

Fairview Health Services Diabetic Ketoacidosis (DKA) Orders, Adult (>45kg)

Usual Diagnostic Criteria:

- | | | |
|-----------------------------|-----------------------------------|------------------------|
| • Serum glucose > 250 mg/dL | • Serum bicarbonate < 18 mEq/L | • Anion gap > 10 mEq/L |
| • Arterial pH < 7.3 | • Moderate ketonuria or ketonemia | |

A. PATIENT CARE

- Admit as Inpatient to PCU _____
- Vital Signs Q 30 mins until stable, then Q1H
- Neuro Checks Q1H x _____ hrs, then Q4H
- Intake and Output Q1H x 4, then Q4H x 2, then Q Shift
Notify MD: If urine output < 50 mL/hr
- ECG Continuous Monitoring (IF ICU)
- Telemetry (IF non-ICU)
- Foley Catheter to straight gravity drainage
- Nasogastric tube to low intermittent suction

Blood Glucose Monitoring Frequency

- Glucose Monitoring Q1H until stable for 4 hrs within 150-200 mg/dL range, then Q2H

B. RESPIRATORY THERAPY

- Oxygen by nasal cannula or face mask to maintain O₂ Sats > 90%

C. NUTRITION SERVICES

- NPO
- NPO x 4 hrs, then ice chips PRN
- Clear Liquids
- Low Consistent Carbohydrate Diet (1200-1500 calories / 3-5 CHO units per meal)
- Moderate Consistent Carbohydrate Diet (1600-1900 calories / 4-6 CHO units per meal)
- High Consistent Carbohydrate Diet (2000-2400 calories / 4-7 CHO units per meal)
- Very High Consistent Carbohydrate Diet (2500-3000 calories / 6-9 CHO units per meal)
- Other _____

D. LABORATORY TESTS

Initial-STAT

- Basic Metabolic Battery (sodium, potassium, chloride, CO₂, glucose, BUN, creatinine, calcium, anion gap)
- Hemogram Differential Platelet Count
- Blood Gas Arterial with Oxyhemoglobin
- Serum Ketone (In FCIS: Ketone @ non-UMMC sites; Ketone Whole Blood Quantitative @ UMMC)
- Serum Osmolality
- Phosphorus Level
- Magnesium Level
- Hepatic Panel (albumin, alk phosphatase, ALT(SGPT), AST(SGOT), bilirubin, total protein)
- Blood Culture
- Urine Analysis (In FCIS: Urinalysis Routine @ FSH; UA with Microscopic @ FRH / UMMC)
- Urine Culture
- Lactic Acid
- Amylase Level
- Troponin I

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D. LABORATORY TESTS *(continued)*

Follow-up labs Q _____ hrs *(recommend Q 2-4 hrs)*

- Basic Metabolic Panel
- Serum Ketones *(In FCIS: Ketone @ non-UMMC sites; Ketone Whole Blood Quantitative @ UMMC)*
- Phosphorus Level
- Bicarbonate, serum *(CO2 Total)*
- Other _____
- Other _____

Routine AM labs

- Hemoglobin A1C *(If none available within past 3 months)*
- Phosphorus Level
- Other _____
- Other _____
- Other _____

E. DIAGNOSTIC IMAGING

- Chest AP Port – Xray *Reason for exam:* _____
- Chest PA/Lat – Xray *Reason for exam:* _____

F. PROCEDURES

- EKG 12 Lead ___STAT ___ Routine *Reason for exam:* _____

G. CONSULTS

- Endocrinology Consult – **UMMC, FSH Only** *Reason for consult:* _____
- Diabetes Consult: Clinical Nurse Specialist Consult – **UMMC Only** *Reason for consult:* _____
- Diabetes Education Consult : Basic Survival Skills *Reason for consult:* _____
- Diabetes Education Consult: Outpatient *Reason for consult* _____
- Nutrition Services Consult *Reason for consult:* _____
- Other _____

H. PHARMACY

IV FLUID THERAPY - STEP ONE (bolus)

- IV Fluid Bolus - Sodium Chloride 0.9%.** Infuse 1000 mL over 1 hour.
For initial fluid replacement related to diabetic ketoacidosis.

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H. PHARMACY (continued)

IV FLUID THERAPY - STEP TWO (maintenance)

Note: After completing Step One, determine hydration status and select one of the following.

For Hypovolemic Shock

- Sodium Chloride 0.9% @ 1000 mL/hr

For Mild Hypotension *Corrected Sodium = Sodium plus (glucose – 100) x 0.016 = _____ mEq/L

Serum sodium corrected HIGH or NORMAL

- Sodium Chloride **0.45%** - IV soln @ _____ mL/hr
If initial potassium ≥ 5.3 mmol/L
- Sodium chloride **0.45% + 20 mEq KCL/L** - IV soln @ _____ mL/hr
If initial potassium 4 – 5.2 mmol/L to maintain at 4 – 5 mmol/L
- Sodium chloride **0.45% + 30 mEq KCL/L** - IV soln @ _____ mL/hr
If initial potassium 3.3 – 3.9 mmol/L to maintain at 4 – 5 mmol/L
- Sodium Chloride **0.45%** - IV soln @ _____ mL/hr
If initial potassium < 3.3 mmol/L (and see electrolyte replacement orders below)

