



**Endocrinology - Treatment of Hypoglycemia  
in Children and Adolescents with Diabetes  
Mellitus (Pediatric)**

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DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_ TIME: \_\_\_\_  
DD MM YYYY

WEIGHT: \_\_\_\_ kg HEIGHT: \_\_\_\_ cm

ALLERGY CAUTION sheet reviewed

### Patient Care

▶ If patient has a blood glucose reading of less than 4 mmol/L, follow the hypoglycemia protocol for all following treatments

▶ If patient is alert and can be treated with oral glucose:

For patients 1 to 12 months of age:

- Give sucrose 6 g PO once. 30 mL of 20% sugar water, prepared by mixing 12 grams (three 4 - gram packets) of table sugar in 59 mL of sterile water and shaking for 1 minute

For patients from 1 to less than 5 years of age:

- Give 6 grams fast-acting carbohydrate PO once: Dextrose tablet (Dex4®) 1.5 tablets or 45 mL of orange or apple juice

For patients from 5 to 10 years of age:

- Give 12 grams of fast-acting carbohydrate PO once: Dextrose tablets (Dex4®) 3 tablets or 90 mL of orange or apple juice

For patients greater than 10 years of age:

- Give 16 grams of fast-acting carbohydrate PO once: Dextrose tablets (Dex4®) 4 tablets or 120 mL of orange or apple juice

### Medications

▶ If patient is alert, but CANNOT be treated with oral glucose (e.g. NPO or vomiting):

For patients less than or equal to 2 years of age:

- glucagon 0.02 mg (2 units) subcutaneous once and call MD

For patients 3 to 15 years of age:

- glucagon \_\_\_\_ mg (\_\_\_\_ units) subcutaneous once (0.01 mg (1 unit)/year of age) and call MD

For patients greater than 15 years of age:

- glucagon 0.15 mg (15 units) subcutaneous once and call MD

▶ If patient is unconscious and/or seizing without IV access:

For patients less than 5 years of age:

- glucagon 0.5 mg IM or subcutaneous once and call MD

For patients greater than or equal to 5 years of age:

- glucagon 1 mg IM or subcutaneous once and call MD

### IV Infusions

▶ If patient is unconscious and/or seizing with IV access:

- D10W \_\_\_\_ mL (2 mL/kg) IV bolus (Maximum: 150 mL) and call MD

Signature: \_\_\_\_\_ Print Name: \_\_\_\_\_

College ID: \_\_\_\_\_ Pager: \_\_\_\_\_

# SECTION A: PEDIATRIC HYPOGLYCEMIA MANAGEMENT ALGORITHM FOR PATIENTS WITH DIABETES

**\*NOT FOR USE FOR HYPOGLYCEMIA TREATMENT IN INFANTS <1 MONTH OF AGE\***

**BLOOD GLUCOSE <4 mmol/L (unless otherwise specified in orders)**

1. Assess vital signs and level of consciousness (LOC)

**2. If airway, breathing, vitals and/or LOC compromised, call CODE BLUE or 911 (as per site applicability) and initiate resuscitation**

**Conscious & able to swallow/enteral access  
(includes tube feeds/modified diets)**

## 1A. Give fast-acting carbohydrate orally:

- **6 grams** for children <5 years of age
- **12 grams** for children 5–10 years of age
- **16 grams** for children >10 years of age

### Suggested treatment options:

- 6 grams =
  - 1–12 months: 30 mL of 20% sugar water\*
  - 1–5 years: 1½ Dex4® tabs or 45 mL juice
- 12 grams = 3 Dex4® tabs or 90 mL juice
- 16 grams = 4 Dex4® tabs or 120 mL juice

**\*20% sugar water: 3 x 4-gram packets table sugar in 59 mL sterile water; shake 1 minute.**

*NOTE: All patients with diabetes should have hypoglycemia treatment supplies in fridge upon admission and through duration of stay*

Tube feeds: If gastric, use juice, and flush pre/post with water. If post-pyloric (NJ), page MD.

## 2A. Recheck blood glucose in 15 minutes

- **If <4.0 mmol/L:** Repeat **Step 1A**. If blood glucose remains below 4.0 mmol/L after repeating **Step 1A** twice, call MD.
- **If ≥4.0 mmol/L:** Proceed to **SECTION B**.

