This algorithm is not intended to be used for those individuals with Type 1 diabetes, diabetic ketoacidosis or hyperglycemic hyperosmolar states.

**TARGET RANGE FOR GLYCEMIC CONTROL: 80–140 mg/dL (Generally 110 mg/dL)**

1. Standard drip 100 units/100 mL 0.9% NaCl. Approved IV insulins include Regular, aspart and glulisine
2. Start IV insulin therapy when glucose is above target range. Insulin infusions should be discontinued when
   a. Patient has no history of diabetes and is receiving <1 Unit/hour
   b. Patient receives 1st dose of SC basal + bridging dose of fast analog or R (see #10)
3. Bolus dose and Initial Infusion rate: Divide initial glucose level by 100, then round to nearest 0.5 units for bolus AND initial infusion rate
   Examples: 1) Initial glucose=326 mg/dL: 326÷100=3.26, round to 3.5: IV bolus 3.5 units + start infusion @ 3.5 units/hour
            2) Initial glucose=174 mg/dL: 174÷100=1.74, round to 1.5: IV bolus 1.5 units + start infusion @1.5 units/hour
4. Intravenous Fluids
   - Most patients will need 5–10 g glucose per hour D5W or D5W½NS at 100–200 mL/hour or equivalent (TPN, enteral feeding, etc.)
5. Adjusting the Infusion:
   - **Algorithm 1:** Start here for most patients.
   - **Algorithm 2:** For patients not controlled with Algorithm 1, or start here if s/p CABG, solid organ or islet cell transplant, receiving glucocorticoids etc. or patient with diabetes receiving >80 units/day of insulin as an outpatient.
   - **Algorithm 3:** For patients not controlled on Algorithm 2. NO PATIENT STARTS HERE without authorization from the endocrine service.
   - **Algorithm 4:** For patients not controlled on Algorithm 3. NO PATIENT STARTS HERE
6. Moving from Algorithm to Algorithm:
   - **Moving Up**: When glucose remains outside the target range after titrating insulin
   - **Moving Down**: When glucose is $<70 \text{ mg/dL} \times 2$ or decreases $>60 \text{ mg/dL}$ in 1 hour

7. **Patient Monitoring**:
   - Hourly venous (lab) determinations until glucose $<450 \text{ mg/dL}$; then capillary glucose (finger sticks) q 1 hour until glucose is within goal $\times 4$ hours; then every 2 hours $\times 4$ hours; If stable, decrease monitoring to every 4 hours
   - Hourly monitoring indicated for critically ill patients even if the glucose is stable
   - In hypotensive patients (BP $<80/60$), capillary glucose values may be inaccurate. Obtain venous blood for glucose determinations
   - If any of the following occur, temporarily resume hourly glucose monitoring, until glucose is again stable ($2–3$ consecutive values within target range):
     - Any change in insulin infusion rate
     - Significant changes in clinical condition
     - Starting or stopping pressor or steroid therapy
     - Starting or stopping dialysis
     - Starting, stopping or changing rates of TPN, PPN or tube feedings

8. **Treatment of Hypoglycemia (Glucose $<60 \text{ mg/dL}$)**
   - Discontinue insulin drip AND
   - Give D50W IV Glucose $40–60 \text{ mg/dL}$ 12.5 g (1/2 amp) Glucose $<40 \text{ mg/dL}$ 25.0 g (1 amp)
   - Recheck glucose every 15–30 minutes and repeat D50W IV as above. Restart insulin drip, one algorithm lower, when glucose $>80 \text{ mg/dL} \times 2$
9. Notify the physician:
   - For patients not responding to Algorithm 1 or 2.
   - For hypoglycemia which has not resolved after administration of D50W IV and discontinuation of the insulin drip

10. Transition from IV insulin to SC insulin: “Basal-Analog” Method

   a. Calculate Total Daily Dose (TDD) for subcutaneous insulin
      \[
      \text{TDD} = \text{Infusion rate/h} \times 20h
      \]

   b. First dose SQ insulin includes [basal insulin + bridging dose aspart, glulisine, lispro or R] x 1

   1. If patient will begin eating give:
      - Half TDD as basal glargine, detemir* or NPH* Plus
      - Bridging insulin** @ 10% of basal insulin dose
      - Stop IV insulin
      - Continue primary I.V.

   2. If patient will continue NPO, TPN or tube feeding give:
      - All TDD as basal glargine, detemir* or NPH* Plus
      - Bridging insulin** @ 5% of basal insulin dose
      - Stop IV insulin and continue primary I.V.

   c. Proceed to “Inpatient Management of Insulin in the Non-Critical Care Setting” algorithm for management of daily basal insulin, prandial + supplemental insulin**

* No evidence-based data on inpatient transition from I.V. insulin to detemir. If detemir is selected, expect to use at least 25% greater dose than glargine. If the dose of detemir is <0.6 units/Kg, use half bid. If NPH is used as a basal insulin the dose is 2/3 of the TDD (whether or not the patient is eating) and is distributed bid as 2/3 A.M. and 1/3 H.S. or may be divided equally and given q 6h.

** R (regular insulin) is not preferred as a bridging or prandial insulin
REFERENCES:


