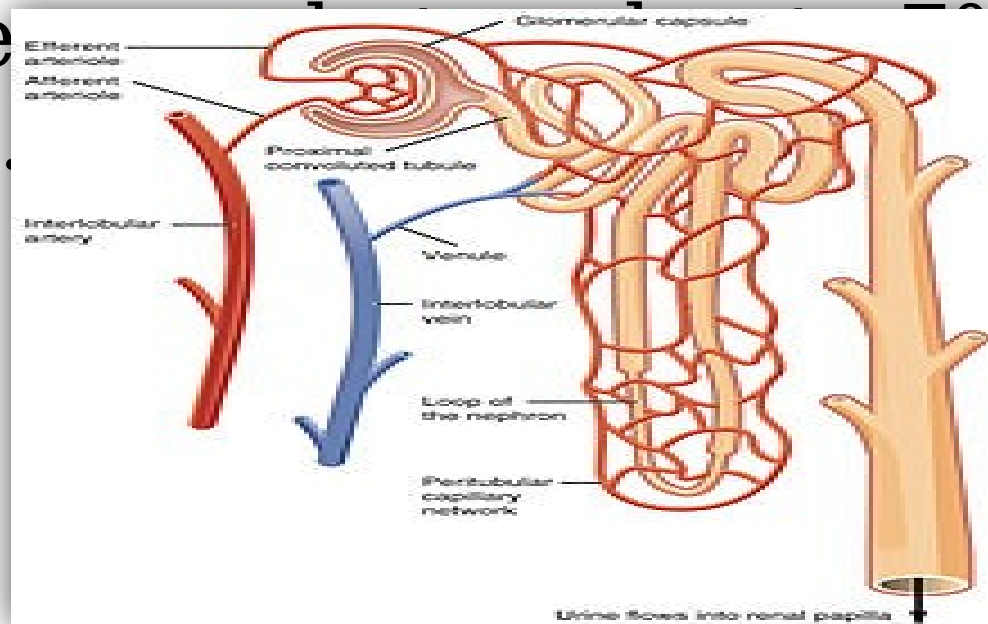




KIDNEY

- Glomerular Filtration Rate To calculate GFR: **125 ml/min** X 60 min/hr X 24 hr/day daily GFR = 180 L/ day. A 70Kg person has a blood volume 5% body weight.

NEPHRON



Acid-Base Balance

- Your blood needs the right balance of acidic and basic (alkaline) compounds to function properly. This is called the acid-base balance. Your kidneys and lungs work to maintain the acid-base balance. Even slight variations from the normal range can have significant effects on your vital organs. Normal blood pH is 7.35-7.45.
- Acid and alkaline levels are measured on a pH scale. An increase in acidity causes pH levels to fall. An increase in alkaline causes pH levels to rise.
- When the levels of acid in your blood are too high, it's called acidosis. When your blood is too alkaline, it is called alkalosis.
- *Respiratory acidosis and alkalosis are due to a problem with the lungs.*
- *Metabolic acidosis and alkalosis are due to a problem with the kidneys.*

Respiratory acidosis

- When you breathe, your lungs remove excess carbon dioxide from your body. *When they cannot do so, your blood and other fluids become too acidic.*

Symptoms and Causes

Symptoms of respiratory acidosis

- Symptoms may include fatigue, shortness of breath, and confusion.

Causes of respiratory acidosis

- chest deformities or injuries
- chronic lung and airway diseases
- overuse of sedatives
- obesity

Treatment

- A doctor should be seen immediately to treat acute respiratory acidosis, as this can be a life threatening condition. Treatment is targeted to the cause.
- Bronchodilator medications may be given to correct some forms of airway obstruction. If your blood oxygen level is too low, you may require oxygen.
- Noninvasive positive pressure ventilation or a breathing machine may be necessary.

Metabolic acidosis

- Metabolic acidosis occurs either when your body produces too much acid, or when your kidneys are unable to remove it properly.

Symptoms and Causes

Symptoms of metabolic acidosis

- Symptoms can include rapid breathing, fatigue, and confusion.

Causes of metabolic acidosis

- *There are three main types of metabolic acidosis.*

1. *Diabetic acidosis*, or [diabetic ketoacidosis](#), is a buildup of ketone bodies. This is usually due to uncontrolled type 1 diabetes.

2. *Hyperchloremic acidosis* is when your body loses too much sodium bicarbonate, often after severe diarrhea.

3. *Lactic acidosis* is when too much lactic acid builds up. This can be due to:

- prolonged exercise
- lack of oxygen
- low blood sugar, or hypoglycemia
- alcohol

Treatment

Treatment of metabolic acidosis

- The underlying condition behind the acidosis must be treated. In some cases, sodium bicarbonate is prescribed to return the blood to a normal pH.

Respiratory Alkalosis

- **Respiratory alkalosis** occurs when you breathe too fast or too deep and carbon dioxide levels drop too low. This **causes** the pH of the blood to rise and become too alkaline.

causes

- hyperventilation, which commonly occurs with anxiety
- high fever
- lack of oxygen
- salicylate poisoning
- being in high altitudes
- liver disease
- lung disease

Treatment

- **Treatment** is aimed at the condition that causes **respiratory alkalosis**. Breathing into a paper bag -- or using a mask that causes you to re-breathe carbon dioxide -- sometimes helps reduce symptoms when anxiety is the main cause of the condition.

Metabolic Alkalosis

- **Metabolic alkalosis** is a **metabolic** condition in which the pH of tissue is elevated beyond the normal range (7.35–7.45). This is the result of decreased hydrogen ion concentration, leading to increased bicarbonate, or alternatively a direct result of increased bicarbonate concentrations.

causes

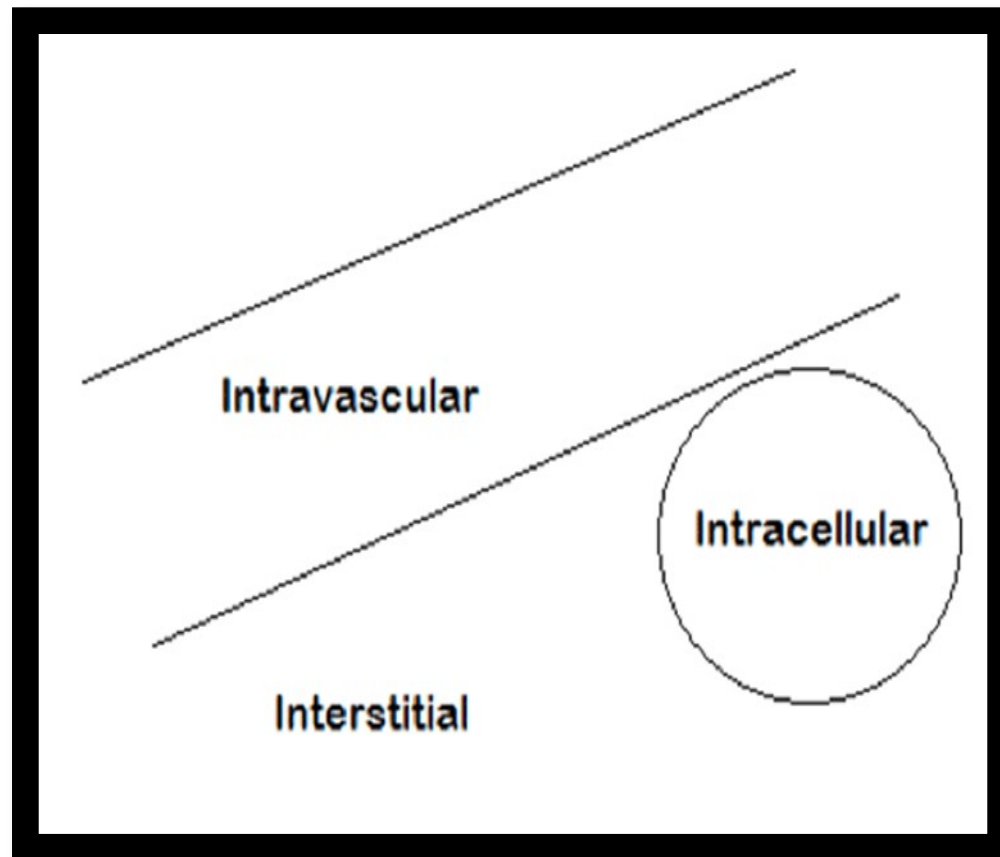
- Metabolic alkalosis develops when your body loses too much acid or gains too much base. This can be attributed to:
- excess vomiting, which causes electrolyte loss
- overuse of diuretics
- [adrenal disease](#)
- a large loss of potassium or sodium in a short amount of time
- antacids
- accidental ingestion of bicarbonate, which can be found in baking soda
- laxatives
- alcohol abuse

Symptoms

- muscle twitching, hand tremor, muscle spasms
- numbness and tingling
- nausea
- vomiting
- lightheadedness
- confusion

FLUID

- The body is made of trillions of cells. Water is found around cells, inside cells, within vessels, and around organs. Each fluid in the body has unique characteristics that allow for the specific functions within each space.