Serum sodium corrected LOW

- Sodium Chloride **0.9%** - IV soln @ _____ mL/hr
For initial potassium ≥ 5.3 mmol/L
- Sodium Chloride **0.9% + 20 mEq KCL/L** - IV soln @ _____ mL/hr
For initial potassium 4 – 5.2 mmol/L to maintain at 4 – 5 mmol/L
- Sodium Chloride **0.9% + 30 mEq KCL/L** - IV soln @ _____ mL/hr
For initial potassium 3.3 – 3.9 mmol/L to maintain at 4 – 5 mmol/L
- Sodium Chloride **0.9%** - IV soln @ _____ mL/hr
For initial potassium < 3.3 mmol/L (and see electrolyte replacement orders below)

When Serum Glucose reaches 200 mg/dL change to:

- D5W Sodium Chloride 0.45% - IV soln + _____ mEq KCL/L @ _____ mL/hr
Note: Order potassium at previously ordered concentration

ELECTROLYTE REPLACEMENT

Note: Establish adequate renal function (urine output approximately 50 mL/hr).

POTASSIUM CHLORIDE

For initial potassium ≥ 5.3 mmol/L – Select appropriate IV fluid above. Recheck serum potassium Q 2 hrs.

For initial potassium 4 – 5.2 mmol/L – Select appropriate IV fluid above.

For initial potassium 3.3 – 3.9 mmol/L – Select appropriate IV fluid above.

For initial potassium < 3.3 mmol/L – HOLD INSULIN and give:

- Potassium Chloride 20 mEq IV Q1H PRN for K+ < 3.3 mmol/L. (In 100 mL of Sodium Chloride 0.9%)
- May use Lidocaine 1% (PF) inj 10 mg IV for each 20 mEq KCL Q1H PRN for pain during peripheral infusion.

SODIUM BICARBONATE

For pH 6.9-7.0

- Sodium Bicarbonate 50 mEq + Potassium Chloride 10 mEq in 200 mL Sterile Water. One Time Only. Infuse @ 200 mL/hr. (total volume = 255 mL)

For pH < 6.9

- Sodium Bicarbonate 100 mEq + Potassium Chloride 20 mEq in 400 mL Sterile Water. One Time Only. Infuse @ 200 mL/hr. (total volume = 510 mL)

PHOSPHATE

For phosphorus level < 1.0 mg/dL

- Sodium Phosphate 25 mmol IV in 500 mL Sodium Chloride 0.9% Q6H PRN. Infuse over 6 hrs. Stop after: 48 hrs
- Potassium Phosphate 25 mmol IV in 500 mL Sodium Chloride 0.9% Q6H PRN. Infuse over 6 hrs. Stop after: 48 hrs

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H. PHARMACY (continued)

CONTINUOUS IV INSULIN INFUSION

**NOTE: DO NOT start insulin infusion until Serum Potassium level is ≥ 3.3 mEq/L.
 Rate of blood glucose fall should be 50-70 mg/dL/hr.
 Insulin Infusions will be provided as 1 Unit of Regular Insulin/1 mL Sodium Chloride 0.9%.**

Step One

Insulin Regular Human _____ units (0.1 units/kg; MAX dose: 10 units) IV bolus. One Time Only.

Step Two

Insulin Regular Human (1 unit/mL) Drip **Initiate drip with Algorithm 1**

Move to HIGHER number algorithm:

If BG >200 mg/dL AND BG has not fallen by at least 50 mg/dL within the previous hour.
 Notify MD if already at Algorithm 4.

Move to LOWER number algorithm:

If BG <150 mg/dL x 2 consecutive readings. Notify MD if already at Algorithm 1.

Algorithm 1		Algorithm 2		Algorithm 3		Algorithm 4	
BG	Units/hr	BG	Units/hr	BG	Units/hr	BG	Units/hr
< 60 = Hypoglycemia (Follow hypoglycemia orders)							
< 70	Off	< 70	Off	< 70	Off	< 70	Off
70-109	0.2	70-109	0.5	70-109	1	70-109	1.5
110-119	0.5	110-119	1	110-119	2	110-119	3
120-149	1	120-149	1.5	120-149	3	120-149	5
150-179	1.5	150-179	2	150-179	4	150-179	7
180-209	2	180-209	3	180-209	5	180-209	9
210-239	2	210-239	4	210-239	6	210-239	12
240-269	3	240-269	5	240-269	8	240-269	16
270-299	3	270-299	6	270-299	10	270-299	20
300-329	4	300-329	7	300-329	12	300-329	24
330-359	4	330-359	8	330-359	14	> 330	28
> 360	6	> 360	12	> 360	16		

TRANSITION FROM IV INSULIN INFUSION TO SQ INSULIN

**NOTE: When DKA has resolved and patient is tolerating PO intake, transition to SQ insulin.
 See FV SQ Insulin Management Orders (# 510111) for transition orders.**

HYPOGLYCEMIA MANAGEMENT

FV Hypoglycemia Orders, Adult (>45 kg)

MD/PROVIDER SIGNATURE: _____ DATE: _____ TIME: _____

MD/PROVIDER NAME (print): _____ PAGER #: _____

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