

Height \_\_\_\_\_ cm      Weight \_\_\_\_\_ kg

Allergies \_\_\_\_\_

<b>Emergency Department (ED) ADULT Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycaemic State (HHS) Initial Management Order Set</b>		M	K	O	
Orders Processed Date (dd/mm/yyyy)	<p style="text-align: center;"><b>*** In HHS: Consider less or no insulin, and No sodium bicarbonate. Fluids may need individualization.***</b></p> <input checked="" type="checkbox"/> Complete Best Possible Medication History Reconciliation and Prescriber Order Form (ORD37)				
Time (hhmm)	<b>Consults</b> <input checked="" type="checkbox"/> Dr: _____ to assume care (preferably Critical Care)				
By	<b>Diet</b> <input type="checkbox"/> Diet as tolerated				
Status	<b>Vitals</b> <input checked="" type="checkbox"/> Cardiac Monitoring <input checked="" type="checkbox"/> HR, RR, BP, SpO <sub>2</sub> and neurovital signs (CNS) q30minutes x 4 hours, then q1h x 4 hours <input checked="" type="checkbox"/> Intake and output q1h <input type="checkbox"/> Foley to Urometer (regular use is discouraged, restrict to cases of shock or obstruction)				
Processing Reviewed by	<b>Lab Investigations</b> <input checked="" type="checkbox"/> CBC <input checked="" type="checkbox"/> S. Ketones <input checked="" type="checkbox"/> S. Osmolarity <input checked="" type="checkbox"/> Magnesium, Calcium, and Phosphorus Lab Investigations to be done <b>STAT THEN 1 hour after IV Bolus initiated THEN q3h x2</b> <input checked="" type="checkbox"/> Na, K, Cl <input checked="" type="checkbox"/> TCO <sub>2</sub> <input checked="" type="checkbox"/> Glucose <input checked="" type="checkbox"/> Creatinine <input checked="" type="checkbox"/> Urea <input checked="" type="checkbox"/> Venous Blood Gases <input checked="" type="checkbox"/> Anion Gap				
Status	<b>Additional Lab Investigations</b> <input checked="" type="checkbox"/> Capillary Blood Glucose <b>STAT</b> then q1h <input type="checkbox"/> Troponin <input type="checkbox"/> Lipase <input type="checkbox"/> AST, ALT, GGT <input type="checkbox"/> INR <input type="checkbox"/> Albumin <input type="checkbox"/> ABG <input type="checkbox"/> Other: _____				
Faxed by	<b>Symptom Management</b> Maximum from all sources in 24 hours: acetaminophen = 4,000 mg AND ibuprofen = 2,400 mg <input type="checkbox"/> acetaminophen 650 mg PO or PR q4h PRN <input type="checkbox"/> ibuprofen 400 mg PO q6h PRN <input type="checkbox"/> morphine _____ mg IV q _____ h PRN (avoid use of narcotics when possible) <input type="checkbox"/> ondansetron 4 mg IV q8h PRN <input type="checkbox"/> dimenhydrinate 25 – 50 mg IV q6h PRN (for patients at low risk for falls and/or delirium) <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____				
	<b>IV Fluids and Electrolytes</b> <b>Initial Bolus (for vascular compromise and signs of shock)</b> <input type="checkbox"/> sodium chloride 0.9% <input type="checkbox"/> 1,000 mL <b>OR</b> <input type="checkbox"/> 2,000 mL      IV x1 dose				

Telephone Order \_\_\_\_\_  
 Ordering Practitioner, Designation      Signature      Date/Time (dd/mm/yyyy hhmm)

If Telephone Order \_\_\_\_\_  
 Ordering Physician      Date (dd/mm/yyyy)      Time (hhmm)       Read Back



