

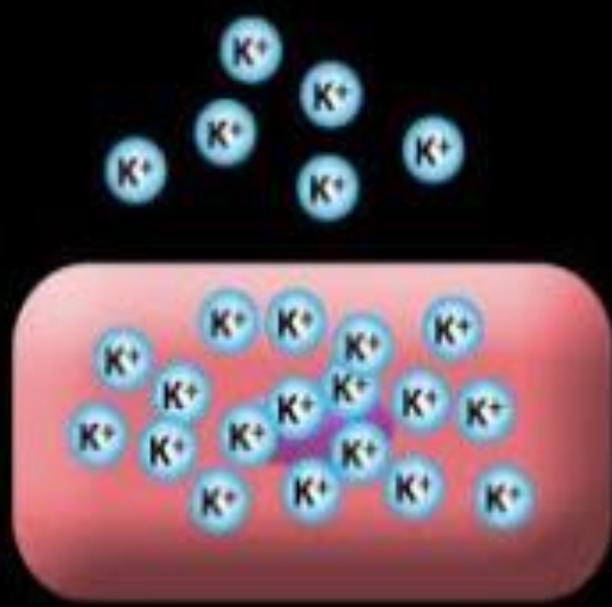


P O T A S S I U M

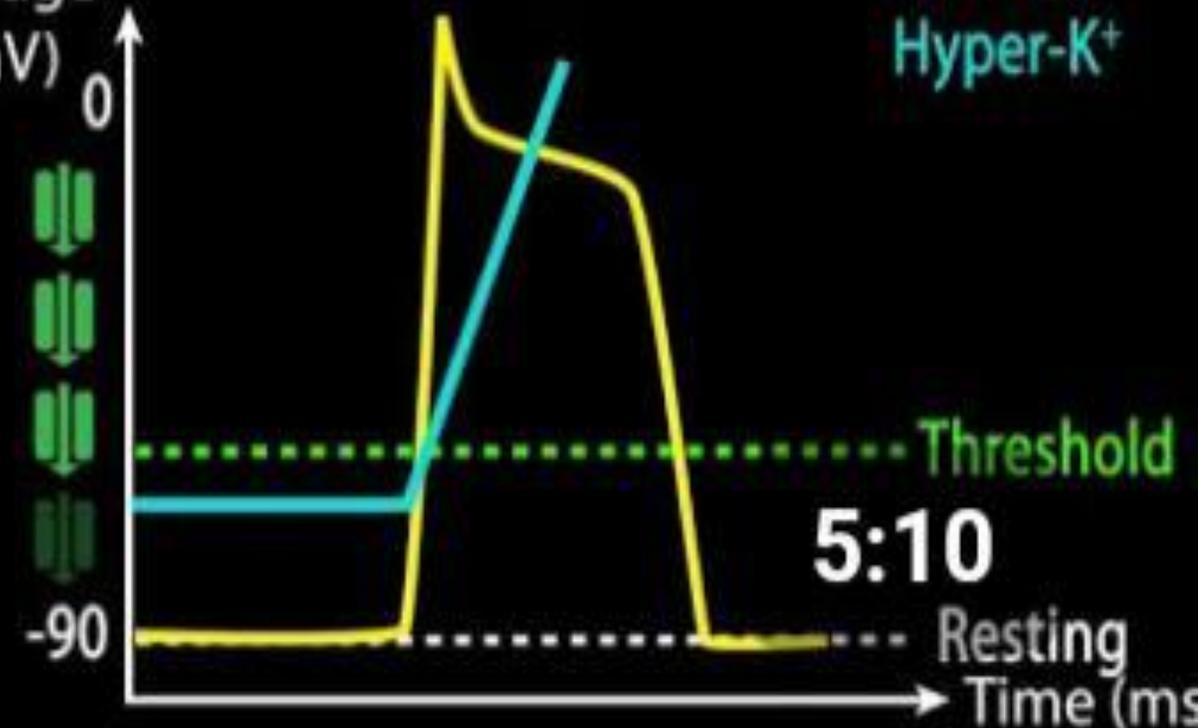
IMBALANCE



Hyperkalemia



Voltage (mV)



