

# University of Minnesota Provides Protocol

“Hyperglycemia,” From Page 23

## UMMC Continuous Intravenous INSULIN Infusion Orders; ADULT (>45 kg)

GOAL: Maintain glucose level between 80–100 mg/dL. Start protocol only if glucose >110 mg/dL x 2. This protocol is not to be used for patients in Diabetic Ketoacidosis (DKA).

### GENERAL

- ✓ Discontinue all currently active insulin orders.
- ✓ Insulin infusions will be provided as 1 unit of regular insulin/mL in 0.9% Sodium Chloride, in 30 mL syringes, unless otherwise requested.
- ✓ If patients are on Parenteral Nutrition/Enteral Feeding, and they are held or cycled, contact MD for specific instructions regarding the insulin infusion.
- ✓ If subcutaneous insulin (correction scale or scheduled) is ordered, discontinue the insulin infusion 2 hr after the 1st dose of Sub-Q insulin.
- ✓ Discontinue this protocol when the patient has achieved glycemic control, and is being transitioned to subcutaneous insulin or no longer requires insulin therapy. See Transition Insulin Orders.

### GLUCOSE MONITORING

- ✓ Bedside glucose monitor (whole blood glucose) Q1H until glucose is stable within 80-110 mg/dL x 4, then Q2H until insulin infusion is discontinued. If subsequent glucose values are outside the 80-110 mg/dL range, measure whole blood glucose Q1H.
- ✓ Obtain a STAT plasma glucose for changes in mental status, diaphoresis, or unexplained tachycardia.

### INITIATION OF CONTINUOUS INSULIN INFUSION PROTOCOL

**STEP ONE.** For initial glucose value, start insulin infusion according to scale below:

Initial glucose value	Action taken
111 – 140 mg/dL	Start insulin infusion @ 1 unit/hour.
141 – 175 mg/dL	Start insulin infusion @ 2 units/hour.
176 – 220 mg/dL	Give 2 units IV bolus of regular insulin and start insulin infusion @ 2 units/hour.
221 – 300 mg/dL	Give 4 units IV bolus of regular insulin and start insulin infusion @ 3 units/hour.
301 – 400 mg/dL	Give 10 units IV bolus of regular insulin and start insulin infusion @ 4 units/hour.

### INITIATION OF CONTINUOUS INSULIN INFUSION PROTOCOL, continued

**STEP TWO.** For 2nd blood glucose value, adjust insulin infusion according to scale below:

Second glucose value	Action taken
<80 mg/dL	Follow instructions for blood glucose value in Step Three.
80 – 110 mg/dL	No changes. Continue current infusion rate.
111 – 400 mg/dL	Increase insulin infusion BY 2 units / hour.
>400 mg/dL	Notify MD.

**STEP THREE.** For all blood glucose values after the 2nd reading, adjust insulin infusion according to scale below:

Blood glucose value	Action taken
<40 mg/dL	Hold insulin infusion. Notify MD. Give 50 mL IV of Dextrose 50%. Recheck blood glucose in 15 min. If <80 mg/dL, repeat 50 ml Dextrose 50%. If recheck glucose > 80 mg/dL, then restart insulin infusion at half previous rate.
40 – 59 mg/dL	Hold insulin infusion. Give 25 mL IV of Dextrose 50%. Recheck blood glucose in 15 minutes. If <80 mg/dL, repeat 25 mL of Dextrose 50%. If recheck glucose >80 mg/dL, then restart insulin infusion at half previous rate.
60 – 79 mg/dL	Hold insulin infusion. Recheck blood glucose in 1 hour. If <80 mg/dL, follow STEP 3 protocol. If recheck glucose >80 mg/dL, then restart infusion at half previous rate.
80 – 110 mg/dL	No changes if blood glucose stable within range. If blood glucose is fluctuating within range, titrate in 0.5 unit increments based on patient response to keep within range.
111 – 175 mg/dL	Increase insulin infusion BY 0.5 – 1 unit/hour.
176 – 220 mg/dL	Increase insulin infusion BY 1 – 2 units/hour.
221 – 260 mg/dL	Increase insulin infusion BY 2 – 3 units/hour.
261 – 300 mg/dL	Increase insulin infusion BY 4 units/hour.
301 – 350 mg/dL	Increase insulin infusion BY 5 units/hour.
351 – 400 mg/dL	Increase insulin infusion BY 6 units/hour.
>400 mg/dL	Notify MD

MD SIGNATURE: \_\_\_\_\_

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