

Mild-Moderate Diabetic Ketoacidosis (DKA) Treatment with Subcutaneous Insulin [353]

MILD-MODERATE DKA Inclusion Criteria: (ALL MUST BE PRESENT) See CHART

Alert and oriented, and tolerating PO intake AND

Blood glucose greater than 250 AND

Arterial or venous pH less than 7.3 but greater than or equal to 7.0 AND

Serum bicarbonate less than 18 mEq/L but greater than 10 mEq/L AND

Anion gap greater than 14 AND

Positive ketones (urine or serum)

ABSOLUTE EXCLUSIONS: Acute encephalopathy, Euglycemic DKA, OR severe co-morbidities (CKD 4 or higher, ESRD, liver cirrhosis, acute cardiac issues, organ transplant, pulmonary edema)

Proceed with Caution: BMI >40

Discontinue all previous insulin orders and oral diabetes medications upon entering DKA protocol.

[Click here to view Diagnostic Criteria for DKA and HHS](#)

URL:

"\\epic-nas.et0922.epichosted.com\\static\\OrderSets\\DKA chart 4-25-23.pdf"

Nursing

Fingerstick Blood Glucose (FSBG) Monitoring

Bedside glucose monitoring

Routine, Every hour, Starting S with First Occurrence Include Now For 4 Hours

Now, then every 1 hour for 4 occurrences, then every 2 hours until after anion gap is LESS THAN 14 mEq/L.

Nursing

Mild to moderate DKA worksheet

Routine, Until discontinued, Starting S

Notify

Notify Provider

Routine, Until discontinued, Starting S, -If glucose is LESS THAN 70 mg/dL AFTER following hypoglycemia protocol.

-If glucose is LESS THAN 120 mg/dL: do not administer any more insulin and notify provider immediately.

-If potassium is GREATER THAN 5.2 mEq for possible adjustments on potassium content in intravenous fluids.

-If at the first 4 hour lab check there is an INCREASE in anion gap from prior value.

-If at the 8 hour lab check the anion gap is not LESS THAN 14 mEq/L

DKA Potassium Replacement

DKA Potassium Replacement

DKA orderset to be acted on by IMU, ICU or ED nurses only

Routine, Until discontinued, Starting S

Non ICU DKA Potassium Replacement Orders

Routine, Until discontinued, Starting S

RN will enter orders "Per Protocol"

Potassium Replacement Scale for Mild to Moderate DKA:

-For Potassium level LESS than or EQUAL to 3.3, administer Potassium Chloride 60 mEq Oral, Once. Notify provider if patient develops arrhythmias.

-For Potassium level 3.4 - 4.0, administer Potassium Chloride 40 mEq Oral, Once. Notify provider if patient develops arrhythmias.

-For Potassium level 4.1 - 5.2, administer Potassium Chloride 20 mEq Oral, Once.

-For Potassium level GREATER than 5.2, notify provider for possible adjustments on potassium content in intravenous fluids.

IV Fluids

Initial IV fluids (Single Response)

<input checked="" type="checkbox"/> sodium chloride 0.9 % bolus	1,000 mL, intravenous, Administer over: 60 Minutes, once, For 1 Doses
<input type="checkbox"/> sodium chloride 0.9 % bolus	500 mL, intravenous, once

Subsequent IV fluids (Rates adjusted with every blood glucose check) (Single Response) (Selection Required)

<input checked="" type="checkbox"/> Choice # 1 with Dextrose 10 %: D10 + 1/2NS + 20 mEq/L potassium chloride and 1/2NS + 20 mEq/L potassium chloride	"And" Linked Panel
D10 is the preferred dextrose containing fluid (use D5W only if D10 is on backorder/unavailable)	
<input checked="" type="checkbox"/> sodium chloride 0.45 % with potassium chloride 20 mEq/L infusion (for DKA)	0-250 mL/hr, intravenous, titrated 1/2 NS + KCl 20 mEq/L Titration: For: Glucose greater than 299 mg/dL: 100% hourly fluid rate Glucose 200 - 299 mg/dL: 50% hourly fluid rate Glucose 150 - 199 mg/dL: 30% hourly fluid rate Glucose 100 - 149 mg/dL: 10% hourly fluid rate Glucose 70 - 99 mg/dL: 0% hourly fluid rate Glucose less than 70 mg/dL: 0% hourly fluid rate Glucose LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 14 (RESOLUTION OF DKA) - Notify prescriber Titrate both fluids per protocol for a combined rate of:
<input checked="" type="checkbox"/> dextrose 10 % and sodium chloride 0.45 % + potassium chloride 20 mEq/L infusion (for DKA)	0-250 mL/hr, intravenous, titrated D10 + 1/2 NS + KCl 20 mEq/L Titration: For: Glucose greater than 299 mg/dL: 0% hourly fluid rate. Glucose 200 - 299 mg/dL: 50% hourly fluid rate Glucose 150 - 199 mg/dL: 70% hourly fluid rate Glucose 100 - 149 mg/dL: 90% hourly fluid rate Glucose 70 - 99 mg/dL: 100% hourly fluid rate Glucose less than 70 mg/dL: 100% hourly fluid rate - HOLD Insulin and send blood glucose to lab confirmation Glucose LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 14 (RESOLUTION OF DKA) - Notify prescriber
<input type="checkbox"/> Choice # 2 with Dextrose 5 %: D5 + 1/2NS + 20 mEq/L potassium chloride and 1/2NS + 20 mEq/L potassium chloride	"And" Linked Panel
D10 is the preferred dextrose containing fluid (use D5W only if D10 is on backorder/unavailable)	
<input type="checkbox"/> sodium chloride 0.45 % with potassium chloride 20 mEq/L infusion (for DKA)	0-250 mL/hr, intravenous, titrated 1/2 NS + KCl 20 mEq/L Titration: For: Glucose greater than 299 mg/dL: 100% hourly fluid rate Glucose 200 - 299 mg/dL: 50% hourly fluid rate Glucose 150 - 199 mg/dL: 30% hourly fluid rate Glucose 100 - 149 mg/dL: 10% hourly fluid rate Glucose 70 - 99 mg/dL: 0% hourly fluid rate Glucose less than 70 mg/dL: 0% hourly fluid rate Glucose LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 14 (RESOLUTION OF DKA) - Notify prescriber