FLUID VOLUME

- **Total Body Water: 40 Liters**
- **Intracellular fluid:** The fluid components within the cell are the cytoplasm and neoplasm. Intracellular fluids make up 60% of total body water. **25 liters.**
- **Intravascular Fluid:** This includes all the blood within the circulatory system: veins and arteries. IVF, also known as blood contains red blood cells and Plasma. **The plasma makes up 3 liters out of 5 liters of IVF.**
- **Interstitial Fluid:** Interstitials fluid is found in many compartments throughout the body. Some examples include lymph, synovial fluid, cerebrospinal fluid, digestive secretions, and pericardial fluid. **11-12 liters of fluid.**
- **Extracellular fluid:** Fluid outside of the cell. ECF includes fluids within the blood vessels (intravascular fluid) and fluid within the interstitial spaces. **ECF totals about 15 Liters.**

FLUID VOLUME DEICIT

Fluid volume deficit:- **(Hypovolemia)**

- Hypovolemia is a decrease in intravascular fluid/blood volume. With hypovolemia the body will attempt to compensate by increasing stimulation of the central nervous system: increase heart rate, vascular resistance, thirst, ADH, and aldosterone.

causes

- Skin: exercise, fever, burns, or cystic fibrosis.
- Decreased fluid intake: coma patient, dementia, limited access to water
- Renal: loss of fluid excreted via the kidney can be caused by diabetes mellitus, diabetes insipidus, diuretics, renal disease, and adrenal insufficiency
- Blood loss: loss of blood could occur with hemorrhage or surgery
- Gastrointestinal: GI loss of fluid due to nausea, vomiting, diarrhea, fistula, nasogastric suction
- Fluid shift (from intravascular space into interstitial): peritonitis, small bowel obstruction, pulmonary edema, burns

Signs and Symptoms

- sunken eyeballs,
- increased temp,
- fatigue,
- syncope,
- weight loss,
- vomiting,
- increased HR,
- thirst,
- dry tongue,
- nausea,
- confusion,
- oliguria,
- dizziness,
- decreased BP,

Treatment

- Treatment with IV Fluids

Crystalloid

- Isotonic Normal Saline: increases intravascular fluid, without increasing intracellular fluid
- Saline/Electrolyte solutions: provides fluid and electrolytes (K+, Ca+, Lactate, acetate)
- hypotonic fluid is used for maintenance fluids
- isotonic fluid will replace fluid loss (most fluids lost are isotonic)
- Dextrose solutions: provides free water which is distributed to intracellular fluid and extracellular fluid, replete total body water deficit.

Colloid

- Blood products: increase intravascular fluid only
- Plasma: Increase intravascular fluid

Fluid volume overload

HYPERVOLUMIA

- Hypervolemia is an increase in extracellular fluid (intravascular and interstitial fluid). In hypervolemia the body compensates with the release of natriuretic peptides- which increase excretion of sodium and water by the kidneys- and inhibition of aldosterone.

CAUSES

- Retention of water and sodium: cirrhosis, nephrotic syndrome, heart failure, excess glucocorticoids
- Excess fluid administration: excess IV fluids, excess fluid in total parenteral nutrition
- Decreased renal function: acute or chronic renal failure with decreased urine output.
- Fluid shift from interstitial space to intravascular fluid: treatment after a burn, hypertonic saline administration, administration of a colloid solution like albumin

SYMPTOMS

- moist skin,
- edema,
- ascites,
- crackles,
- weight gain,
- orthopnea,
- shortness of breath,
- bounding pulses,
- wheezes,
- rhonchi,
- rales,
- distended neck veins,
- tachypnea,
- tachycardia,

TREATMENT

Treatment

- Water and sodium restriction: oral, enteral, parenteral
- Diuretics: IV or oral diuretics, loop diuretics (Furosemide) in severe hypervolemia, or renal failure
- Renal replacement therapy (dialysis): in renal failure or very severe volume overload

Monitor

- input and output, weight (monitor weights daily, a 2 kg weight gain equals 2 L fluid gain), specific gravity, edema.

Dehydration

- Dehydration occurs when you lose more fluid than you take in, and your body doesn't have enough water and other fluids to carry out its normal functions. If you don't replace lost fluids, you will get dehydrated.
- Anyone may become dehydrated, but the condition is especially dangerous for young children and older adults.

Electrolytes imbalances

Hypernatremia

- A normal blood sodium level is between 135 and 145 milliequivalents per liter (mEq/L). Hyponatremia occurs when the sodium in your blood falls below 135 mEq/L.
- Sodium plays a key role in your body. It helps maintain normal blood pressure, supports the work of your nerves and muscles, and regulates your body's fluid balance.

Hypernatremia

- Hypernatremia is a common electrolyte problem that is defined as a rise in serum sodium concentration to a value exceeding 145 mmol/L.
- The main symptom of hypernatremia is excessive thirst. Other symptoms are [lethargy](#), which is extreme fatigue and lack of energy, and possibly confusion.
- Advanced cases may also cause muscle twitching or spasms. That's because sodium is important for how muscles and nerves work. With severe elevations of sodium, [seizures](#) and [coma](#) may occur.

Hypokalemia

- Normally, your blood potassium level is 3.6 to 5.2 millimoles per liter (mmol/L). A very low potassium level (less than 2.5 mmol/L) can be life-threatening and requires urgent medical attention.
- Low potassium (hypokalemia) refers to a lower than normal potassium level in your bloodstream. Potassium helps carry electrical signals to cells in your body. It is critical to the proper functioning of nerve and muscles cells, particularly heart muscle cells.

Hyperkalemia

- Hyperkalemia is the medical term that describes a potassium level in your blood that's higher than normal. Potassium is a chemical that is critical to the function of nerve and muscle cells, including those in your heart.
- Your blood potassium level is normally 3.6 to 5.2 millimoles per liter (mmol/L). Having a blood potassium level higher than 6.0 mmol/L can be dangerous and usually requires immediate treatment.

HYPOCALCEMIA

- Calcium is a vital mineral. Your body uses it to build strong bones and [teeth](#). Calcium is also needed for your [heart](#) and other muscles to function properly.
- When you don't get enough calcium, you increase your risk of developing disorders like:
 - [osteoporosis](#)
 - [osteopenia](#)
 - calcium deficiency disease (hypocalcemia)

Hypercalcemia

- Hypercalcemia is a condition in which the calcium level in your blood is above normal. Too much calcium in your blood can weaken your bones, create kidney stones, and interfere with how your heart and brain work.
- Hypercalcemia is usually a result of overactive parathyroid glands.

Hypomagnesaemia

- Magnesium is one of the most abundant essential minerals in your body. It's primarily stored in the bones of your body. A very small amount of magnesium circulates in your bloodstream.
- Magnesium plays a role in [over 300 metabolic reactions in your body](#).

These reactions impact a number of very important body processes, including:

- protein synthesis
- cellular energy production and storage
- stabilization of cells
- DNA synthesis
- nerve signal transmission
- bone metabolism
- cardiac function
- the conduction of signals between muscles and nerves
- glucose and insulin metabolism
- blood pressure

Hypomagnesaemia...

Symptoms of low magnesium

- nausea
- vomiting
- weakness
- decreased appetite
- numbness
- tingling
- [muscle cramps](#)

Causes of low magnesium

- Low magnesium is typically due to decreased absorption of magnesium in the gut or increased excretion of magnesium in the urine. Low magnesium levels in otherwise healthy people are uncommon. This is because magnesium levels are largely controlled by the kidneys. The kidneys increase or decrease excretion (waste) of magnesium based on what the body needs.
- Continually low dietary intake of magnesium, excessive loss of magnesium, or the presence of other chronic conditions can lead to hypomagnesemia.

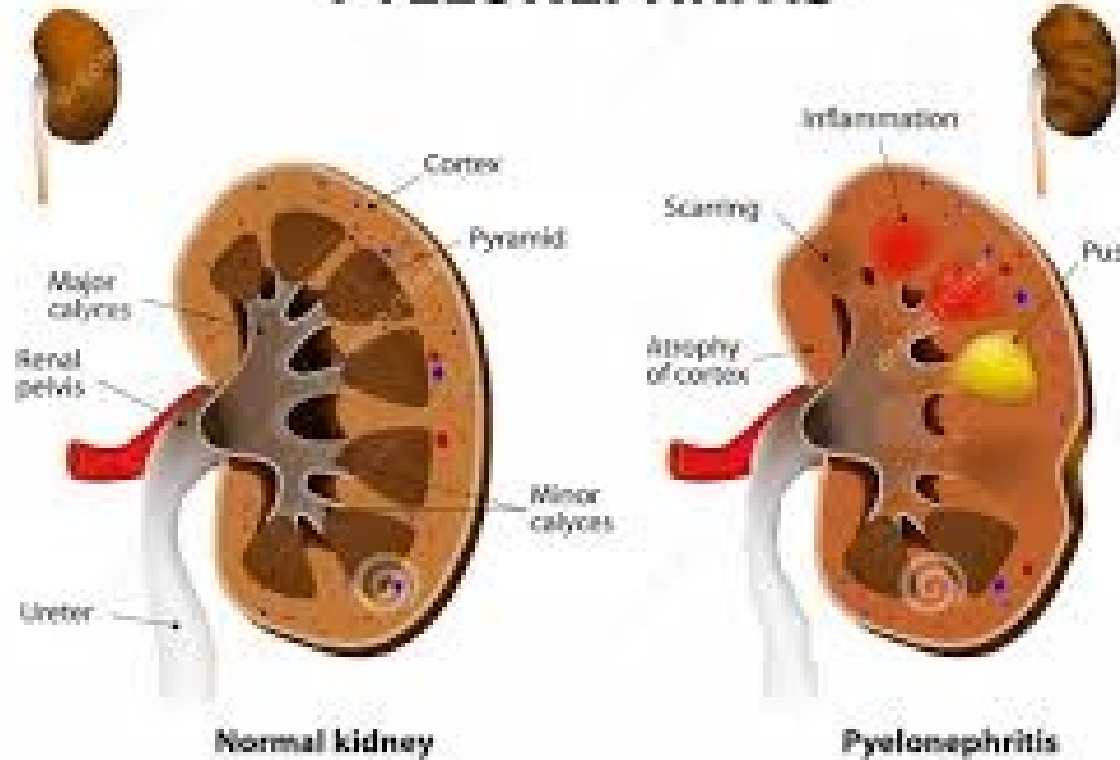
Hypermagnesemia

- Hypermagnesemia refers to an excess amount of magnesium in the bloodstream. It is rare and is usually caused by renal failure or poor kidney function.
- Magnesium is a mineral the body uses as an electrolyte, meaning it carries electric charges around the body when dissolved in the blood.
- Magnesium has a role in bone health, cardiovascular function, and neurotransmission, among other functions. Most magnesium is stored in the bones.