Normal
Hyper- K^+

5:10

Threshold

Resting

Time (ms)

DEFINITION

- ▶ **Hyperkalemia means an abnormally elevated level of potassium in the blood. The normal potassium level in the blood is 3.5-5.0 milliequivalents per liter (mEq/L). Potassium levels between 5.1 mEq/L to 6.0 mEq/L reflect mild hyperkalemia. Potassium levels of 6.1 mEq/L to 7.0 mEq/L are moderate hyperkalemia, and levels above 7 mEq/L are severe hyperkalemia.**

CAUSES

The most common cause of genuinely high potassium (hyperkalemia) is related to your kidneys, such as:

- ▶ **Acute kidney failure**
- ▶ **Chronic kidney disease**

- ▶ **Other causes of hyperkalemia include:**
- ▶ **Addison's disease (adrenal insufficiency)**
- ▶ **Angiotensin II receptor blockers**
- ▶ **Angiotensin-converting enzyme (ACE) inhibitors**
- ▶ **Beta blockers**
- ▶ **Dehydration**
- ▶ **Destruction of red blood cells due to severe injury or burns**
- ▶ **Excessive use of potassium supplements**

SYMPTOMS

- ▶ tiredness or weakness
- ▶ a feeling of numbness or tingling
- ▶ nausea or vomiting
- ▶ trouble breathing

▶ chest pain

▶ palpitations or irregular heartbeats

▶ In extreme cases, high potassium can cause paralysis or heart failure. If left untreated, high potassium levels can cause your heart to stop

MANAGEMENT

- ▶ A diet low in potassium (for mild cases).
- ▶ Discontinue medications that increase blood potassium levels.
- ▶ Intravenous administration of glucose and insulin, which promotes movement of potassium from the extracellular space back into the cells.

- ▶ **Intravenous calcium to temporarily protect the heart and muscles from the effects of hyperkalemia.**
- ▶ **Sodium bicarbonate administration to counteract acidosis and to promote movement of potassium from the extracellular space back into the cells.**
- ▶ **Diuretic administration to decrease the total potassium stores through increasing potassium excretion in the urine. It is important to note that most diuretics increase kidney excretion of potassium.**

- ▶ Medications that stimulate beta-2 adrenergic receptors, such as albuterol and epinephrine, have also been used to drive potassium back into cells.
- ▶ Medications known as cation-exchange resins, which bind potassium and lead to its excretion via the gastrointestinal tract.
- ▶ Dialysis, particularly if other measures have failed or if renal failure is present.

HYPOKALEMIA

DEFINITION

- ▶ Hypokalemia is a low level of potassium (K^+) in the blood serum.

CAUSES

- ▶ **Alcohol use (excessive)**
- ▶ **Chronic kidney disease.**
- ▶ **Diabetic ketoacidosis.**
- ▶ **Diarrhea.**
- ▶ **Diuretics (water retention relievers)**
- ▶ **Excessive laxative use.**
- ▶ **Excessive sweating.**
- ▶ **Folic acid deficiency.**

SYMPTOMS

- ▶ **Weakness and fatigue (most common)**
- ▶ **Muscle cramps and pain (severe cases)**
- ▶ **Worsening diabetes control or polyuria.**
- ▶ **Palpitations.**
- ▶ **Psychological symptoms (eg, psychosis, delirium, hallucinations, depression)**

MANAGEMENT

- ▶ **stopping or reducing the dosages of any medicines that can cause low potassium**
- ▶ **taking daily potassium supplements**
- ▶ **eating more foods rich in potassium, such as fruits and vegetables**

- ▶ **taking medications that can increase potassium levels in the body, such as angiotensin converting enzyme inhibitors or angiotensin receptor blockers**
- ▶ **Potassium occurs naturally in a wide range of foods, including fruits, vegetables, meats, dairy products, nuts, and whole grains. The body absorbs around 85 to 90% of the potassium in food sources**

Thank
you