**UNCONSCIOUS (CODE BLUE and Resuscitation initiated) OR NPO/TPN**

1. Attempt to establish IV access and page MD.

2. If unable to achieve IV access within **2 minutes**, proceed with giving glucagon (**Step 1C**).

**IV ACCESS**

Practice Level: RN ONLY

**1B. Obtain order from MD to give 2 mL/kg D10W bolus.**

**CRITICAL CARE TEAM ONLY:** Can consider using D25W/D50W for the glucose bolus at MD's discretion.

## 2B. Recheck blood glucose in 5–10 minutes.

- **If <4.0 mmol/L:**
  - **Patient remains unconscious and/or NPO:** Repeat Step 1B.  
*NOTE: Consider giving IM glucagon (as described in Step 1C), especially if hypoglycemia is from an insulin overdose.*
  - **Patient is conscious and able to swallow:** Proceed to **Step 1A**.
- **If ≥4.0 mmol/L:**
  - **Patient conscious and NPO:** Ensure patient has IV dextrose containing fluids infusing. Proceed to **SECTION B**.
  - **Patient is conscious and able to swallow:** Proceed to **SECTION B**.

**NO IV ACCESS**

Practice Level: RN/LPN/RPN

**1C. Initial treatment of severe hypoglycemia:**

- **If patient unconscious, give glucagon IM/SC, as per MD:**

- 0.5 mg for children <5 years of age
- 1 mg for children ≥5 years of age
- **\*Position pt on side as vomiting may occur**
- **If patient conscious but unable to take PO:** consider use of mini-dose glucagon. Discuss with MD.

## 2C. Recheck blood glucose in 15 minutes.

- **If <4.0 mmol/L:**
  - **Patient remains unconscious and/or NPO:** Repeat **Step 1C**. Call IV team/MD to establish emergency IV/IO access.
  - **Patient is conscious and able to swallow:** Proceed to **Step 1A**.
- **If ≥4.0 mmol/L:**
  - **Patient conscious and NPO:** Establish IV access and start dextrose-containing fluids. Call MD. Proceed to **SECTION B**.
  - **Patient is conscious and able to swallow:** Proceed to **SECTION B**.

## SECTION B: ONGOING MANAGEMENT OF PATIENTS WITH DIABETES, POST HYPOGLYCEMIA TREATMENT

(NOTE: Blood glucose must be  $\geq 4.0$  mmol/L)

Conscious and able to swallow

1. If next meal/snack is **more than 45 minutes** from the present time, give additional snack immediately after successful treatment of hypoglycemia. Snack should consist of carbohydrate and protein (e.g. crackers with cheese or peanut butter or for infants give EBM/Formula)
2. If meal (or usual snack) is **within 45 minutes** from the present time, have the patient eat the meal early, rather than adding an additional meal/snack.

Tube Fed

1. If tube feed is continuous, continue regular feeding schedule at established rate, as per physician's orders.
2. If tube feed is intermittent and **more than 45 minutes** from present time, obtain order for bolus feed as per physician's recommendations.

IV access & unable to receive enteral nutrition (e.g. NPO/unconscious)

1. Ensure maintenance IV fluids contain dextrose; discuss with physician and ask for new order if a solution change is necessary.  
*[NOTE: D10NS run at 3 mL/kg/h provides a glucose infusion rate of 5 mg/kg/min, which meets the physiological needs of most children >1 years of age.]*
2. IV rate should be adjusted to ensure the blood glucose remains in target (e.g. 4–10 mmol/L), as specified by orders. Discuss with physician.

No IV access & unable to receive enteral nutrition (e.g. NPO/unconscious)

1. Discuss treatment options and nutritional plan with physician.

- **Re-check blood glucose 2 hours post hypoglycemia treatment, to ensure it remains  $\geq 4.0$  mmol/L**
  - If  $< 4.0$  mmol/L, initiate appropriate hypoglycemia algorithm (**SECTION A**) and call physician
  - If  $\geq 4.0$  mmol/L, check blood glucose before next meal/snack, bedtime, or as per physician's orders
- **Review possible causes of hypoglycemia, and discuss with physician/care team. Institute prevention measures as appropriate.**

### Contributors:

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