PYELONEPHRITIS

- Kidney infection (pyelonephritis) is a type of urinary tract infection (UTI) that generally begins in your urethra or bladder and travels to one or both of your kidneys.

PYELONEPHRITIS



CAUSES

- **Bacteria** from an infection elsewhere in your body also can spread through your bloodstream to your kidneys.
- **Being female.** The urethra is shorter in women than it is in men, which makes it easier for bacteria to travel from outside the body to the bladder.
- **Having a urinary tract blockage.** This includes anything that slows the flow of urine or reduces your ability to empty your bladder when urinating.
- **Having a weakened immune system.** This includes medical conditions that impair your immune system, such as diabetes and HIV.
- **Having damage to nerves around the bladder.** Nerve or spinal cord damage can block the sensations of a bladder.
- **Using a urinary catheter for a time.** Urinary catheters are tubes used to drain urine from the bladder. You might have a catheter placed during and after some surgical procedures and diagnostic tests.

SYMPTOMS

- Fever
- Chills
- Back, side (flank) or groin pain
- Abdominal pain
- Frequent urination
- Strong, persistent urge to urinate
- Burning sensation or pain when urinating
- Nausea and vomiting
- Pus or blood in your urine (hematuria)

TREATMENT

- **Antibiotics** are the first line of treatment for kidney infections. Which drugs you use and for how long depend on your health and the bacteria found in your urine tests.
- **Use pain medicine.** For fever or discomfort, take a nonaspirin pain reliever such as acetaminophen (Tylenol, others) or ibuprofen (Motrin IB, Advil, others).
- **Stay hydrated.** Drinking fluids will help flush bacteria from your urinary tract. Avoid coffee and alcohol until your infection has cleared.

URINARY TRACT INFECTION (UTI)

- A urinary tract infection (UTI) is an infection in any part of your urinary system — your kidneys, ureters, bladder and urethra. Most infections involve the lower urinary tract — the bladder and the urethra.

LOCATION OF INFECTION

- Kidneys (acute pyelonephritis)
- Bladder (cystitis)
- Urethra (urethritis)

CAUSES

- **Infection of the bladder (cystitis).** This type of UTI is usually caused by *Escherichia coli* (E. coli), a type of bacteria commonly found in the gastrointestinal (GI) tract.
- **Sexual intercourse** may lead to **cystitis**. All women are at risk of cystitis because of their anatomy.
- **Infection of the urethra (urethritis).** This type of UTI can occur when GI bacteria spread from the anus to the urethra.

SYMPTOMS

- A strong, persistent urge to urinate
- A burning sensation when urinating
- Passing frequent, small amounts of urine
- Urine that appears cloudy
- Urine that appears red, bright pink or cola-colored — a sign of blood in the urine
- Strong-smelling urine

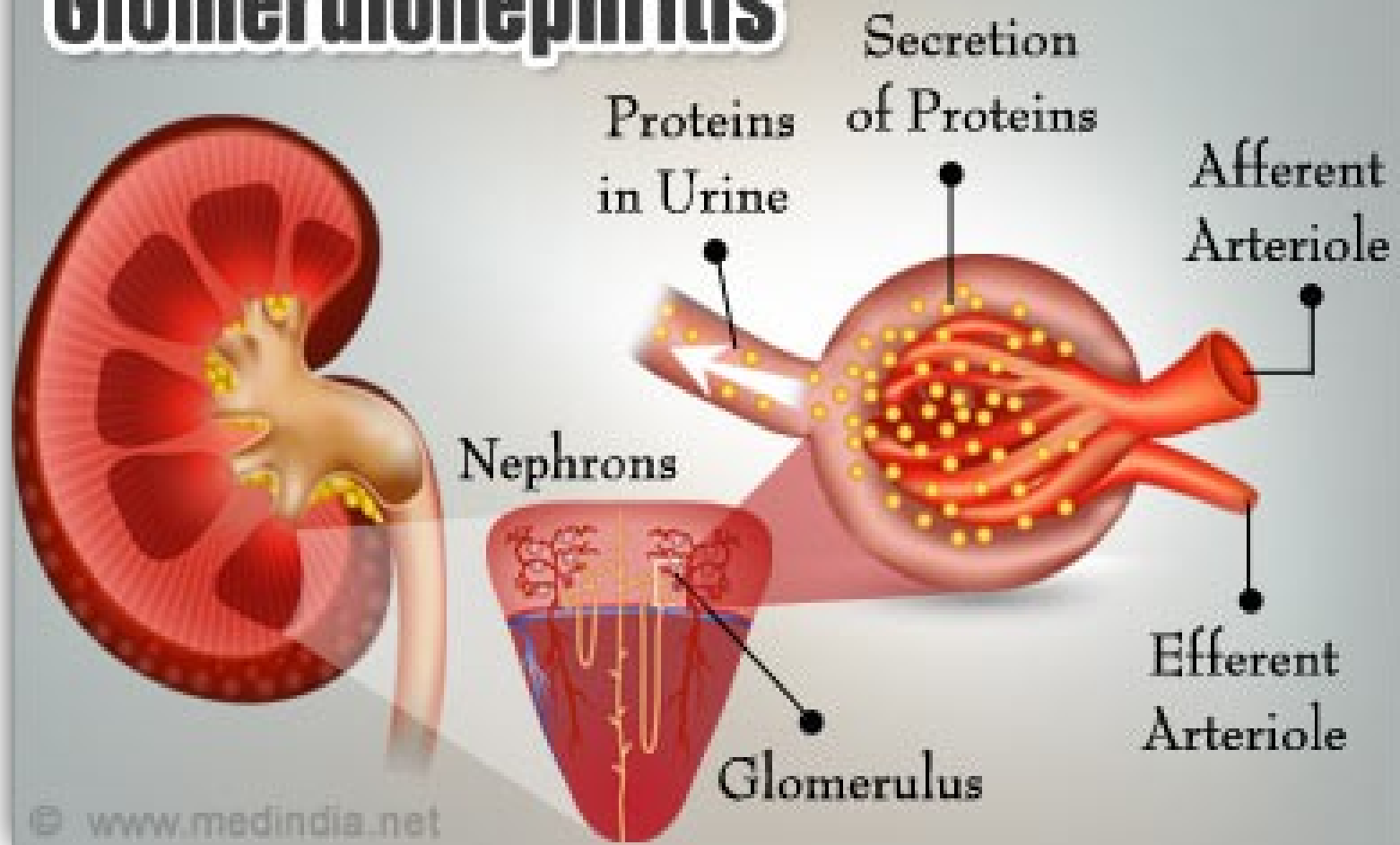
TREATMENT

- Drugs commonly recommended for simple UTIs include:
- Trimethoprim/sulfamethoxazole (Bactrim, Septra, others).
- Ceftriaxone.

GLOMERULONEPHRITIS

- Glomerulonephritis is inflammation of the **tiny filters in your kidneys (glomeruli)**.
- Glomeruli remove excess fluid, electrolytes and waste from your bloodstream and pass them into your urine.
- Glomerulonephritis can come on suddenly (acute) or gradually (chronic).

Glomerulonephritis



CAUSES

- **Post-streptococcal Glomerulonephritis.** Glomerulonephritis may develop a week or two after recovery from a strep throat infection or, rarely, a skin infection (impetigo).
- Children are more likely to develop post-streptococcal glomerulonephritis than are adults, and they're also more likely to recover quickly.
- **Bacterial endocarditis.** Bacteria occasionally can spread through your bloodstream and lodge in your heart, causing an infection of one or more of your heart valves.
- **Viral infections.** Viral infections, such as the human immunodeficiency virus (HIV), hepatitis B and hepatitis C, can trigger glomerulonephritis.

SYMPTOMS

- Pink or cola-colored urine from red blood cells in your urine (hematuria)
- Foamy urine due to excess protein (proteinuria)
- High blood pressure (hypertension)
- Fluid retention (edema) with swelling evident in your face, hands, feet and abdomen.

DIAGNOSIS

- **Urine test.** A urinalysis might show red blood cells and red cell casts in your urine, an indicator of possible damage to the glomeruli.
- **Blood tests.** These can provide information about kidney damage and impairment of the glomeruli by measuring levels of waste products, such as creatinine and blood urea nitrogen.
- **Imaging tests.** kidney X-ray, an ultrasound examination or a CT scan.
- **Kidney biopsy.** This procedure involves using a special needle to extract small pieces of kidney tissue for microscopic examination to help determine the cause of the inflammation. A kidney biopsy is almost always necessary to confirm a diagnosis of glomerulonephritis.

TREATMENT

- Some cases of acute glomerulonephritis, especially those that follow a strep infection, might improve on their own and **require no treatment**.
- Treat with appropriate antibiotics.
- For acute glomerulonephritis and acute kidney failure, **dialysis** can help remove excess fluid and control high blood pressure.

NEPHROTIC SYNDROME

- Nephrotic syndrome is a kidney disorder that causes your body to excrete too much protein in your urine.

PATHOLOGY

- Healthy glomeruli keep blood protein (mainly albumin) — which is needed to maintain the right amount of fluid in your body
- Nephrotic syndrome is usually caused by damage to the clusters of small blood vessels in your kidneys that filter waste and excess water from your blood. Protein loss in the urine leads to intravascular fluid escapes into tissue area.
- Nephrotic syndrome causes swelling (edema), particularly in your feet and ankles, and increases the risk of other health problems.

