



UPMC
University of Pittsburgh
Medical Center

PHYSICIAN ORDER SET

AUTHORIZATION IS GIVEN TO THE PHARMACY TO DISPENSE AND TO THE
NURSE TO ADMINISTER THE GENERIC OR CHEMICAL EQUIVALENT WHEN
THE DRUG IS FILLED BY THE PHARMACY OF UPMC - UNLESS THE PRODUCT
NAME IS CIRCLED.

IMPRINT PATIENT IDENTIFICATION HERE

Adult Diabetic Ketoacidosis (DKA) *Do NOT use with patients with ESRD/CHF

Check All Orders that Apply with a & All Handwritten Orders Should be BLOCK PRINTED for Clarity

Patient Care/Communication Orders

- Assign patient to a monitored bed
- Call MD if
 - BG < 100 mg/dL or > 300 mg/dL
 - HCO₃ < 16 mEq/L
 - Potassium (K) < 3.3 mEq/L or > 5 mEq/L
- Vital Signs every _____ hours
- Intake and Output every 2 hours for 8 hours, then every 4 hours
- Foley Catheter

Labs

- Capillary blood glucose every 1 hour *STAT plasma glucose if >500 mg/dL*
 - STAT serum electrolytes q _____ (2-4) hours x 4, then q 4 hours
- First specimen sent at (time): _____

Routine Labs (one time orders)

- | | | | | |
|--|---|--|--|--|
| <input type="checkbox"/> BUN, Creatinine | <input type="checkbox"/> Calcium | <input type="checkbox"/> CBC with Differential | <input type="checkbox"/> Venous blood gas | <input type="checkbox"/> HbA1c |
| <input type="checkbox"/> Phosphate | <input type="checkbox"/> Amylase/Lipase | <input type="checkbox"/> Serum osmolality | <input type="checkbox"/> Urinalysis with Urine Culture | <input type="checkbox"/> Toxicology Screen |
| <input type="checkbox"/> Magnesium | <input type="checkbox"/> LFTs | <input type="checkbox"/> Serum Ketones | <input type="checkbox"/> Blood Culture x _____ | <input type="checkbox"/> Urine HgG (qualitative) |

Diagnostic Tests/Procedures

- EKG (recommended)
- Chest X-Ray (indication) _____

Nutritional Services

- Clear liquids, advance as tolerated to Diabetic Consistent Carbohydrate Diet
- Diabetic Consistent Carbohydrate Diet
- NPO
- Other Diet: _____

Consult

- Nutrition Consult for: _____
- Diabetes Consult Service (pager # 1082) for glycemic management

IV Fluids

Initial (if not done in ED):

- 0.9 % Sodium Chloride at _____ (500-1000) ml/hour for _____ (1-4) hours

Subsequent:

- 0.9% Sodium Chloride with _____ mEq/L KCl at _____ (100-250) ml/hour for _____ hours
- 0.45% Sodium Chloride with _____ mEq/L KCl at _____ (100-250) ml/hour

When plasma glucose ≤ 250 mg/dL,:

- Change IV fluids to Dextrose 5% in 0.45% Sodium Chloride with KCl at the same concentration and rate as the current fluids being administered
- Reduce Regular insulin infusion to 50% of current rate

- Hold any continuous infusion containing KCl if urine output <30 ml/hr or serum potassium (K+) > 5 mEq/L and Call MD

Intravenous Insulin (Insulin Infusion Standard concentration 1 unit Regular Insulin per 1 ml 0.9 % Sodium Chloride)

- Regular insulin 0.1 unit/kg IV BOLUS = _____ units and then infusion as below (Consider if BG >300 mg/dL)
- Regular insulin infusion at 0.1 unit/kg/hour = _____ units/hour
- Regular insulin infusion at 5 units/hour

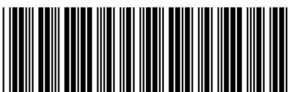
- If blood glucose is > 250 mg/dL and is decreasing by < 50 mg/dL/hour while on IV insulin, call MD for adjustment of insulin infusion.

