Pediatric Diabetic

History
- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms
- Altered mental status
- Combative/ irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea/ vomiting
- Weakness
- Dehydration
- Deep/ rapid breathing

Differential
- Alcohol/ drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.

	Blood Glucose Analysis Procedure
B	12 Lead ECG Procedure ***if indicated***
	IV or IO Access Protocol UP 6
P	Cardiac Monitor
	Altered Mental Status Protocol UP 4 ***if indicated***
	Hypotension/ Shock Protocol AM 5 ***if indicated***
	Seizure Protocol UP 13 ***if indicated***

A	***Blood glucose ≤ 69 mg/dl Symptomatic with NO IV / IO Access:*** Awake, alert and able to tolerate oral agent: Give **oral glucose solution**. If unable to tolerate oral: **Glucagon 0.1 mg/kg IM (Maximum 1 mg)** Repeat every 15 minutes as needed to keep Blood glucose > 60 mg / dl.

Blood Sugar ≤ 69 mg / dl

	Oral Glucose ½ to 1 Tube If age appropriate
	Consider Oral Solution (Juices / Food)
A	<u>< 1 Year of Age:</u> **D10 (or D5): 5 mL/kg IV / IO** Repeat as needed <u>1 to 2 Years:</u> **D25: 2 mL/kg IV / IO** **D10 (or D5): 5 mL/kg IV / IO** Repeat as needed <u>> 2 Years:</u> **D50: 1 mL/kg IV / IO** **D10 (or D5): 5 mL/kg IV / IO** **Maximum 25 g per dose** Repeat as needed

Blood Sugar 70 – 249 mg / dl

	Blood Glucose Analysis Procedure ***if condition changes***

Exit to Appropriate Protocol(s)

Blood Sugar ≥ 250 mg / dl

A	**Normal Saline Bolus 10 - 20 mL/kg IV / IO** **Maximum 20 mL/kg**

	Monitor and Reassess Every 5 minutes Until Blood Glucose ≥ 80 mg / dl

Notify Destination or Contact Medical Control

Pediatric Medical Protocol Section

Pediatric Diabetic

Dextrose Dosing Regimen: Rule of 50

Newborn to 1 year: D10 - 5 mL/kg IV / IO	(D10 x 5 mL/kg = 50)
1 year to 2 years: D25 – 2 mL/kg IV / IO	(D25 x 2 mL/kg = 50)
≥ 2 years: D50 – 1 mL/kg IV / IO	(D50 x 1 mL/kg = 50)

Feeding:

- Feeding the awake patient who is able to swallow is good strategy.
- Follow the 15 – 15 Rule, 15 g of carbohydrates and recheck blood glucose in 15 minutes, and repeat as needed.
- Regular soda, fruit just, honey, sugary candy.
- Once hypoglycemia corrected, then feed protein or fatty food.

Hypoglycemia:

D10 is the preferred agent and may be used in all age ranges. If patient demonstrates evidence of volume overload, and if available, more concentrated formulations should be used based on the Rule of 50.
Due to continued drug shortages we may utilize D5 solutions and use the D10 dosing regimen.

Hyperglycemia:

Diabetic ketoacidosis (DKA) is a complication of diabetes and cannot be diagnosed in the field but can be suspected.
DKA is a condition where the body cannot properly utilize insulin to effect glucose metabolism. The body compensates by breaking down fats and proteins leading to a metabolic acidosis. The body also begins to dump excess glucose by excessive urination. Patients typically appear dehydrated, ill and usually have tachypnea.

Patients can have marked hyperglycemia without being in DKA. DKA can occur at any level of hyperglycemia typically above 200 mg/dl.

Glucagon:

- If IV / IO access is obtained after glucagon administration and the patient remains symptomatic, then give Dextrose as per appropriate treatment arm.

Insulin Pump:

If patient is hypoglycemic turn off the patient's insulin pump. Elicit help from the patient, when able, and/ or the family who typically are well versed in it's operation.

Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Respirations and effort, Abdomen, Neuro.**
- **Patients with prolonged hypoglycemia or those who are malnourished my not respond to glucagon.**
- **Do not administer oral glucose to patients that are not able to swallow or protect their airway.**
- **Quality control checks should be maintained per manufacturers recommendation for all glucometers.**
- **D10/ D25 Preparation:**
  D10: Remove 10 mL of D50 from a D50 vial. Add 40 mL of NS with the 10 mL of D50 with a total volume of 50 mL.
  D10: Alternative, Discard 40 mL from the D50 vial and draw up 40 mL of NS with a total volume of 50 mL.
  D25: Remove 25 mL of D50 and draw up 25 mL of NS with a total volume of 50 mL.
- **Patient's refusing transport to medical facility after treatment of hypoglycemia:**
  Adult caregiver must be present with pediatric patient.
  Blood sugar must be ≥ 80, patient has ability to eat and availability of food with responders on scene.
  Patient must have known history of diabetes and not taking any oral diabetic agents.
  Patient returns to normal mental status and has a normal neurological exam with no new neurological deficits.
  Must demonstrate capacity to make informed health care decisions. See Universal Patient Care Protocol UP-1.
  Otherwise contact medical control.
- **Hypoglycemia with Oral Agents:**
  Patients taking oral diabetic medications should be strongly encouraged to allow transportation to a medical facility.
  They are at risk of recurrent hypoglycemia that can be delayed for hours and require close monitoring even after normal blood glucose is established.
  Not all oral agents have prolonged action so Contact Medical Control or NC Poison Control Center for advice.
  Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal.
- **Hypoglycemia with Insulin Agents:**
  Many forms of insulin now exist. Longer acting insulin places the patient at risk of recurrent hypoglycemia even after a normal blood glucose is established.
  Not all insulins have prolonged action so Contact Medical Control for advice. Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal.
- In extreme circumstances with no IV and no response to glucagon, Dextrose 50 % can be administered rectally. Contact medical control for advice.