SYMPTOMS

- Severe swelling (edema), particularly around your eyes and in your ankles and feet
- Foamy urine, which may be caused by excess protein in your urine
- Weight gain due to excess fluid retention.



CAUSES

- Uncontrol hypertension
- High cholestrol
- Nephritis
- Minimal change disease- un known cause
- DM
- Auto Immune disorder
- Acute and chronic kidney disease

TREATMENT

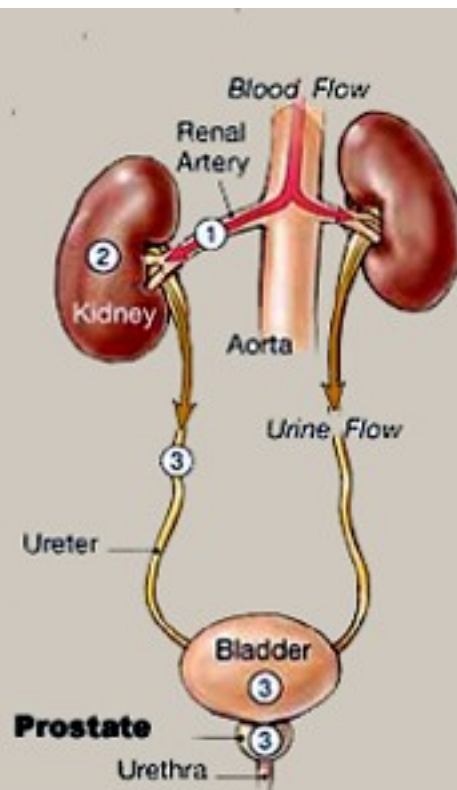
- **Blood pressure medications:- Amelodipin.**
- **Water pills.** Water pills (diuretics) help control swelling by increasing your kidneys' fluid output. Diuretic medications include furosemide (Lasix) and spironolactone (Aldactone).
- **Cholesterol-reducing medications.** Medications called lovastatin (Altoprev, Mevacor), pravastatin (Pravachol).
- **Blood thinners.** Medications called anticoagulants help decrease your blood's ability to clot and reduce your risk of developing blood clots. warfarin (Coumadin).
- **Immune system-suppressing medications.** Medications to control the immune system, such as corticosteroids.

ACUTE RENAL FAILURE (ARF)

- Acute kidney failure occurs when your kidneys suddenly become unable to filter waste products from your blood. When your kidneys lose their filtering ability, dangerous levels of wastes may accumulate, and your blood's chemical makeup may get out of balance.
- Acute kidney failure — also called acute renal failure or acute kidney injury — develops rapidly over a few hours or a few days.

CAUSES

- Diseases and conditions that may slow blood flow to the kidneys and lead to kidney failure include:
- Blood or fluid loss
- Blood pressure medications
- Heart attack
- Heart disease
- Infection
- Liver failure
- Use of aspirin, ibuprofen
- Severe allergic reaction (anaphylaxis)
- Severe burns
- Severe dehydration



① Prerenal

Sudden and severe drop in blood pressure (shock) or interruption of blood flow to the kidneys from severe injury or illness

② Intrarenal

Direct damage to the kidneys by inflammation, toxins, drugs, infection, or reduced blood supply

③ Postrenal

Sudden obstruction of urine flow due to enlarged prostate, kidney stones, bladder tumor, or injury

SYMPTOMS

Signs and symptoms of acute kidney failure may include:

- Decreased urine output
- Fluid retention, causing swelling in your legs, ankles or feet
- Drowsiness
- Shortness of breath
- Fatigue
- Confusion
- Nausea
- Seizures or coma in severe cases
- Chest pain or pressure

Diagnosis

- **Urine output measurements.** The amount of urine you excrete in a day may help your doctor determine the cause of your kidney failure.
- **Urine tests.** Analyzing a sample of your urine, a procedure called urinalysis, may reveal abnormalities that suggest kidney failure.
- **Blood tests.** A sample of your blood may reveal rapidly rising levels of urea and creatinine—two substances used to measure kidney function.

TREATMENT

- **Treatments to balance the amount of fluids in your blood.** If your acute kidney failure is caused by a lack of fluids in your blood, your doctor may recommend intravenous (IV) fluids. In other cases, acute kidney failure may cause you to have too much fluid, leading to swelling in your arms and legs. In these cases, your doctor may recommend medications (diuretics) to cause your body to expel extra fluids.
- **Medications to control blood potassium.** If your kidneys aren't properly filtering potassium from your blood. Too much potassium in the blood can cause dangerous irregular heartbeats (arrhythmias) and muscle weakness.
- **Medications to restore blood calcium levels.** If the levels of calcium in your blood drop too low, your doctor may recommend an infusion of calcium.
- **Dialysis to remove toxins from your blood.** If toxins build up in your blood, you may need temporary hemodialysis — often referred to simply as dialysis — to help remove toxins and excess fluids from your body while your kidneys heal.

CHRONIC RENAL FAILURE(CRF)

- Chronic kidney failure, also called chronic kidney failure, describes the gradual loss of kidney function. When chronic kidney disease reaches an advanced stage, dangerous levels of fluid, electrolytes and wastes can build up in your body.

CHRONIC RENAL FAILURE (CRF)

- RENAL INSUFFICIENCY -



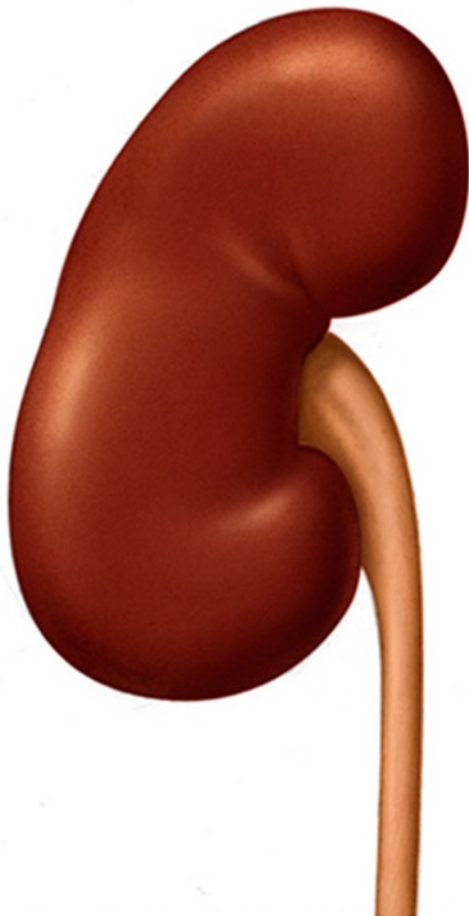
- Headaches
- ↓ Ability to Concentrate Urine
- Polyuria → Oliguria
- ↑ BUN & Serum Creatinine
- Edema
- GFR - progressively decreases from 90 to 30 ml/min
- Mild Anemia
- ↑ BP
- Weakness & Fatigue

SYMPTOMS

- Nausea
- Vomiting
- Loss of appetite
- Fatigue and weakness
- Sleep problems
- Changes in how much you urinate
- Decreased mental sharpness
- Muscle twitches and cramps
- Swelling of feet and ankles
- Persistent itching- skin changes (accumulation of creatinine and urae)
- Chest pain, if fluid builds up around the lining of the heart
- Shortness of breath, if fluid builds up in the lungs
- High blood pressure (hypertension) that's difficult to control

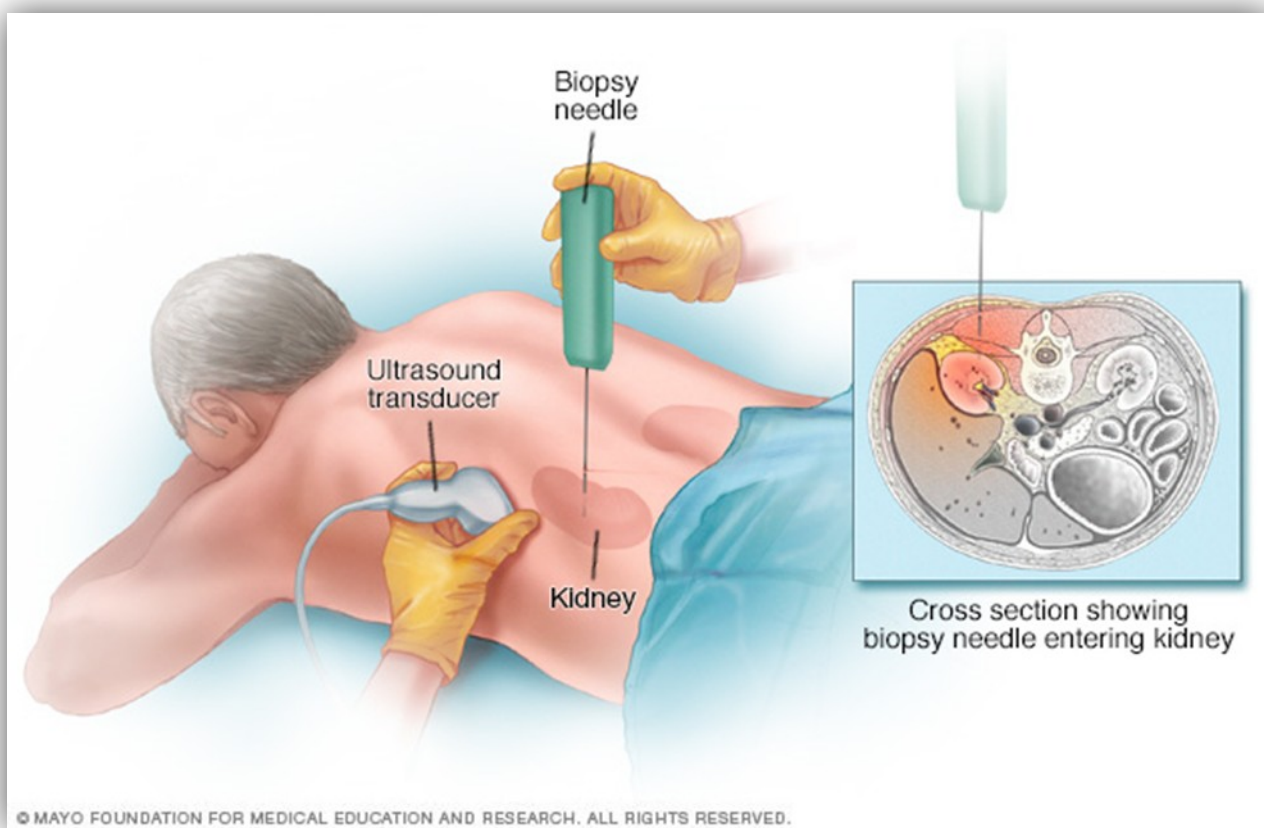
CAUSES

- Type 1 or type 2 diabetes
- High blood pressure
- Glomerulonephritis
- Polycystic kidney disease
- Prolonged obstruction of the urinary tract, from conditions such as enlarged prostate, kidney stones and some cancers
- Recurrent kidney infection, also called pyelonephritis