[] dextrose 5 % and sodium chloride 0.45 %
with potassium chloride 20 mEq/L infusion

0-250 mL/hr, intravenous, titrated
D5 + 1/2 NS + KCl 20 mEq/L Titration:

For:

Glucose greater than 299 mg/dL: 0% hourly fluid rate
Glucose 200 - 299 mg/dL: 50% hourly fluid rate
Glucose 150 - 199 mg/dL: 70% hourly fluid rate
Glucose 100 - 149 mg/dL: 90% hourly fluid rate
Glucose 70 - 99 mg/dL: 100% hourly fluid rate
Glucose less than 70 mg/dL: 100% hourly fluid rate

Glucose LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL
to 14 (RESOLUTION OF DKA)

- Notify prescriber

Titrate both fluids per protocol for a combined rate of:

Initial Electrolytes Replacement

Potassium (Single Response)

DKA POTASSIUM REPLACEMENT SCALE

Potassium replacement scale for

Mild to Moderate DKA patients:

POTASSIUM

Level (mEq/L)	Potassium Chloride Dose	Comments
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LESS than or EQUAL to 3.3

60 mEq

Oral

Oral route preferred. Notify prescriber if patient develops arrhythmias.

3.4 - 4.0

40 mEq

Oral

Oral route preferred. Notify the prescriber if patient develops arrhythmias.

4.1 - 5.2

20 mEq

Oral

Oral route preferred.

GREATER than 5.2 Notify prescriber Contact the prescriber if patient has IVF with potassium for possible adjustment of potassium.

() Oral Replacement (Single Response)

() potassium chloride (KAYCIEL) 20 mEq/15 mL solution	oral
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() potassium chloride (MICRO-K) CR capsule	oral
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Phosphate replacement (central or peripheral line)

[] For phosphorus level less than 2.5 mg/dL 20 mmol, intravenous, once, For 1 Doses

Magnesium Replacement (Single Response)

() Magnesium 1.5-2.0	2 g, intravenous, once, For 1 Doses
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() magnesium 1.0-1.4	3 g, intravenous, once, For 1 Doses
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Insulin Management

Protocol not indicated for ESRD patients. Use IV Insulin 2-Bag System for DKA

Long-Acting Subcutaneous Insulin (Single Response) (Selection Required)

() insulin glargine (LANTUS) injection - Patient's Home Dose	subcutaneous, every 24 hours, Starting S
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() insulin glargine (LANTUS) injection	0.3 Units/kg, subcutaneous, every 24 hours, Starting S
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Fast-Acting Subcutaneous Insulin (Selection Required)

<input checked="" type="checkbox"/> insulin lispro (ADMELOG) injection	0.3 Units/kg, subcutaneous, once, For 1 Doses X1 dose
<input checked="" type="checkbox"/> insulin lispro (ADMELOG) injection	0.2 Units/kg, subcutaneous, every 4 hours, Starting H+4 Hours Every 4 hours until blood glucose LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 14 (RESOLUTION OF DKA) If Euglycemic DKA, continue until anion gap LESS THAN 14

Hypoglycemia Management

Adult Hypoglycemia Standing Orders (Selection Required)

