

Management of DKA/HHS

- Focused history & physical exam
- Evaluate & treat precipitating cause
- Monitor urine output

- Capillary glucose every hour till stable
- Electrolytes (may add VBG if needed) q 2-4 hours till stable
- Some follow capillary ketones
- Other labs as clinically indicated

Consider MICU admission if:

- Hemodynamic instability
- Mental obtundation
- Pregnancy
- pH < 7.0
- Heart failure
- Chronic kidney disease

IV fluids

Give 15-20 ml/kg (1-1.5 liters) 0.9% NaCl over 1st hour

Determine hydration status

Severe Hypovolemia

(Hemodynamically unstable)

0.9% NaCl

1 to 2 liters/hour till stable

Mild to moderate dehydration

(Mild symptoms, hemodynamically stable)

0.9% NaCl

500 ml/hour for 4 hours
then 250-500 ml/hour depending on clinical status

Once euvolemic
calculate corrected serum Na⁺

≥135 mmol/L

Change to 0.45% NaCl

125-250 ml/hr

<135 mmol/L

Continue 0.9% NaCl

125-250 ml/hr

When glucose is ≤200 mg (11.1 mmol) in DKA; ≤300 mg (16.6 mmol) in HHS:

- Change to D₅ 0.45% NaCl (125-250 ml/hour) [can use D₁₀ if needed]
- Target glucose: 150-200 mg (8.3-11.1 mmol) in DKA
200-300 mg (11.1-16.6 mmol) in HHS

Potassium

(Target serum K⁺: 4-5 mEq)

K⁺ <3.3

- Do not start (or hold) insulin till K >3.3
- Give 20-30 mEq KCL per hour

K⁺ 3.3-5.2

20-30 mEq KCL in each liter of IV fluid

K⁺ >5.2

- No K treatment
- Monitor

IV INSULIN (Regular)

IV bolus 0.1 unit/kg
then IV infusion
0.1 units/kg/hour
(no bolus if age < 20)

Or

IV infusion
0.14 units/kg/hour
with no bolus

If blood glucose does not fall by at least
50 mg (2.8 mmol) or 10% in 1st hour:
Give 0.14 units/kg IV insulin bolus and continue same prior infusion rate

When glucose ≤200 mg (11.1 mmol) in DKA, ≤300 mg (16.6 mmol) in HHS:
↓ Insulin infusion to 0.02-0.05 units/kg/hour

Criteria of DKA resolution: glucose <200 mg (11.1 mmol) and 2 of the following:
serum HCO₃ ≥15, venous pH >7.3, anion gap ≤12
Criteria of HHS resolution: glucose <300 mg (16.6 mmol), normal osmolality

Switching from IV to S.C. insulin

When the patient is clinically stable, can take orally & on resolution of DKA/HHS:

Stop IV fluids

Newly diagnosed DM: 0.5 u/kg/day: [50% basal + 50% meal]

Established DM: resume home insulin regimen (basal/meal) if previously controlled or adjust insulin if previously uncontrolled

Stop IV insulin after 2 hours

Bicarbonate
(Use is controversial)

American diabetes association: "consider if pH <6.9"

100 mEq sodium bicarbonate in 400 mL sterile water with 20 mEq KCl over 2 hours
Repeat every 2 hours till pH ≥7. Monitor serum K⁺ every 2 hours