

Special situations

MANAGING THE PATIENT WITH HYPERKALEMIA

Hyperkalemia may occur for a variety of reasons (e.g., renal failure or medication effects), and commonly occurs in patients in shock, often as a result of hypoperfusion and / or acidosis.

Life-threatening hyperkalemia manifests as cardiac conduction abnormalities, which are evident on ECG analysis as peaked T waves, shortened P-R interval, loss of P waves, widened QRS, sine wave, and ultimately asystole. Unfortunately, these may occur unpredictably and progress rapidly.



Treatments

Calcium chloride should be administered for patients with hyperkalemia and ECG changes to stabilize the depolarization threshold in the myocardium.

Calcium gluconate may be considered as an alternative, but contains only one third of the calcium per gram.

Insulin supplementation (usually given with dextrose to prevent hypoglycemia) and **beta agonists** (e.g., albuterol, epinephrine) help to drive potassium intracellularly, lowering serum potassium levels.

Sodium bicarbonate should be reserved for cases of acidosis, and should be given through an **isotonic infusion**. Rapid administration of hypertonic sodium bicarbonate amps may exacerbate hyperkalemia.

IV fluids may help potassium excretion and organ perfusion. Acidotic fluids like 0.9% sodium chloride should be avoided because acidosis will exacerbate hyperkalemia. If the only pH-balanced solution available contains potassium (e.g., lactated Ringer's), this may still be preferable, and will still lower serum potassium levels, provided the infused concentration is below that of the serum (e.g., 4 mEq / L, as in the case of lactated Ringer's).

Potassium elimination may be achieved through renal excretion when possible (augmented by **potassium-wasting diuretics**), enteral elimination (although this is not effective in the short term, and risks gastrointestinal injury), or **dialysis** (especially in cases where renal function is inadequate).