<input checked="" type="checkbox"/> Hypoglycemia management - Monitor patient for signs and symptoms of HYPOglycemia and follow standing orders	Routine, Per unit protocol CLICK REFERENCE LINK TO OPEN ALGORITHM:
<input checked="" type="checkbox"/> dextrose 50% intravenous syringe	12.5 g, intravenous, every 20 min PRN, low blood sugar, if blood glucose is between 41-69 mg/dL For blood glucose between 41-69 mg/dL, give ½ cup juice if patient is able or dextrose 50% intravenous solution 12.5 g (25mL) IV push ONCE. Contact the provider and recheck blood glucose in 20 minutes until glucose is greater than 100 mg/dL. DO NOT give further insulin until ordered by a provider
<input checked="" type="checkbox"/> dextrose 50% intravenous syringe	25 g, intravenous, every 20 min PRN, low blood sugar, if blood glucose is less than or equal 40 mg/dL Recheck bedside glucose every 20 min until glucose greater than 100 mg/dL.
<input checked="" type="checkbox"/> glucagon injection	1 mg, intramuscular, every 15 min PRN, low blood sugar, if patient NPO, unable to swallow safely with no IV access. If glucose remains LESS than 70 mg/dL, after 2 doses of D50 or Glucagon, send serum glucose level STAT. Initiate treatment immediately after lab drawn. Do NOT delay treatment waiting for lab result. Recheck blood sugar every 20 min until greater than 100 mg/dL. Notify Provider.
<input checked="" type="checkbox"/> dextrose 10 % infusion	40 mL/hr, intravenous, continuous PRN, other, For bedside glucose LESS than 70 mg/dL For use after administration of dextrose 50% x 2 and subsequent glucose value LESS than 70 mg/dL. Notify Provider, consider transfer to ICU. Check Glucose every hour while on D10 infusion. Titrate infusion by 10 mL per hour to keep glucose between 100 and 140 mg/dL. Notify provider when ANY/ALL of the following occur: -Dextrose 10% infusion is started -If glucose is less than 70 mg/dL while on dextrose 10% infusion -When dextrose 10% infusion rate is increased to greater than 100 mL/hr

Labs

Laboratory - STAT and Repeat

<input checked="" type="checkbox"/> Blood gas, venous	STAT For 1 Occurrences
<input checked="" type="checkbox"/> Serum ketones (Beta hydroxybutyrate)	STAT For 1 Occurrences
<input checked="" type="checkbox"/> Lactic acid level - ONE TIME ORDER ONLY	STAT For 1 Occurrences
<input checked="" type="checkbox"/> Comprehensive metabolic panel	STAT, Starting S For 1 Occurrences
<input checked="" type="checkbox"/> Basic metabolic panel	Every 4 hours, Starting H+4 Hours For 3 Occurrences Until Anion Gap < 14

<input checked="" type="checkbox"/> Magnesium	Now then every 4 hours, Starting S For 3 Occurrences Until Anion Gap < 14
<input checked="" type="checkbox"/> Phosphorus	Now then every 4 hours, Starting S For 3 Occurrences Until Anion Gap < 14
<input checked="" type="checkbox"/> DKA electrolytes and glucose test	Now then every 4 hours, Starting S For 3 Occurrences Until Anion Gap < 14
<input checked="" type="checkbox"/> CBC with differential	STAT For 1 Occurrences
<input checked="" type="checkbox"/> Hemoglobin A1c	STAT For 1 Occurrences
<input checked="" type="checkbox"/> Urinalysis screen and microscopy, with reflex to culture	STAT For 1 Occurrences Specimen Source: Urine Specimen Site:
<input checked="" type="checkbox"/> Blood culture x 2	"And" Linked Panel
<input checked="" type="checkbox"/> Blood Culture (Aerobic & Anaerobic)	Once, Blood Collect before antibiotics given. Blood cultures should be ordered x2, with each set drawn from a different peripheral site. If unable to draw both sets from a peripheral site, please call the lab for assistance; an IV line should NEVER be used.
<input checked="" type="checkbox"/> Blood Culture (Aerobic & Anaerobic)	Once, Blood Collect before antibiotics given. Blood cultures should be ordered x2, with each set drawn from a different peripheral site. If unable to draw both sets from a peripheral site, please call the lab for assistance; an IV line should NEVER be used.
<input type="checkbox"/> Amylase	STAT For 1 Occurrences
<input type="checkbox"/> Lipase	STAT For 1 Occurrences
<input type="checkbox"/> Sputum culture	STAT For 1 Occurrences, Sputum
<input type="checkbox"/> Creatine kinase, total (CPK)	STAT For 1 Occurrences
<input type="checkbox"/> Troponin T	STAT For 1 Occurrences

Other Diagnostic Tests

Diagnostic Tests

<input checked="" type="checkbox"/> Chest 1 Vw Portable	Routine, 1 time imaging, Starting S at 1:00 AM For 1
<input checked="" type="checkbox"/> ECG 12 lead	Routine, STAT For 1 Occurrences Clinical Indications: Other: Other: DKA Interpreting Physician:

Consults

Pharmacy Consults

<input checked="" type="checkbox"/> Pharmacy Consult for Notification of SQ Insulin DKA Patient	Routine, Until discontinued, Starting S
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