DIAGNOSIS

- **Blood tests.** Kidney function tests look for the level of waste products, such as creatinine and urea, in your blood.
- **Urine tests.** Analyzing a sample of your urine may reveal abnormalities that point to chronic kidney failure and help identify the cause of chronic kidney disease.
- **Imaging tests.** Your doctor may use ultrasound to assess your kidneys' structure and size.
- **Removing a sample of kidney tissue for testing.** Your doctor may recommend a kidney biopsy to remove a sample of kidney tissue. Kidney biopsy is often done with local anesthesia using a long, thin needle that's inserted through your skin and into your kidney..



Treatment

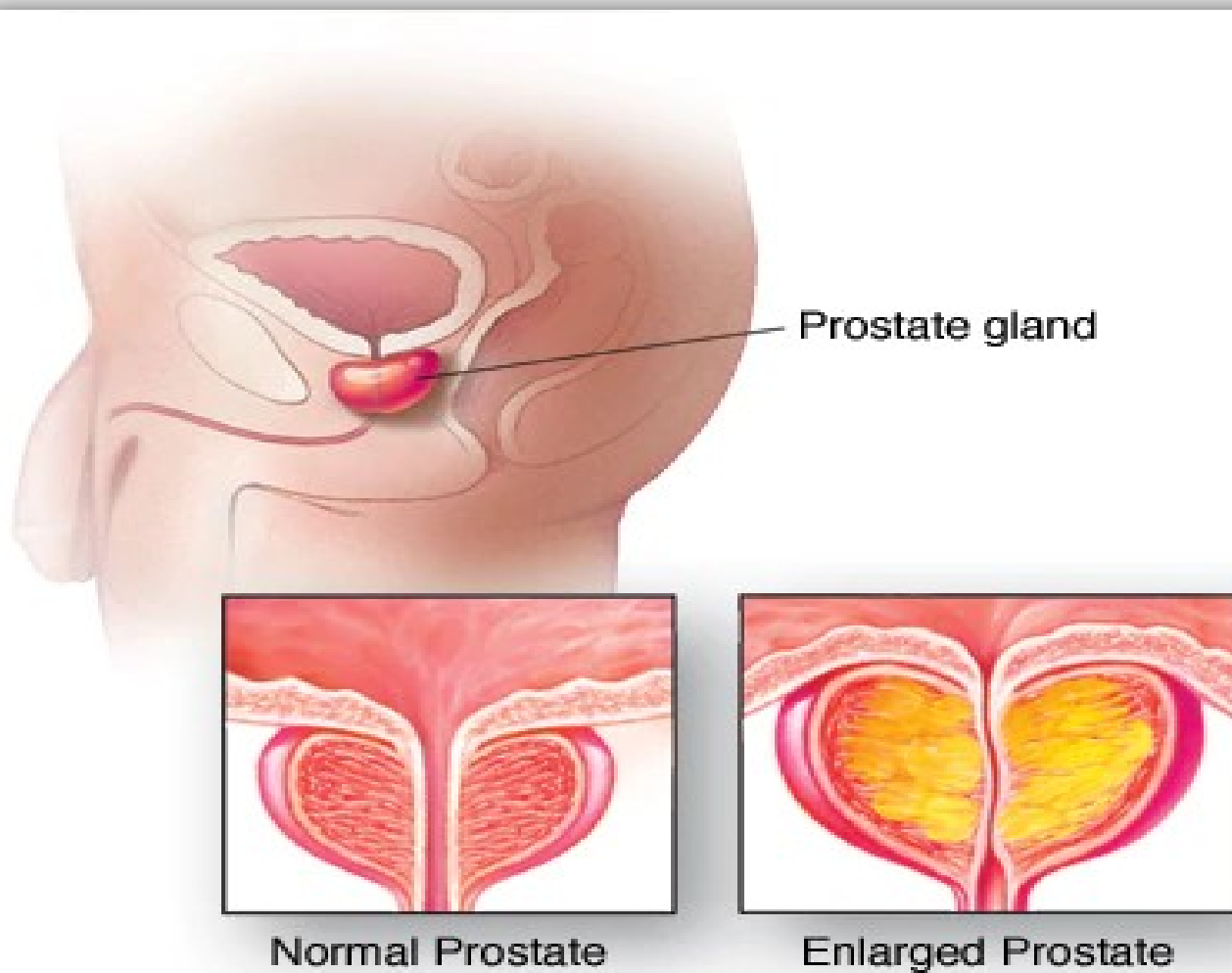
Dialysis.

- **Hemodialysis:-** Dialysis artificially removes waste products and extra fluid from your blood when your kidneys can no longer do this. In hemodialysis, a machine filters waste and excess fluids from your blood.
- **In peritoneal dialysis,** a thin tube (catheter) inserted into your abdomen fills your abdominal cavity with a dialysis solution that absorbs waste and excess fluids

Kidney transplant. A kidney transplant involves surgically placing a healthy kidney from a donor into your body. Transplanted kidneys can come from deceased or living donors. You'll need to take medications for the rest of your life to keep your body from rejecting the new organ. You don't need to be on dialysis to have a kidney transplant.

Benign prostatic hyperplasia (BPH)

- Benign prostatic hyperplasia (BPH) — also called prostate gland enlargement — is a common condition as men get older. An enlarged prostate gland can cause uncomfortable urinary symptoms, such as blocking the flow of urine out of the bladder. It can also cause bladder, urinary tract or kidney problems.



CAUSES

- **Aging.** Prostate gland enlargement rarely causes signs and symptoms in men younger than age 40. About one-third of men experience moderate to severe symptoms by age 60, and about half do so by age 80.
- **Family history.** Having a blood relative, such as a father or a brother, with prostate problems means you're more likely to have problems.
- **Diabetes and heart disease.** Studies show that diabetes, as well as heart disease and use of beta blockers, might increase the risk of BPH.
- **Lifestyle.** Obesity increases the risk of BPH, while exercise can lower your risk.

SYMPTOMS

- The severity of symptoms in people who have prostate gland enlargement varies, but symptoms tend to gradually worsen over time. Common signs and symptoms of BPH include:
- Frequent or urgent need to urinate
- Increased frequency of urination at night (nocturia)
- Difficulty starting urination
- Weak urine stream or a stream that stops and starts
- Dribbling at the end of urination
- Inability to completely empty the bladder
- Less common signs and symptoms include:
- Urinary tract infection
- Inability to urinate
- Blood in the urine

DIAGNOSIS

- **Digital rectal exam.** The doctor inserts a finger into the rectum to check your prostate for enlargement. **Urine test.** Analyzing a sample of your urine can help rule out an infection or other conditions that can cause similar symptoms. **Blood test.** The results can indicate kidney problems. **Prostate-specific antigen (PSA) blood test.** PSA is a substance produced in your prostate. PSA levels increase when you have an enlarged prostate.

TREATMENT

- **Alpha blockers.** These medications relax bladder neck muscles and muscle fibers in the prostate, making urination easier. Alpha blockers — which include alfuzosin (Uroxatral), doxazosin (Cardura).
- **5-alpha reductase inhibitors.** These medications shrink your prostate by preventing hormonal changes that cause prostate growth.

TREATMENT - SURGERY

- **Transurethral resection of the prostate (TURP)**

A lighted scope is inserted into your urethra, and the surgeon removes all but the outer part of the prostate. TURP generally relieves symptoms quickly, and most men have a stronger urine flow soon after the procedure. After TURP you might temporarily need a catheter to drain your bladder.

- **Transurethral incision of the prostate (TUIP)**

A lighted scope is inserted into your urethra, and the surgeon makes one or two small cuts in the prostate gland — making it easier for urine to pass through the urethra. This surgery might be an option if you have a small or moderately enlarged prostate gland, especially if you have health problems that make other surgeries too risky.

