

DKA Insulin Infusion Guidelines

Give initial insulin bolus IV Push ONE TIME per Table 1:

• **Insulin should NOT be initiated if serum potassium is less than 3.5 mEq/L**

	TABLE 1. INSULIN BOLUS (0.15 units/kg) **Round to nearest WHOLE number**				
Weight (kg)	Insulin bolus (units) IV Push ONE TIME	Weight (kg)	Insulin bolus (units) IV Push ONE TIME		
40-43	6	97-103	15		
44-49	7	104-109	16		
50-56	8	110-116	17		
57-63	9	117-123	18		
64-69	10	124-129	19		
70-76	11	130-137	20		
77-83	12	138-143	21		
84-90	13	144-149	22		
91-96	14	Greater than or equal to 150	23		

Initiate Insulin Infusion per Table 2: (100 units Insulin Regular in 100 ml Normal Saline = 1 unit/mL)

- Blood Glucose draws must be obtained from a consistent site
- DO NOT draw from line with dextrose or TPN infusing

TABLE 2. INITIAL INFUSION RATE				
Weight (kg)	Initial Rate (unit/hr)	Weight (kg)	Initial Rate (unit/hr)	
40-44	4	100-104	10	
45-49	4.5	105-109	10.5	
50-54	5	110-114	11	
55-59	5.5	115-119	11.5	
60-64	6	120-124	12	
65-69	6.5	125-129	12.5	
70-74	7	130-134	13	
75-79	7.5	135-139	13.5	
80-84	8	140-144	14	
85-89	8.5	145-149	14.5	
90-94	9	Greater than or equal to 150 kg	15	
95-99	9.5	**Any dose greater than 15 unit/hr N	IUST be ordered by physician**	

Adjusting the Insulin Infusion Rate

Evaluate blood glucose and insulin infusion rate each *hour*. Make adjustments per Table 3:

- Blood glucose should be decreased by approximately 50-100 mg/dL per hour. If blood glucose
 decreases by more than 150 mg/dL per hour, decrease rate of change of insulin infusion by 50% and
 notify provider.
- Begin subcutaneous insulin 2 hours before stopping insulin drip. ** Do NOT abruptly stop insulin drip.
 Failure to overlap therapies may result in recurrence of DKA.**
- RN to document each insulin infusion rate change

TABLE 3. DKA INSULIN INFUSION TITRATION				
Blood Glucose (BG) (mg/dL)	Trend	Insulin Infusion Titration		
0-70		 Follow Hypoglycemia Guidelines Decrease insulin infusion rate to 1 unit/hr Infuse Dextrose containing IVFluids Check BG every 1 hour IF BG greater than 200 mg/dL, resume infusion at 50% of previous infusion rate (i.e. prior to drop in blood glucose between 0-70 mg/dL) 		
71-150		 Decrease insulin infusion rate to 1 unit/hr Infuse Dextrose containing IVFluids Check BG every 1 hour IF BG greater than 200 mg/dL, resume infusion at 50% of previous infusion rate (i.e. prior to drop in blood glucose between 71-150 mg/dL) 		
151-175	Upward / unchanged	Decrease by 6 units/hr Infuse Dextrose containing IVFluids		
	downward	Decrease by 8 units/hr Infuse Dextrose containing IVFluids		
176-200	Upward / unchanged	Decrease by 4 units/hr Infuse Dextrose containing IVFluids		
	downward	Decrease by 6 units/hr Infuse Dextrose containing IVFluids		
201-250		No change in insulin infusion rate. Continue to monitor. Infuse Dextrose containing IVFluids		
251-300	Upward / unchanged downward	Increase by 1 units/hr Increase by 0.5 units/hr		
301-350	Upward / unchanged downward	Increase by 2 units/hr Increase by 1 units/hr		
351-400	Upward / unchanged downward	Increase by 3 units/hr Increase by 1.5 units/hr		
401-450	Upwards/ unchanged downward	Increase by 4 units/hr Increase by 2 units/hr		
451-500	Upward / unchanged downward	Increase by 5 units/hr Increase by 2.5 units/hr		
501-550	Upward / unchanged downward	Increase by 6 units/hr Increase by 3 units/hr		
551-600	Upward / unchanged downward	Increase by 7 units/hr Increase by 3.5 units/hr		
601-650	Upward / unchanged downward	Increase by 8 units/hr Increase by 4 units/hr		
Greater than 650		Give 0.05 unit/kg IV bolus of insulin regular Increase infusion by 9 units/hr Notify provider		

^{***}Nurse MUST accompany patient to any diagnostic tests outside of the ICU while on insulin infusion***

Converting Insulin Infusion to Scheduled Subcutaneous (subcut) Insulin

- 1. A physician's order is necessary to convert the insulin infusion to scheduled subcutaneous long-acting insulin.
- 2. Note: Patients without a history of insulin-requiring diabetes who are receiving less than 2 units/hour of IV insulin may not require transition to scheduled subcutaneous insulin. For these patients, consider starting "low dose" sliding scale insulin regular (SSI-regular).
- 3. Conversion Recommendations:
 - a. Determine the Total Daily Insulin (TDI) requirement (units/day)
 - i. Determine the average hourly rate over the last 8 hours in units/hr and multiply by 24 hours
 - b. **Basal Insulin: Long-acting insulin** (e.g. insulin detemir) Dose (*If long-acting insulin dose is greater than 60 units, the dose should be split in half and given twice daily*)
 - i. Administer 50% of TDI requirement as long-acting insulin subcutaneously every 24 hours
 - ii. Discontinue insulin infusion 2 hours after administration of first long-acting insulin dose
 - iii. Physician to reassess long-acting insulin dose every 24 hours
 - c. Prandial Insulin: Short or Rapid-acting Insulin Dose
 - i. Administer the other 50% of the TDI requirement as rapid-acting insulin (e.g. insulin aspart) subcutaneously in 3 divided doses with meals
 - ii. If patient is on enteral nutrition, divide into 4 doses of short-acting insulin (e.g. **insulin regular**) and give every 6 hours. If enteral feeds are stopped abruptly, start an IV infusion containing 10% Dextrose (D10W), at the same rate as the feedings and **HOLD** scheduled short-acting insulin
 - iii. If patient is NPO or not eating, then HOLD schedule short/rapid acting insulin Note: Short/rapid acting insulin can be adjusted to allow for changes in diet/steroids/etc. It may be adjusted or held based upon patient conditions.

(**Example**: 2 units/hr average for last 8 hours \times 24 hr = 48 units/day. Give long-acting insulin 24 units subcutaneously every 24 hours and rapid-acting insulin 8 units subcutaneously TID with meals).

- d. FSBG monitoring
 - i. If patient is eating: Begin FSBG with meals and at bedtime and at 0300
 - 1. Cover with UMC standard Sliding Scale Insulin Aspart in addition to scheduled insulin aspart with meals
 - ii. If patient is NPO: Begin FSBG every 3 hours
 - 1. Cover with UMC standard Sliding Scale Insulin
- e. Order correction insulin (SSI) which is given regardless of nutrition status to cover hyperglycemia
 - i. Low Dose Scale: recommended for patients on less than 40 units of scheduled insulin/day
 - ii. Moderate Dose Scale: recommended for patients on 40 100 units of scheduled insulin/day
 - iii. High Dose Scale: recommended for patients on greater than 100 units of scheduled insulin/day

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