**Chart Copy – Do Not Destroy**

Height \_\_\_\_\_ cm      Weight \_\_\_\_\_ kg

Allergies \_\_\_\_\_

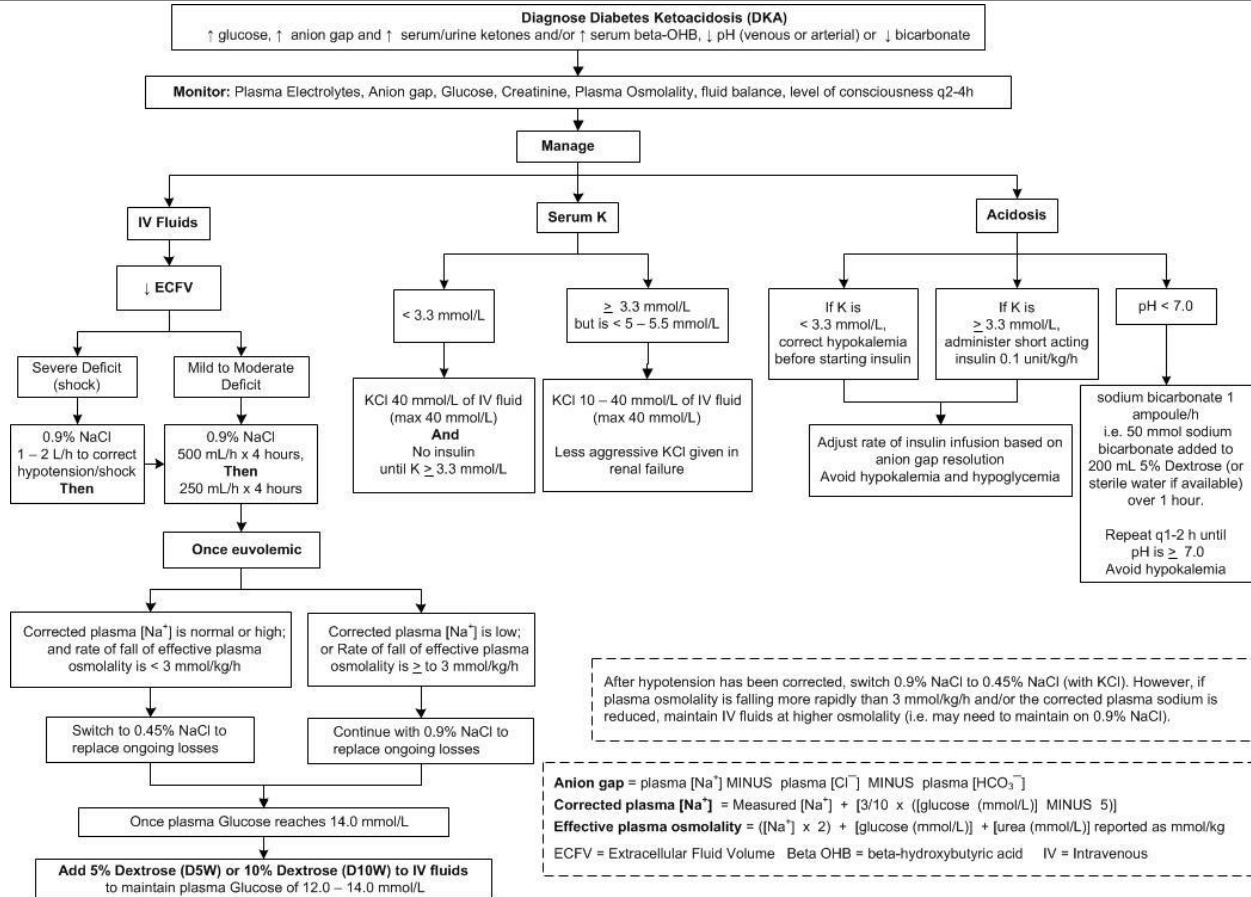
<b>Emergency Department (ED) ADULT Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycaemic State (HHS) Initial Management Order Set</b>		M	K	O
Orders Processed Date (dd/mm/yyyy)	<b>IV Fluids and Electrolytes Continued...</b>			
Time (hhmm)	<b>Replacement Fluid</b> <input checked="" type="checkbox"/> sodium chloride 0.9% at 500 mL/h for 4 hours, <b>THEN</b> <input checked="" type="checkbox"/> sodium chloride 0.9% at 250 mL/h for 4 hours ( <i>inform MD if new pulmonary crackles develop</i> ) <input checked="" type="checkbox"/> Once blood glucose is 14 mmol/L or less, <input checked="" type="checkbox"/> Change maintenance fluid to 5% dextrose in water with sodium chloride 0.45% <input checked="" type="checkbox"/> Reduce insulin infusion to half current rate <input checked="" type="checkbox"/> If blood glucose is less than 4 mmol/L, follow Medical Directive: Adult Hypoglycemic Management <input checked="" type="checkbox"/> Once there is urine output, if serum potassium (as reassessed after every new result): <input checked="" type="checkbox"/> is between 3.3 and 5 mmol/L, Add 20 mmol KCL to each Liter of above fluid <input checked="" type="checkbox"/> is less than 3.3 mmol/L, Add 40 mmol KCL to each Liter of above fluid <input type="checkbox"/> magnesium 2 g in mini-bag over 1 hour <input type="checkbox"/> If Arterial pH is less than 7, infuse sodium bicarbonate 50 mmol in 200 mL of 5% dextrose in water over 1 hour <input type="checkbox"/> Other: _____			
By				
Status				
Processing Reviewed by	<b>Glucose Management</b>			
Status	<input checked="" type="checkbox"/> Do <b>NOT</b> give a bolus of IV insulin <input checked="" type="checkbox"/> Do <b>NOT</b> infuse insulin if serum potassium is less than 3.3 mmol/L <input checked="" type="checkbox"/> regular insulin 25 units in 250 mL sodium chloride 0.9% <input checked="" type="checkbox"/> regular insulin IV infusion at _____ <b>units/h</b> (0.05 – 0.1 units/kg/h = 0.5 – 1 mL/kg/h) <input type="checkbox"/> Other: _____			
Faxed by	<b>Additional Orders</b>			
	_____ _____ _____ _____ _____			

Telephone Order \_\_\_\_\_  
 Ordering Practitioner, Designation      Signature      Date/Time (dd/mm/yyyy hhmm)

If Telephone Order \_\_\_\_\_  
 Ordering Physician      Date (dd/mm/yyyy)      Time (hhmm)       Read Back



## Emergency Guidelines for Managing the Adult with Diabetic Ketoacidosis (DKA)



Adapted from 2013 Canadian Diabetes Association Clinical Practice Guidelines: Management of DKA in adults

### RECOMMENDATIONS

- In adult patients with DKA, a protocol should be followed that incorporates the following principles of treatment: 1) fluid resuscitation, 2) avoidance of hypokalemia, 3) insulin administration, 4) avoidance of rapidly falling serum osmolality, and 5) search for precipitating cause (as illustrated in Figure 1) [Grade D, Consensus].
- In adult patients with HHS, a protocol should be followed that incorporates the following principles of treatment: 1) fluid resuscitation, 2) avoidance of hypokalemia, 3) avoidance of rapidly falling serum osmolality, 4) search for precipitating cause, and 5) possibly insulin to further reduce hyperglycemia (as illustrated in Figure 1) [Grade D, Consensus].
- Point-of-care capillary beta-hydroxybutyrate may be measured in the hospital in patients with type 1 diabetes with capillary glucose >14.0 mmol/L to screen for DKA, and a beta-hydroxybutyrate >1.5 mmol/L warrants further testing for DKA [Grade B, Level 2 (10–15)].
- In individuals with DKA, 0.9% sodium chloride should be administered initially at 500 mL/h for 4 hours, then 250 mL/h for 4 hours [Grade B, Level 2 (32)] with consideration of a higher initial rate (1–2 L/h) in the presence of shock [Grade D, Consensus]. For persons with a HHS, IV fluid administration should be individualized based on the patient's needs [Grade D, Consensus].
- In individuals with DKA, an infusion of short-acting IV insulin of 0.10 U/kg/h should be used [Grade B, Level 2 (36,37)]. The insulin infusion rate should be maintained until the resolution of ketosis [Grade B, Level 2 (42)] as measured by the normalization of the plasma anion gap [Grade D, Consensus]. Once the plasma glucose concentration reaches 14.0 mmol/L, IV dextrose should be started to avoid hypoglycemia [Grade D, Consensus].

#### Abbreviations:

DKA, diabetic ketoacidosis; HHS, hyperosmolar hyperglycemic state; IV, intravenous.