- **Transurethral microwave thermotherapy (TUMT)**

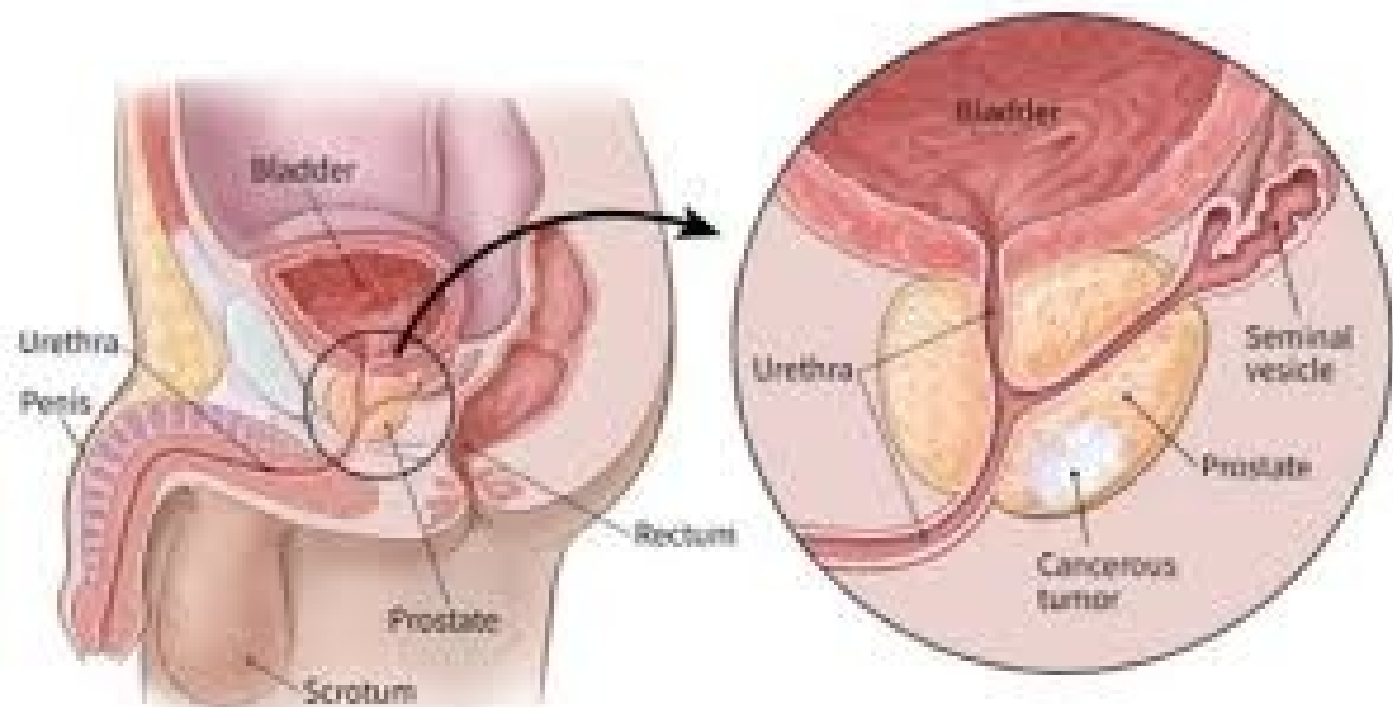
Your doctor inserts a special electrode through your urethra into your prostate area. Microwave energy from the electrode destroys the inner portion of the enlarged prostate gland, shrinking it and easing urine flow.

- **Laser therapy**

A high-energy laser destroys or removes overgrown prostate tissue. Laser therapy generally relieves symptoms right away and has a lower risk of side effects than does nonlaser surgery. Laser therapy might be used in men who shouldn't have other prostate procedures because they take blood-thinning medications.

Prostate cancer

- Prostate cancer is cancer that occurs in the prostate — a small walnut-shaped gland in men that produces the seminal fluid that nourishes and transports sperm.



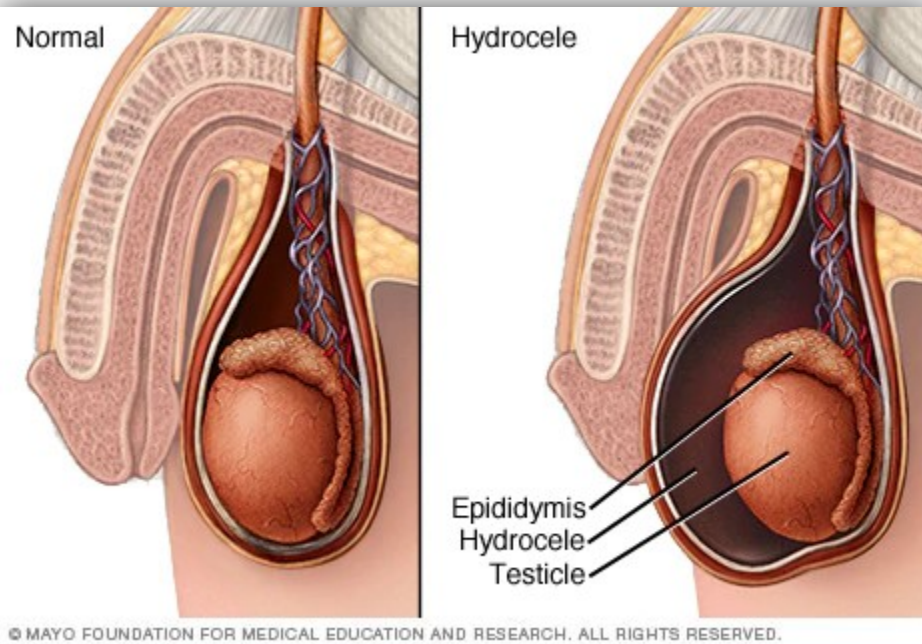
RISK FACTORS

Factors that can increase your risk of prostate cancer include:

- **Age.** Your risk of prostate cancer increases as you age.
- **Race.** For reasons not yet determined, black men carry a greater risk of prostate cancer than do men of other races. In black men, prostate cancer is also more likely to be aggressive or advanced.
- **Family history.** If men in your family have had prostate cancer, your risk may be increased. Also, if you have a family history of genes that increase the risk of breast cancer (BRCA1 or BRCA2) or a very strong family history of breast cancer, your risk of prostate cancer may be higher.
- **Obesity.** Obese men diagnosed with prostate cancer may be more likely to have advanced disease that's more difficult to treat.

HYDROCELE

- A hydrocele (HI-droe-seel) is a type of swelling in the scrotum that occurs when fluid collects in the thin sheath surrounding a testicle. Hydrocele is common in newborns and usually disappears without treatment by age 1. Older boys and adult men can develop a hydrocele due to inflammation or injury within the scrotum.
- A hydrocele usually isn't painful or harmful and might not need any treatment. But if you have scrotal swelling, see your doctor to rule out other causes.



HYDROCELE

BY TLALI



SYMPTOMS

- Usually, the only indication of a hydrocele is a painless swelling of one or both testicles.
- Adult men with a hydrocele might experience discomfort from the heaviness of a swollen scrotum.
- Pain generally increases with the size of the inflammation.
- Sometimes, the swollen area might be smaller in the morning and larger later in the day.

CAUSES

Baby boys

- A hydrocele can develop before birth. Normally, the testicles descend from the developing baby's abdominal cavity into the scrotum. A sac accompanies each testicle, allowing fluid to surround the testicles. Usually, each sac closes and the fluid is absorbed.

Older males

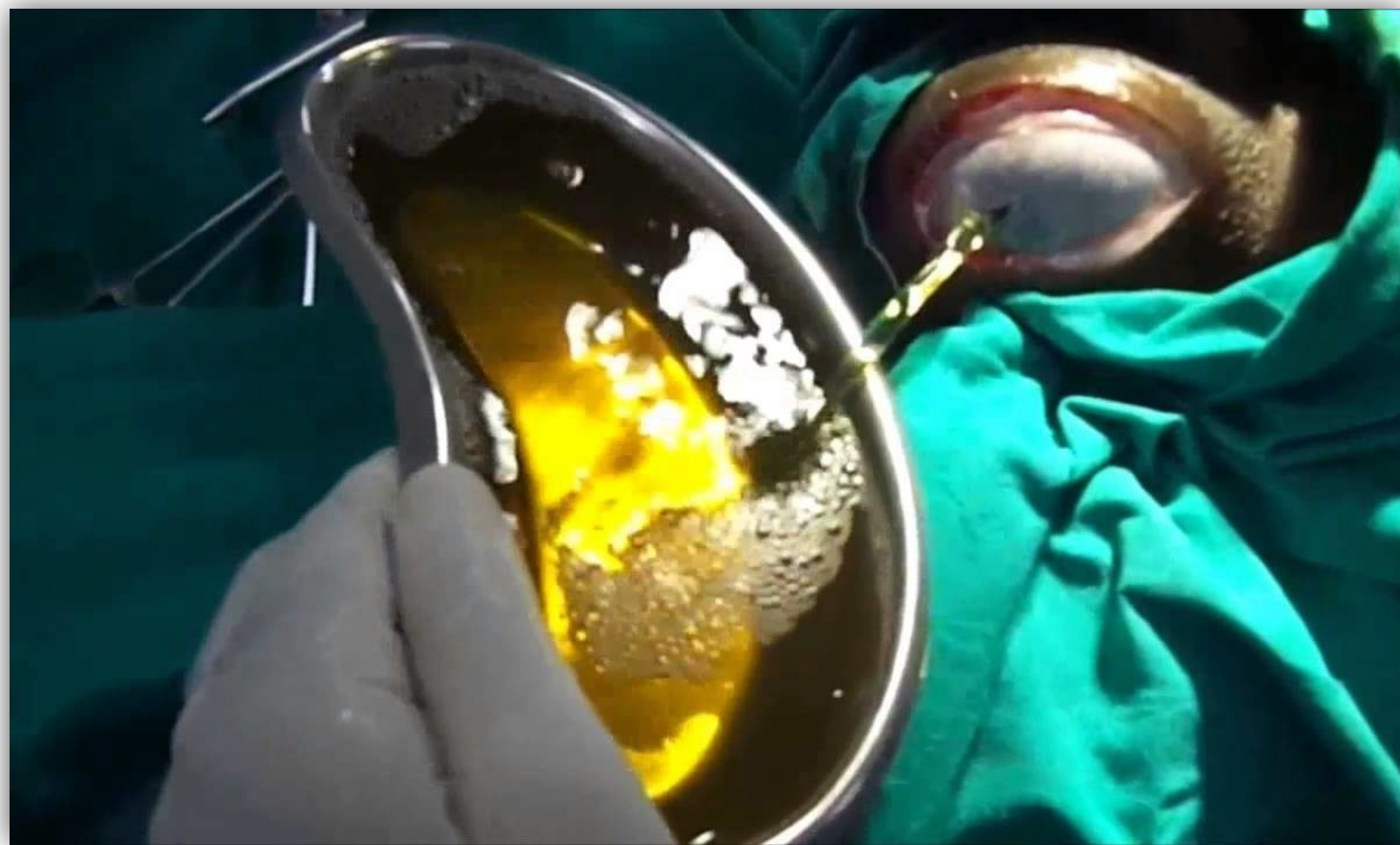
- A hydrocele can develop as a result of injury or inflammation within the scrotum. Inflammation might be caused by an infection in the testicle or in the small, coiled tube at the back of each testicle (epididymitis).

DIAGNOSIS

- Checking for tenderness in an enlarged scrotum.
- Applying pressure to the abdomen and scrotum to check for inguinal hernia.
- Shining a light through the scrotum (transillumination). If you or your child has a hydrocele, transillumination will show clear fluid surrounding the testicle.

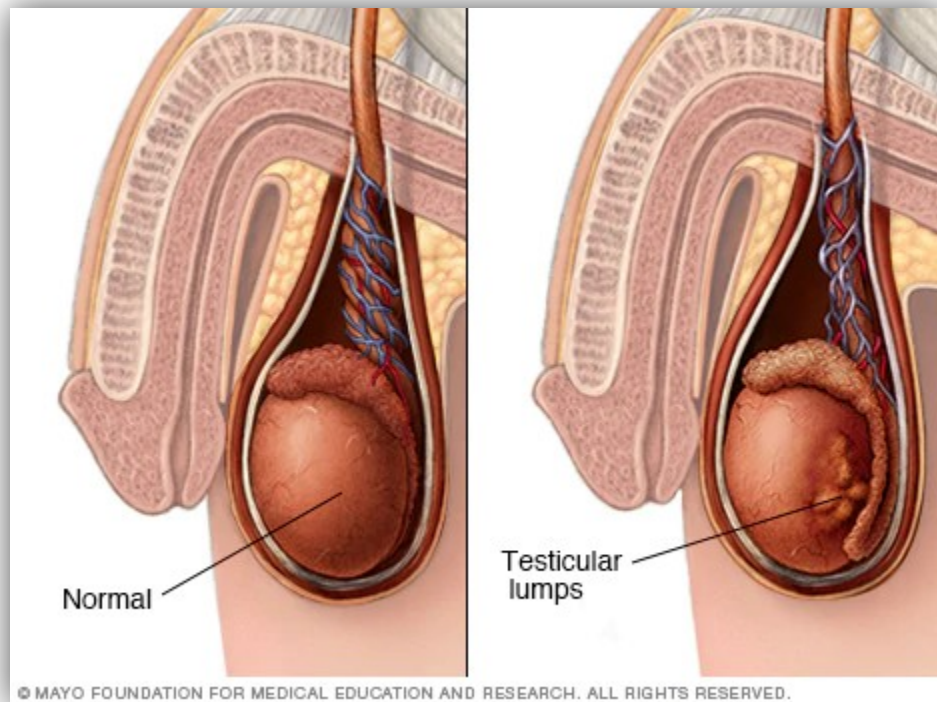
TREATMENT

- baby boys, a hydrocele sometimes disappears on its own. But for males of any age, it's important for a doctor to evaluate a hydrocele because it can be associated with an underlying testicular condition.
- A hydrocele that doesn't disappear on its own might need to be surgically removed, typically as an outpatient procedure. The surgery to remove a hydrocele (hydrocelectomy) can be done under general or regional anesthesia. An incision is made in the scrotum or lower abdomen to remove the hydrocele. If a hydrocele is found during surgery to repair an inguinal hernia, the surgeon might remove the hydrocele even if it's causing no discomfort.
- After hydrocelectomy, you might need a tube to drain fluid and a bulky dressing for a few days. Your doctor is likely to recommend a follow-up examination because a hydrocele might recur.



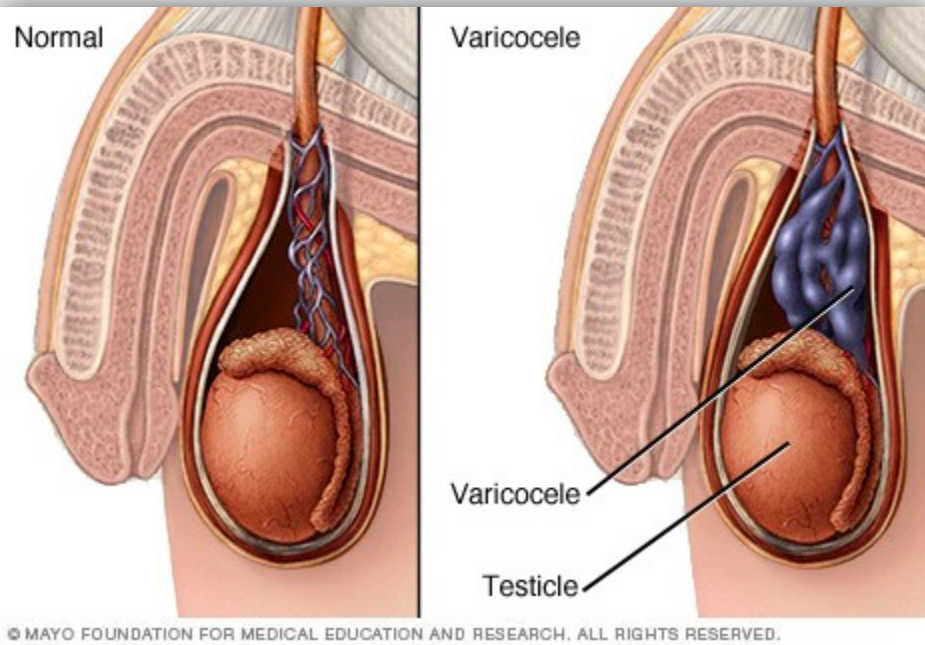
TESTICULAR CANCER

- Testicular cancer occurs in the testicles (testes), which are located inside the scrotum, a loose bag of skin underneath the penis. The testicles produce male sex hormones and sperm for reproduction.
- Compared with other types of cancer, testicular cancer is rare. But testicular cancer is the most common cancer in American males between the ages of 15 and 35.
- Testicular cancer is highly treatable, even when cancer has spread beyond the testicle. Depending on the type and stage of testicular cancer, you may receive one of several treatments, or a combination.



varicocele

- A varicocele (VAR-ih-koe-seel) is an enlargement of the veins within the loose bag of skin that holds your testicles (scrotum). A varicocele is similar to a varicose vein you might see in your leg.
- Varicoceles are a common cause of low sperm production and decreased sperm quality, which can cause infertility. However, not all varicoceles affect sperm production. Varicoceles can also cause testicles to fail to develop normally or shrink.



SYMPTOMS

- A varicocele often produces no signs or symptoms. Rarely, it might cause pain. The pain may:
 - Vary from sharp to dull discomfort
 - Increase with standing or physical exertion, especially over long periods
 - Worsen over the course of a day
 - Be relieved when you lie on your back
 - Impaired fertility

CAUSES

- However, many experts believe a varicocele forms when the valves inside the veins in the cord prevent your blood from flowing properly. The resulting backup causes the veins to widen (dilate). This might cause damage to the testicle and result in worsened fertility.
- Varicoceles often form during puberty. Varicoceles usually occur on the left side, most likely because of the position of the left testicular vein.

DIAGNOSIS

- If you have a smaller varicocele, your doctor might ask you to stand, take a deep breath and hold it while you bear down (Valsalva maneuver). This helps your doctor detect abnormal enlargement of the veins.

TREATMENT

- Varicocele treatment might not be necessary. Many men with varicoceles are able to father a child without any treatment. However, if your varicocele causes pain, testicular atrophy or infertility or if you are considering assisted reproductive techniques, you might want to undergo varicocele repair.
- The purpose of surgery is to seal off the affected vein to redirect the blood flow into normal veins. In cases of male infertility, treatment of a varicocele might improve or cure the infertility or improve the quality of sperm if techniques such as in vitro fertilization (IVF) are to be used.

PRIAPISM

- Priapism is a prolonged erection of the penis. The persistent erection continues hours beyond or isn't caused by sexual stimulation. Priapism is usually painful.
- Although priapism is an uncommon condition overall, it occurs commonly in certain groups, such as people who have sickle cell anemia. Prompt treatment for priapism is usually needed to prevent tissue damage that could result in the inability to get or maintain an erection (erectile dysfunction).
- Priapism most commonly affects men in their 30s and older.

TYPES

Ischemic priapism

- Ischemic priapism, also called low-flow priapism, is the result of blood not being able to leave the penis. It's the more common type of priapism. Signs and symptoms include:
- Erection lasting more than four hours or unrelated to sexual interest or stimulation
- Rigid penile shaft, but the tip of penis (glans) is soft
- Progressive penile pain

Nonischemic priapism

- Nonischemic priapism, also known as high-flow priapism, occurs when penile blood flow isn't regulated appropriately. Nonischemic priapism is usually less painful than ischemic priapism. Signs and symptoms include:
- Erection lasting more than four hours or unrelated to sexual interest or stimulation
- Erect but not fully rigid penile shaft

CAUSES

Blood disorders

- Sickle cell anemia
- Leukemia
- Other hematologic dyscrasias, such as thalassemia, multiple myeloma and others
- The most common associated diagnosis in children is sickle cell anemia.

