

# DIABETIC KETOACIDOSIS PATHWAY

**Inclusion Criteria**  
DKA is defined as:

- Hyperglycemia > 200mg/dL
- pH < 7.3 or HCO<sub>3</sub> < 18 mEq/L
- Ketosis in blood or urine

**Exclusion Criteria**

- Blood glucose > 1,000 mg/dL
- **CORRECTED** serum sodium < 130 or > 150
- Hemodynamic instability
- Concern for cerebral edema

**Suspected DKA**  
Signs/symptoms: vomiting, abdominal pain, rapid/deep breathing, lethargy, confusion, fruity scented breath, hyperglycemia

**Emergency Department**

- Triage level 2 & notify provider
- Obtain STAT EPOC on arrival
- VS and neuro checks Q1H

EPOC results indicate DKA?

No → Manage off pathway

**Resuscitation Guide for 2 bag system:**

- Weight < 30 kg = 1.5x maintenance
- Weight > 30 kg = 2x maintenance

Considerations:

- Use recently documented pre-illness weight if available
- For obese patients, consider maintenance rate in context of ideal body weight

**Calculation ideal body weight for adolescents: 22 x height (m<sup>2</sup>)**

**Emergency Department**

- Utilize the ED DKA order set
- Obtain STAT BMP, VBG, and serum beta-hydroxybutyrate while placing 2 PIVs (1 min, if possible place 2<sup>nd</sup>)
- If patient has an insulin pump, remove
- Infuse 20mL/kg up to 1L LR bolus over 1 hour
- NPO
- Evaluate and treat any co-morbid diagnoses
- Repeat blood glucose Q1H
- Repeat BMP +/- VBG Q2H
- After LR bolus completed, start insulin infusion and standard two bag (D/S) fluid resuscitation  
(D: D10 + ¼ NS + 20 K phos + 20 K acetate)  
(S: ¼ NS + 20 K phos + 20 K acetate)
- If hypokalemia (K < 3.5 mEq/L) – start potassium repletion during first hour of fluid resuscitation prior to initiating insulin infusion  
(D: D10 + ¼ NS + 20 K acetate + 20 K phos)  
(S: ¼ NS + 20 K acetate + 20 K phos)
- If hyperkalemia (K ≥ 6 mEq/L):  
(D: D5 + LR)  
(S: LR)

**Cerebral Edema**

Clinical findings concerning for cerebral edema:

- Severe headache and/or vomiting
- Irritability, lethargy, or change in mental status
- Elevated blood pressure and decreased heart rate
- Pupillary reflex changes or cranial nerve palsy
- Decorticate or decerebrate posturing

**Activate emergency response**

**Transport Team**

- [DKA management per Transport protocol](#)
- Review outside records, labs, and management

**To determine appropriate disposition:**

- Review initial BMP and VBG results
- Review current neurologic status

Does this patient meet ICU criteria?\*

**\*Criteria for ICU Placement**  
Based on initial BMP and VBG lab value and current neurologic status:

1. Severe DKA: pH < 7.1 or bicarbonate < 5
2. Mild or Moderate DKA
  - pH < 7.3 or bicarbonate < 18 **AND** any of the following:
    - Significant headache
    - Mental status abnormalities or GCS < 14
    - Hemodynamic instability
    - Age < 24 months

Consider patient < 5 years of age and/or with **CORRECTED** serum sodium > 160

**Admit to Med/Surg**

- Use DKA order set
- VS and neuro checks Q2H
- Continue insulin infusion and 2 bag fluid resuscitation
- Repeat blood glucose hourly
  - If blood glucose falling by > 100 mg/dL/hr see DKA executive summary for recommendations
- Obtain BMP Q2H x2, then if improving, Q4H with a serum BHB
  - If hypo or hyperkalemia present see executive summary for recommendations
- Obtain serum magnesium and phosphorus Q8H
- **Evaluate and treat any co-morbid diagnoses**

**Admit to PICU**

- Management per Intensivist
- Patients with severe DKA should receive ICU level care for 12 hours or more before transfer to the floor.

**If patient is improving with ICU care for 12H, transfer to Med/Surg is encouraged to avoid delays in the transition to SQ insulin.**

**Criteria for Transitioning off Insulin Infusion**  
Serum HCO<sub>3</sub> > 15 and serum beta-hydroxybutyrate ≤ 1 mmol/L **AND** able to tolerate oral intake  
**OR**  
Serum HCO<sub>3</sub> > 17 with normal anion gap **AND** able to tolerate oral intake

Does patient have an insulin pump?

**No**

- Utilize DKA Transition order set
- Refer to Hospitalist for insulin dosing
- Order food
- Administer short (based on blood sugar and carb intake) and long acting insulin sub-q, allow patient to eat. In 30 minutes, after sub-q insulin, turn off insulin infusion and IVF. Start saline IVF, if ordered by Hospitalist team.

**Yes**

- Utilize DKA Transition order set
- Have parent sign waiver of liability specific to insulin pumps
- Have patient or parent replace pump site (use new insertion site, new insulin reservoir filled with new insulin)
- Refer to Hospitalist for insulin dosing
- Order food
- Start insulin pump basal rate and give first insulin bolus through pump (based on blood sugar and carb intake) and allow patient to eat
- In 30 minutes after insulin bolus, turn off insulin infusion and IVF. Start saline IVF, if ordered by Hospitalist team.
- Document on Insulin pump flow sheet

- Order blood glucose monitoring and labs (Refer to DKA transition order set)
- Coordinate education with Diabetes Educator as needed
- Consult Endocrinology
- Consult Dietitian and Social Work as needed
- Consult behavioral health as needed

**Discharge Criteria**

- Reason for DKA identified and addressed
- Patient and/or caretaker has demonstrated ability to complete diabetes education, perform self monitoring of blood glucose, independently calculate insulin doses, administer insulin, identify and treat hypoglycemia and ketonuria
- Appointments with Endocrine and PCP (if needed) scheduled
- All diabetes supplies and prescriptions filled as needed