

**Inclusion Criteria for Hyperosmolarity**

- Serum BG greater than or equal to 500 mg/dL **AND**
- Effective Serum Osmolality greater than or equal to 350 mOsm/kg

**Differentiating between HHS and Hyperosmolar DKA**

**HHS**

- Serum bicarbonate  $\geq 16$  mmol/L
- Urine ketones small/moderate
- POC Serum ketones small (0 -0.5 mmol/L) / moderate (0.6 - 1.5 mmol/L)

**Hyperosmolar DKA**

- Serum bicarbonate  $< 16$  mmol/L<sup>^</sup>
- Urine ketones large
- POC Serum ketones large ( $\geq 1.5$  mmol/L)

**Continue Monitoring:**

**Q1hr:** BG, vital signs and hydration  
**Q2hr:** BMP (corrected Na), serum Osm, and UOP  
**Q4hr:** CK, phosphate, magnesium

If CK increasing:

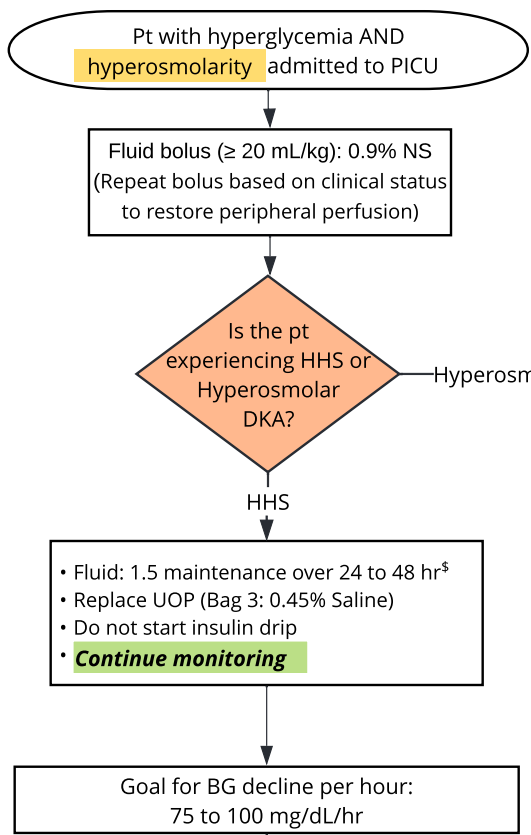
- Concern for rhabdomyolysis: High BUN/Cr, consult Nephrology
- Fever: Evaluate for infection, consider dantrolene

If low Mg:

- 25 to 50 mg/kg/dose q 4-6h (3-4 doses)

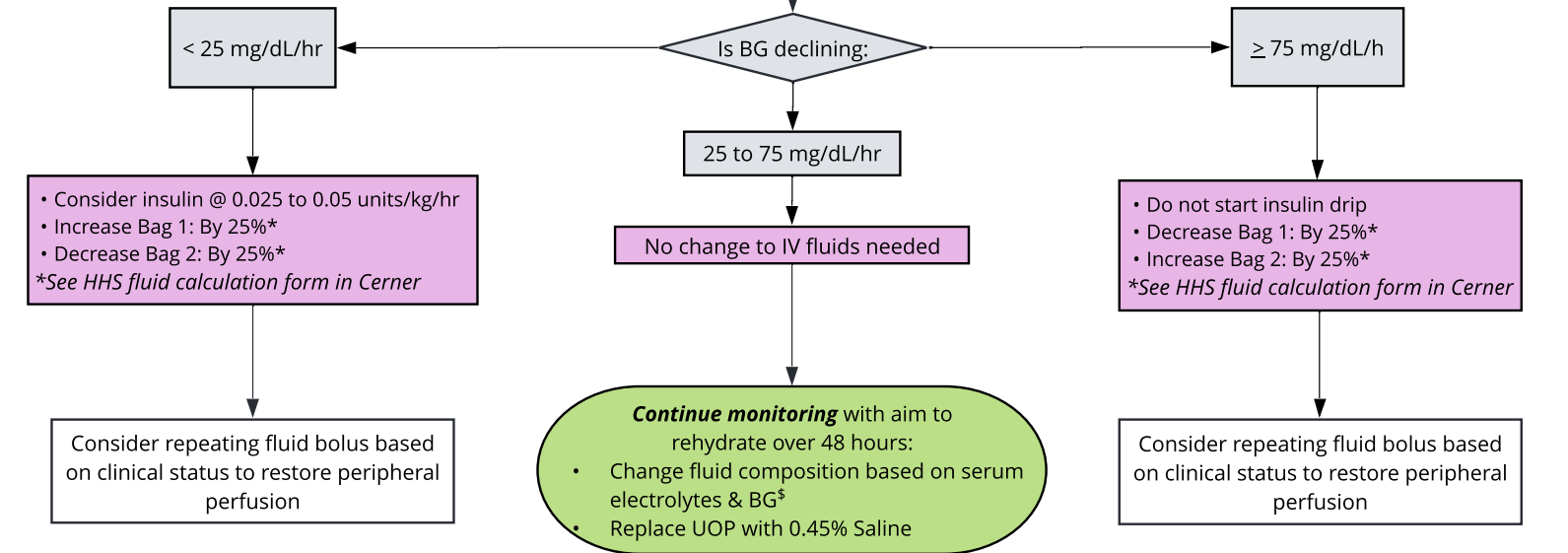
**Consider the following labs based on pt severity:**

**Q4hr:** ABG, VBG, Lactic acid, iCA  
**Q12hr:** Troponin  
**Q24hr:** Nt-ProBNP, LFTs, Coagulation studies



**Rate Adjustment Based on BG Rate of Change**  
 (See HHS fluid calculation form in Cerner)

	BAG 1	BAG 2
<b>Rate of BG change (mg/dL/hr)</b>	<b>NS w/ additives</b>	<b>D<sub>10</sub>NS w/ additives</b>
$\geq 75$	Decrease 25%	Increase 25%
25-75	No change	No change
$< 25$	Increase 25%	Decrease 25%



**Superscript meanings:**

<sup>\$</sup> = Fluid based on: serum electrolytes (Corrected Na), blood glucose, urine output and clinical hydration status. Consider using additive free selection if  $K^+ > 4$

<sup>^</sup> = Serum bicarbonate: 12 to 15 mmol/L; Review insulin and fluids plan with consideration for complications from hyperosmolarity

**Abbreviations (laboratory & radiology excluded):**

Pt = Patient  
 NS = Normal saline  
 BG = Blood glucose  
 HHS = Hyperglycemic Hyperosmolar Syndrome  
 DKA = Diabetic Ketoacidosis  
 UOP = Urine output  
 PICU = Pediatric Intensive Care Unit

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