3H HYPERGLYCEMIA

PATIENT CARE GOALS

- Identify and treat potential life threats associated with an elevated blood glucose level. [1]
- Restore hydration and maintain adequate oxygenation, ventilation, and perfusion.
- Initiate or continue normalization of blood glucose level and electrolytes.[2]

EMT

1. Assess the patient and provide initial care, including oxygen and vascular access, per **1B General Assessment and Care**.[1]
2. Obtain initial blood glucose level.

PARAMEDIC

ADULT	PEDIATRIC (less than 60 kg)
3. If the patient has an elevated blood glucose level and is showing signs and symptoms of DKA[3], start two large bore IVs and administer 2 liters normal saline wide open, monitoring for fluid overload. 4. For non-DKA patients administer 1 liter normal saline, and monitor for fluid overload. • Hyperosmolar hyperglycemic non-ketotic coma (HHNC) will usually require large fluid volumes.[5] 5. Recheck the blood glucose level prior to arrival at hospital.	3. If the patient has elevated blood glucose level and is showing signs and symptoms of DKA[3], administer a fluid bolus in accordance to **Handtevy Pediatric Guidelines**.[4] 4. Recheck the blood glucose prior to arrival at hospital.

DOCUMENTATION KEY POINTS

- Initial and subsequent blood glucose levels.
- Fluid input and output, both prior to arrival, if known, and fluids given during treatment.
- Initial and ongoing assessments, monitoring, interventions, patient response, and complications (if any) encountered.

NOTES

[1] **Hyperglycemia** presents as an elevated blood glucose level (almost always greater than 300mg/dl), along with increased thirst, hunger and urine production, generalized weakness, and dry skin and

mucous membranes. Continued progression of hypovolemia and ketoacidosis may lead to tachycardia, dysrhythmias, hyperventilation (Kussmaul respirations), hypotension, and altered mental status. Fruity or acetone odor may be noted on the patient's breath. Provide treatments based on the patient's overall clinical status and not just the blood glucose level.

[2] Significantly hyperglycemic patients (those with a blood glucose level of greater than 300 mg/dL) are at high risk for severe dehydration, electrolyte imbalance, and dysrhythmias. They should be strongly encouraged to be evaluated at an emergency department.

[3] **DKA** should be suspected in an insulin dependent diabetic with hyperglycemia and signs and symptoms such as;

- altered mental status
- frequent urination
- extreme thirst
- nausea
- vomiting
- abdominal pain
- breath that smells fruity
- a flushed face
- fatigue
- rapid breathing
- dry mouth and skin

[4] **Fluid therapy:** Use caution when providing IV/IO fluid therapy in the pediatric population, due to an increased risk of cerebral edema as a result of excessive fluids.

Handtevy pediatric fluid bolus guidelines:

- **Patients up to 4 months old:** Administer a 10 ml/kg normal saline bolus.
- **Patients 4 months to 11 years old:** Administer a 20 ml/kg normal saline bolus.
- **Patients greater than 11 years old:** Administer a 1 Liter normal saline bolus.

[5] Hyperosmolar hyperglycemic **non-ketotic coma (HHNC)** usually occurs in older persons with Type II diabetes or alcoholism. Patients are often severely dehydrated with a blood glucose level greater than 800 mg/dl, unconscious or obtunded, flaccid, and non-tachypneic. Treatment is similar to patients in ketoacidosis, however patients with hyperosmolar hyperglycemic non-ketotic coma (HHNC) generally require greater fluid replacement and less insulin. Up to 10 to 12 liters of a crystalloid fluid may ultimately be required.