

Severe hypokalemia

A plain-English guide for you and your family

WHAT IS HAPPENING

Potassium is a tiny charged particle that lives mostly inside every cell in your body. Its main job is to help muscles (including your heart) squeeze and relax on command, and to keep nerves firing messages smoothly. Your body keeps potassium in a tight range—between 3.5 and 5.0 mEq/L in the blood—because even small drops can turn dangerous. Severe low potassium (hypokalemia) means the level falls below 2.5, or any level where the heart starts beating wrong, muscles go weak or paralyzed, or the gut stops moving. This happens in three main ways: losing potassium through vomit or diarrhea (GI loss), peeing it out because of diuretic pills or kidney disease (renal loss), or a sudden shift when insulin or asthma medicine pushes potassium from blood into cells where we cannot measure it. Once potassium drops, the electrical system that tells your heart and muscles when to fire goes haywire. You might feel weak, your belly might bloat and stop moving food along (called a stalled gut (ileus)), and the heart monitor shows warning shapes—an extra hump called a U wave and a long pause before the next beat (long QT). If it keeps dropping, the heart can spiral into a deadly rhythm called torsades de pointes, or your breathing muscles can give out. The good news: if we catch it, replace potassium carefully through an IV, fix magnesium at the same time (because low magnesium makes it impossible to hold onto potassium), and stop the leak or shift, the whole cascade reverses—strength comes back, the gut wakes up, the heart steadies, and the danger passes.

What you might feel

- Muscle weakness (especially in the legs and arms)
- Muscle cramps or twitching
- Constipation or bloating (gut slows down)
- Heart palpitations (feeling your heart skip, flutter, or race)
- Abnormal EKG (flattened T waves, U waves, prolonged QT interval)
- Feeling very tired or weak all over
- Numbness or tingling (paresthesias)
- Nausea or vomiting

- Increased urination (polyuria)
- Breathing trouble (if very severe — respiratory muscle weakness)

Call the doctor right away if...

- Chest pain, severe palpitations, or fainting (risk of dangerous heart rhythm — ventricular a fast heart rate (tachycardia) or torsades de pointes)
- Severe muscle weakness or paralysis (risk of respiratory failure if breathing muscles stop working)
- Potassium below 2.5 mEq/L (very high risk of life-threatening arrhythmia)
- New confusion or altered mental status (may signal severe metabolic derangement)
- Shortness of breath or difficulty breathing (may mean diaphragm weakness or heart failure)

What the care team will do

- Place patient on continuous telemetry (heart monitor) and watch for T-wave flattening, U-waves, ST depression, or arrhythmias on the monitor screen
- Start IV potassium chloride through a central line at 10 to 20 mEq per hour, never faster than 20 mEq per hour, and never give IV push
- Check serum magnesium level and give IV magnesium sulfate 1 to 2 grams over 15 minutes if magnesium is low, then start continuous infusion
- Recheck serum potassium level every 2 to 4 hours during replacement and after each change in infusion rate
- Measure and record all urine output, vomit, and diarrhea amounts every hour
- Assess muscle strength by asking patient to squeeze your fingers, lift legs against gravity, and take a deep breath every 2 hours
- Hold all diuretics, laxatives, and beta-agonist nebulizers unless provider specifically reorders them
- Switch to oral potassium chloride 40 to 60 mEq every 4 hours only after nausea stops, bowel sounds are present, and serum potassium is above 2.5 mEq per L

Medicines you may be given — and why

Potassium chloride (KCl) - intravenous (IV)

This medicine delivers potassium straight into the bloodstream to raise the blood potassium level quickly. Potassium is a mineral the body needs so muscles can squeeze, the heart can beat smoothly, and nerves can send signals. When potassium drops dangerously low (under 2.5 or if the heart rhythm is off or muscles are very weak), the body cannot wait for pills to work slowly

through the stomach, so doctors push potassium directly into a vein. The chloride part helps the kidneys hold onto the potassium and also fixes low chloride, which often happens at the same time and makes the potassium problem worse.

Potassium chloride (KCl) - oral (by mouth)

These pills or liquids deliver potassium through the stomach and intestines into the blood. The intestines absorb the potassium, and it travels through the bloodstream to cells all over the body. Oral potassium is slower than IV but works well when the patient can swallow, is not vomiting, and the potassium level is not so low that the heart is in immediate danger. Doctors often switch from IV to oral once the level climbs above 3.0 and the person is stable.

Magnesium sulfate (IV) or magnesium oxide/chloride (oral)

Magnesium is a mineral that acts like a helper for potassium. The sodium-potassium pumps that move potassium into cells need magnesium to work properly. When magnesium is low (which happens often alongside low potassium, especially with vomiting, diarrhea, or diuretics), the pumps cannot hold potassium inside cells, so even if doctors give potassium, it leaks back out and the blood level stays low. Replacing magnesium fixes the pumps so potassium can finally stay where it belongs. Magnesium also calms overexcited nerves and muscles.

Spironolactone

Spironolactone blocks aldosterone, a hormone made by the adrenal glands (two small glands that sit on top of the kidneys). Aldosterone tells the kidneys to dump potassium into the urine and hold onto sodium and water. When potassium keeps dropping because of too much aldosterone (a condition called hyperaldosteronism, which can happen from a tumor, heart failure, or liver disease) or because of diuretic pills that waste potassium, spironolactone steps in and tells the kidneys to STOP throwing away potassium. It also helps the body get rid of extra fluid without losing potassium, which is why it is called a potassium-SPARING diuretic.

Where this information comes from

- UpToDate Clinical Manifestations and Treatment of Hypokalemia 2023
- American Heart Association (AHA) Guidelines on Electrolyte Management
- National Kidney Foundation (NKF) Potassium Disorders Guideline
- Cochrane Systematic Review on Potassium Replacement

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