Prescription medications

- Antidepressants, such as fluoxetine (Prozac), bupropion (Wellbutrin)
- Medications used to treat anxiety or psychotic disorders, such as hydroxyzine, risperidone (Risperdal), olanzapine (Zyprexa), lithium, clozapine, chlorpromazine and thioridazine
- Blood thinners, such as warfarin (Coumadin) and heparin
- Hormones such as testosterone or gonadotropin-releasing hormone
- Medications used to treat attention-deficit/hyperactivity disorder (ADHD), such as atomoxetine (Strattera)

Alcohol and drug use

- Alcohol, marijuana, cocaine and other illicit drug abuse can cause priapism, particularly ischemic priapism.

TREATMENT

Therapies

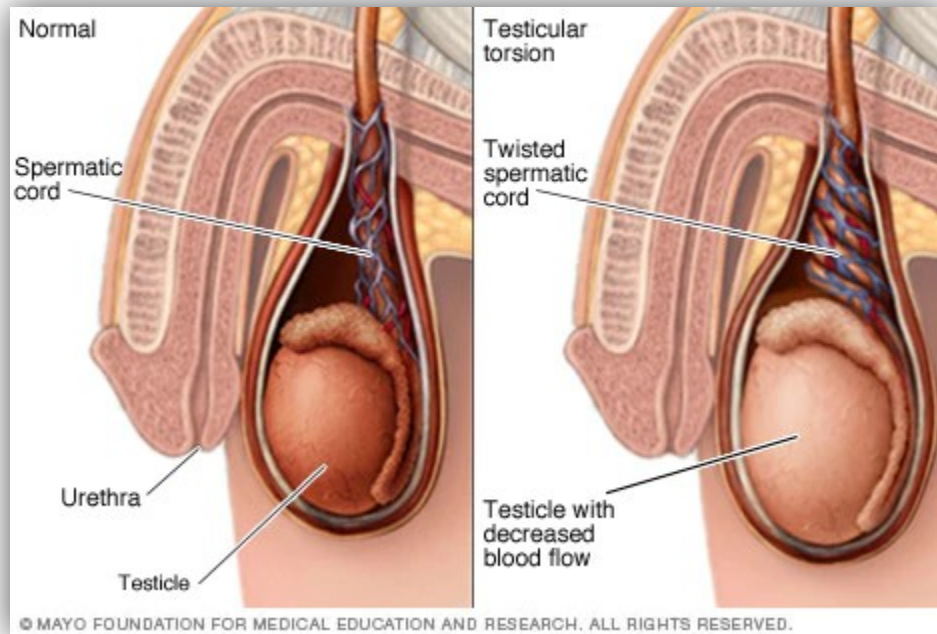
- Excess blood is drained from your penis using a small needle and syringe (aspiration). As part of this procedure, the penis might also be flushed with a saline solution. This treatment often relieves pain, removes oxygen-poor blood and might stop the erection. This treatment might be repeated until the erection ends.

Medications

- A sympathomimetic medication, such as phenylephrine, might be injected into the penis. This drug constricts blood vessels that carry blood into the penis. This action allows blood vessels that carry blood out of the penis to open up and allow increased blood flow out.

Testicular torsion

- Testicular torsion occurs when a testicle rotates, twisting the spermatic cord that brings blood to the scrotum. The reduced blood flow causes sudden and often severe pain and swelling.
- Testicular torsion is most common between ages 12 and 18, but it can occur at any age, even before birth.



causes

- Testicular torsion occurs when the testicle rotates on the spermatic cord, which brings blood to the testicle from the abdomen. If the testicle rotates several times, blood flow to it can be entirely blocked, causing damage more quickly.
- It's not clear why testicular torsion occurs. Most males who get testicular torsion have an inherited trait that allows the testicle to rotate freely inside the scrotum. This inherited condition often affects both testicles. But not every male with the trait will have testicular torsion.

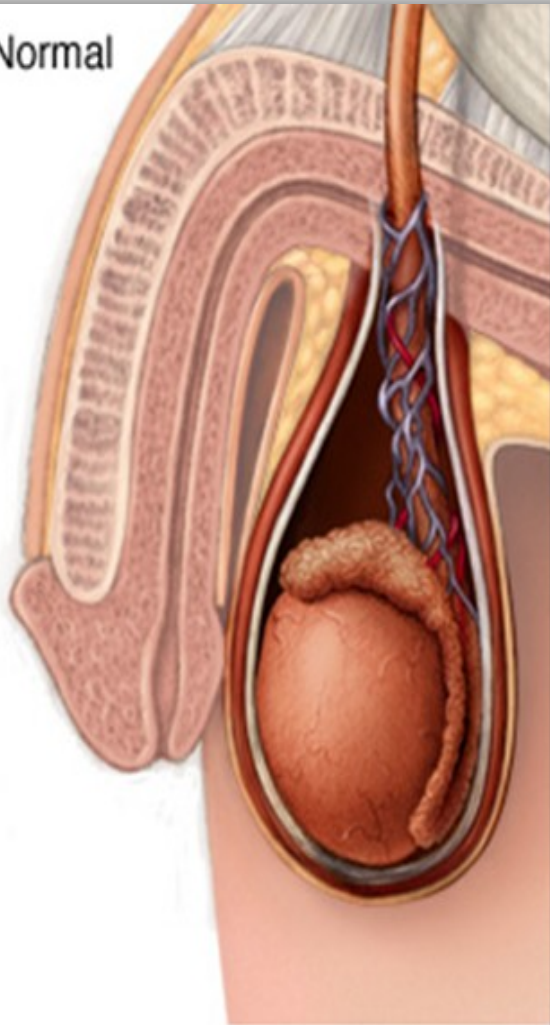
Treatment

- Surgery is required to correct testicular torsion. In some instances, the doctor might be able to untwist the testicle by pushing on the scrotum (manual detorsion). But you'll still need surgery to prevent torsion from occurring again.
- Surgery for testicular torsion is usually done under general anesthesia. During surgery, your doctor will make a small cut in your scrotum, untwist your spermatic cord, if necessary, and stitch one or both testicles to the inside of the scrotum.

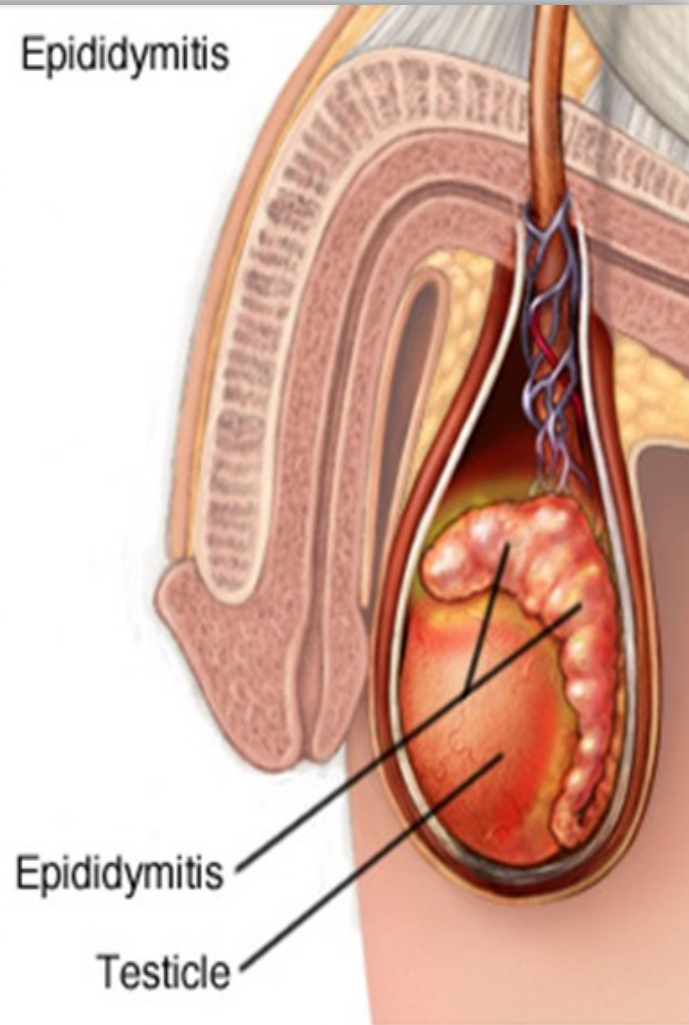
Epididymitis

- Epididymitis is an inflammation of the coiled tube (epididymis) at the back of the testicle that stores and carries sperm. Males of any age can get epididymitis.

Normal



Epididymitis



Epididymitis

Testicle

causes

- **STIs.** Gonorrhea and chlamydia are the most common causes of epididymitis in young, sexually active men.
- **Other infections.** Bacteria from a urinary tract or prostate infection might spread from the infected site to the epididymis. Also, viral infections, such as the mumps virus, can result in epididymitis.
- **Urine in the epididymis (chemical epididymitis).** This condition occurs when urine flows backward into the epididymis, possibly because of heavy lifting or straining.
- **Trauma.** A groin injury can cause epididymitis.
- **Tuberculosis.** Rarely, epididymitis can be caused by tuberculosis infection.

Treatment

- Antibiotics are needed to treat bacterial epididymitis and epididymo-orchitis. If the cause of the bacterial infection is an STI, your sexual partner also needs treatment. Take the entire course of antibiotics prescribed by your doctor, even if your symptoms clear up sooner, to ensure that the infection is gone.
- You should start to feel better within 48 to 72 hours of starting an antibiotic.