Case Study #1
A 72-year-old man with coronary artery disease, diabetes, and recently diagnosed congestive heart failure presented to the emergency department (ED) with chest pain. An acute myocardial infarction was ruled out. Because his admission medication regimen did not include an angiotensin-converting enzyme (ACE) inhibitor, one was started before discharge. He had no known renal dysfunction. Two weeks later, he presented to the ED with fatigue, lethargy, and a critically elevated serum potassium level. Shortly thereafter, he suffered a cardiac arrest and died.
The history is most valuable in identifying conditions that may predispose patients to hyperkalemia.

Hyperkalemia can be difficult to diagnose clinically because complaints may be vague.

Hyperkalemia frequently is discovered as an incidental laboratory finding or ECG abnormality.

Cardiac and neurologic symptoms predominate.

Patients may be asymptomatic or report the following:

* Generalized fatigue
* Weakness
* Paresthesias
* Paralysis
* Palpitations

Hyperkalemia is suggested in any patient with a predisposition toward elevated potassium level. Potential potassium level elevation is observed in the following:

- Acute or chronic renal failure, especially in patients who are on dialysis
- Trauma, including crush injuries (rhabdomyolysis), or burns
- Ingestion of foods high in potassium (e.g., bananas, oranges, high-protein diets, tomatoes, salt substitutes). This alone is not likely to cause clinically significant hyperkalemia in most people; it is often a contributing factor to an acute potassium elevation
- Medications - Potassium supplements, potassium-sparing diuretics, nonsteroidal anti-inflammatory drugs (NSAIDs), beta-blockers, digoxin, succinylcholine, and digitalis glycoside
- **Medication combinations (i.e., spironolactone, ACE inhibitors)**
  - Spirolactone is commonly used in patients with heart failure
- Redistribution - Metabolic acidosis (diabetic ketoacidosis [DKA]), catabolic states

**Prehospital Care:**

A patient with known hyperkalemia or a patient with renal failure with suspected hyperkalemia should have intravenous access established and should be placed on a cardiac monitor. In the presence of hypotension or marked QRS widening, intravenous bicarbonate, calcium, and insulin given together with 50% dextrose may be appropriate as per protocol. Avoid calcium if digoxin toxicity is suspected. Magnesium sulfate (2 g over 5 min) may be used alternatively in the face of digoxin-toxic cardiac arrhythmias. Always be aware of home medications and obtain list to include in patient handoff/report if possible.