Diabetic Ketoacidosis (DKA) Pathway: ED, Inpatient, and PICU Management

March 2026

Children's Healthcare of Atlanta

IF patient arrives on fluids from outside facility or EMS:
- DO NOT discontinue insulin drips until pharmacy delivers insulin
- Document amount of fluid received

Triage history consistent with inclusion criteria[1]

No → Continue Treatment as appropriate

Yes

Nursing Protocol CIP 5-04

RN Assessment
If Concern for Cerebral Edema, Notify Physician Immediately[2]

Full Set of Vital Signs:
- HR
- RR
- BP
- Pulse Ox
- Temperature

Assess for Dehydration:
- Mucous membranes
- Capillary Refill>3 second
- Skin Turgor

Obtain

Labs:
- CG8
- BMP
- Urinalysis
- POC Glucose every hour
- HgbA1C

Other Orders:
- Cardiac Monitoring
- IV Access x 1-2
- Strict NPO Diet
- Reassess Patient Q 30-60 minutes

Notify ED Attending

Suspect DKA?[3]

No → Suspect Diabetes?

No → Manage Hyperglycemia as appropriate for clinical situation

Yes → Notify Endocrinology: Management of Diabetes without DKA Per Endocrinologist

Yes → ***If glucose>600 mg/dl and Ph>7.25**, consider Hyperosmolar Hyperglycemic Syndrome (HHS)[4]*

Yes → **Initiate Treatment for DKA:**
- IVF
- Insulin
- Continue Monitoring

See Details for IVF and Insulin Treatment on Page 2

Consult Endocrinology and Admitting Service for Disposition

- Admit To PICU[5] with Endocrinology Consult
- General Care Area Admit to Endocrine Service
- Discharge Home Only With Endocrinology Approval

[1]Inclusion Criteria

Suspected new onset diabetic with symptoms such as below OR known diabetic with signs/labs suggestive of DKA:

Symptoms:
- Polyuria
- Thirst
- Weight loss
- Vomiting
- Enuresis

Signs/Labs:
- Hyperglycemia (>200)
- pH <7.3
- Dehydration
- Ketonuria
- Rapid &/or deep respirations

[2]Warning Signs of Cerebral Edema

- Headache
- Inappropriate slowing of heart rate (>20 beats below baseline) &/or rising blood pressure
- Recurrent vomiting
- Change in neurologic status: restlessness, irritability, increased drowsiness, or incontinence
- Change in neurologic signs: Cranial nerve palsies, or slower pupillary response
- Altered/abnormal respiratory rate

[3]DKA Criteria

	pH	*OR*	HCO_3/Total CO_2
Mild	7.2-7.29		10-17
Moderate	7.1-7.19		5-9
Severe	<7.1		<5

[4]Hyperosmolar Hyperglycemic Syndrome (HHS)

- Aggressive hydration: NS bolus 20 ml/kg, repeat until perfusion improves
- Insulin: may not be initially necessary, lower dose than DKA (0.025-0.05 units/kg/hr)
- Consult Endocrinology
- Admit to ICU

[5]PICU Admission Criteria

Any of the Following:
- pH <7.1
- K^+ <3.0

(based on most recently obtained labs)
- Altered mental status
- Severe dehydration

CONSIDER PICU ADMISSION IF:
- Age < 5 years
- Barriers to adequate monitoring/staffing in General Care

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Phase I: Initial Rehydration**

10- 20 ml/kg NS over 30 minutes

Dehydration Persists?

Yes

No

REPEAT BOLUS:

10-20 ml/kg NS over 30 minutes

If giving greater than 40 mL/kg of bolus fluid, consult Endocrinologist

Phase II: Replacement Fluids and Insulin[7,8,9]

Begin Dextrose-containing IV fluids when BG<250 mg/dL

IV Fluid No Dextrose[6,7]
(IV Bag #1)
- NS + K^+

Regular Insulin[8]
- Strength: 1 unit/mL in NS
- Rate: 0.1unit/kg/hr

IV Fluid with Dextrose[6,7,9]
(IV Bag #2)
- D_{10} + NS + K^+
- **Pre order and hold at bedside.**
- **Start when BG< 250 mg/dl and titrate per provider order**

Total Fluid Rate= 1.5-2x maintenance rate	
BG > 250 mg/dL	NS: 100% Total Fluid Rate
BG 150-250 mg/dL	NS: 50% Total Fluid Rate D10: 50% Total Fluid Rate
BG < 150 mg/dL	D10: 100% Total Fluid Rate