Bicarbonate Replacement Indicated for life-threatening hyperkalemia

- Administer 50 mEq Sodium Bicarbonate in 0.45% Sodium Chloride 1000 ml IV over 30 to 60 minutes

Phosphate Replacement Indicated in the presence of a serum phosphate level < 1.5 mg/dl with adequate urine output

- _____ (15 or 30) mmol Potassium Phosphate IV (administer 15 mmol over 4 hours, administer 30 mmol over 6 hours)



(BLOCK Print Name) _____ (Signature) _____

Pager # _____ Order Set Faxed to Pharmacy by: _____ (name / time) _____ Unit: _____

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Adult DKA Management

These recommendations do not take into account individual patient situations, and do not substitute for clinical judgment.

Phase	Type of Fluid	Rate	IV regular insulin	Endpoint/Goal
Acute	0.9% NaCl +/- sodium bicarb +/- KCl	≥500 mL/hour	0.1 unit/kg bolus 0.1 unit/kg/hour*	BP stable
	0.45% NaCl +/- KCl	250 mL/hour	0.1 unit/kg/hour*	HCO3 15-18 Anion Gap 12-15 Adequate urine output
Maintenance	0.45% NaCl +/- KCl	100-250 mL/hour	0.1 unit/kg/hour*	BG ≤250 mg/dL
	Add 5% Dextrose to IV fluid		0.05 unit/kg/hour	BG <200 mg/dL Anion Gap normalized Oral intake tolerated
Transition			Continue IV insulin for 90 minutes after 1st SQ dose of NPH or Lantus given	

* If glucose does not fall by 50-75mg/dL in the first hour, then double insulin dose hourly until glucose falls at a steady hourly rate of 50-75mg/dL.

Patients with CHF or ESRD require individualized management.

IV Insulin: Do not discontinue IV insulin during the acute or maintenance phase. If hypoglycemia occurs, increase the rate of dextrose-containing fluids and/or give D50 bolus(es). During acute/maintenance phase, IV Insulin should continue at rate of ≥2 units/hr to facilitate closure of the anion gap.

Fluid Selection: After initial treatment with 0.9% Sodium Chloride, switch to 0.45% Sodium Chloride unless corrected serum Na is low. Discontinue all continuous fluids containing dextrose once patient tolerating oral intake

Potassium replacement: Rate of KCL administration should not exceed 10 mEq/hour via peripheral line or 20 mEq/hour via central line
 If K <3.3mEq/L, replace potassium before starting insulin. Guidelines for determining appropriate potassium concentration for addition to fluids above
If K+ ≤ 3.3 mEq/L, add 40 mEq/L KCl If K+ 3.3 - 5 mEq/L, add 20 mEq/L KCl If K+ > 5 mEq/L, do NOT add KCl

Phosphate Replacement: Indicated only in the presence of a serum phosphate level < 1.5 mg/dl with adequate urine output
 Determine serum calcium level before starting phosphate therapy and recheck in four hours

Bicarbonate Replacement: Indicated only for life-threatening hyperkalemia (EKG changes and/or K > 6.5) or pH < 7

Transition to SQ Insulin

When all the following criteria are met, SQ Basal and Nutritional insulin should be started. (see Insulin Order Form or Insulin Pump Guidelines)

- Plasma glucose < 200 mg/dL
- Anion gap normalized
- Oral intake is tolerated

Resume pre-hospital SQ regimen. If patient is receiving insulin for the first time, see guidelines accompanying the Insulin Order Form for dose recommendations.

Stop Intravenous insulin 60 minutes **after** injection of subcutaneous short or rapid-acting insulin. Stop IV insulin 90 minutes after NPH or Insulin Glargine (Lantus) if no short or rapid insulin is also given.

Sample Flowsheet

Patient Weight:

Date/Hour													
Glucose													
Na													
K													
Cl													
HCO3													
Anion Gap													
Urine Output													
Insulin units													

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