***Nursing**: If BG <100 mg/dl notify physician.*
*If BG <80mg/dl, hold insulin **and** notify physician.*

Phase III: Reduce Sodium Content of IV Fluid

Assess Need for Labs[10]

IF patient is sufficiently stable, consider change to ½ NS after 4-6 hours of Phase II therapy

Do Not Transition to this stage, or use caution, if patient has been treated for suspected cerebral edema during this admission or is at unusually high risk for developing cerebral edema

IV Fluid No Dextrose[6,7]
(IV Bag #1)
- **½ NS + K^+**

IV Fluid with Dextrose[6,7,9]
(IV Bag #2)
- **D_{10} + ½ NS + K^+**

Regular Insulin[8]
- Continue Insulin
- Strength: 1 unit/mL in NS drip
- Rate: 0.1unit/kg/hr

- *Total fluids (Bag #1 + Bag #2) at 1.5-2x maintenance rate*
- *Titrate IV rates to desired serum glucose level, maintaining same total fluid rate*

Proceed to Page 3 for Stages IV and V

**Monitoring During All Phases

POC Glucose
- Every 1 hour
- Target BG Range: 100-200mg/dl

Vital Signs and Neurovitals (Cerebral Edema)
- Every 1 hour

Venous Blood Gas and Chemistry
- Every 2-4 hours

Poor Perfusion Signs

- Cool extremities
- Capillary refill > 3 seconds
- Hypotension (policy 23.00)

The following symptoms may persist, but not indicative of poor perfusion:
- Elevated heart rate
- Dry mouth
- Sunken eyes

IVF For Patients Transferred In

If patient has received over 30ml/kg IVF, consider starting replacement fluids at 1-1½ times maintenance

[6]Replacement Fluid Therapy

- Goal is to re-hydrate patient, correct acidosis, and avoid major fluid shifts
- Provides ability to alter replacement therapy fluids with minimal bag changes without changing the rate of the Insulin therapy

[7]Adding Potassium (K^+)

Add potassium based on serum K^+ level:

K^+ > 5.5	No K^+ *(Phase I fluids (NS) should continue until the K^+ level decreases)*
K^+ 4-5.5	20mEq/L K^+ phosphate AND 20mEq/L K+ acetate
K^+ < 4	30mEq/L K^+ phosphate AND 30mEq/L K^+ acetate

[8]Initiating Insulin Regular

- Initiate Insulin after bolus(es) have infused
- *If K^+<3.5, start K^+ prior to initiating insulin*
- Prime IV tubing with insulin; let additional 20mL run out of tubing before connecting to patient/pump (this allows saturation of plastic binding sites)

[9]Dextrose-Containing IV Fluids

- Pre order and hold at bedside.
- Start when BG<250 mg/dL
- Total fluid rate (dextrose-containing and non-dextrose containing fluids) should equal 1 ½- 2 times maintenance rate
- The K^+ and Na^+ content in each bag should be identical to each other

[10]Labs

If labs not previously drawn, obtain the following upon arrival to inpatient unit (PICU or floor):
- Phosphorus
- Hemoglobin A1c
- β-hydroxybutyrate

Antibodies for New Onset Diabetes ONLY:
- Tissue Transglutaminase, IgA [TTGAB]
- Immunoglobulin A Total [IGA]
- Thyroid Peroxidase AB
- Thyroglobulin AB [ATHY]

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Phase IV: Treatment of Persistent Low Blood Glucose <100mg/dL

- Increase D_{10} to 100%
- Decrease insulin to 0.05 units/kg/hr; AND/OR
- Insulin and dextrose titration per physician order

***Nursing**: If BG<100 mg/dl notify physician.*
*If BG<80mg/dl, hold insulin **and** notify physician.*

Phase V: Transition to Subcutaneous Insulin and Oral Feeds

Transfer of Care to Endocrinology

When:			
• Patient ready by clinical assessment (including resolution of lethargy and presence of hunger); **AND** • HCO3 >15; **OR** pH >7.29	Advance oral intake from ice chips to carb-containing meal as tolerated	Give Humalog (short-acting insulin based on meal) as discussed with Endocrinology	Discontinue IV insulin following administration of Humalog

- *Long-acting insulin and additional orders will be provided by Endocrinology*

**Monitoring During All Phases

POC Glucose
- Every 1 hour
- Target BG Range: 100-200mg/dl

Vital Signs and Neurovitals (Cerebral Edema)
- Every 1 hour

Venous Blood Gas and Chemistry
- Every 2-4 hours

Criteria to Transition to General Care

- Clinical appropriateness of transfer will be based on provider discretion

Discharge Criteria

- When patient is on subcutaneous insulin regimen and tolerating solid food
- Consider when social and educational needs met