Alberta Health Services

Form Title **Diabetic Ketoacidosis, Adult - Inpatient Order Set**

Form Number **21052Bond**

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Alberta Health Services

Last Name	
First Name	
PHN#	MRN#
Birthdate *(dd-Mon-yyyy)*	Physician

Diabetic Ketoacidosis, Adult - Inpatient Order Set

Select orders by placing a (✓) in the associated box

For more information, see Clinical Knowledge Topic ***Diabetic Ketoacidosis, Adult – Inpatient***

Admit, Discharge

☐ Admit to Service _____ under care of Dr _____
☐ Anticipated Date of Discharge *(yyyy-Mon-dd)* _____

Diet

☐ NPO
☐ Diabetic Diet
☐ Other: _____

Patient Care

Activity

☐ Activity as Tolerated
☐ Fall Prevention Risk Assessment

Vital Signs

☐ Vital Signs every 30 minutes x 2; then every hour x 4; then every 2 hours x 24 hours; and then Authorized Prescriber to reassess
☐ Vital Signs every _____ hour(s)
☐ Orthostatic vitals every _____ hour(s)

Intake and Output

☐ Intake and Output every 8 hours, continue until intravenous therapy discontinued
☐ Intake and Output every _____ hour(s)

Consider Foley catheter insertion if clinically indicated
☐ Foley Catheter- Insert
☐ Foley Catheter- Reassess daily

Monitor

Consider if severe hyper/hypokalemia with ECG changes, suspected acute coronary syndrome as precipitating cause or as per physician discretion
☐ Bedside Cardiac Monitoring

Point of Care Testing

POCT glucose, i.e. capillary blood glucose, may be inaccurate if a patient is critically ill. Use non-POCT, non-capillary glucose to assess accuracy prior to reliance on POCT glucose. See POCT glucose procedure for details and other potential interferences.
☐ Blood Glucose Monitoring – POCT every 1 hour while on IV insulin infusion or until anion gaps is normalized
☐ Blood Glucose Monitoring – POCT every _____ hour

Respiratory Care

☐ O2 Therapy – Titrate to Saturation to maintain SpO2 between 92-96%
☐ O2 Therapy – Titrate to Saturation to maintain SpO2 between 88-92%
☐ Notify Authorized Prescriber if oxygen requirement increase by greater than 2L

Prescriber Signature	Date *(dd-Mon-yyyy)*	Time *(hh mm)*

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Laboratory Investigations

Choose ALL if not already done:

Hematology

☐ Complete Blood Count (CBC) with differential

Chemistry

☐ Electrolytes (Na, K, Cl, CO2)
☐ Creatinine
☐ Glucose Random
☐ Beta-Hydroxybutyrate
☐ Serum Osmolality
☐ Lactate
☐ Calcium (Ca)
☐ Albumin
☐ Magnesium (Mg)
☐ Phosphate
☐ Lipase
☐ Beta HCG
☐ Troponin
☐ CK
☐ Hemoglobin A1C

Blood Gases

☐ Arterial Blood Gas

Urine Tests

☐ Urine Osmolality Random
☐ Urinalysis Random
☐ Urine Bacterial Culture

Therapeutic Drug Monitoring and Toxicology - If clinically indicated

☐ Acetaminophen
☐ Ethanol (Blood Alcohol)
☐ Ethylene Glycol
☐ Isopropanol
☐ Methanol
☐ Salicylate

Repeating Labs

☐ Electrolytes (Na, K, Cl, CO2) and serum osmolality every 2 hours x 4; then every 4 hours until anion gap has normalized
☐ Venous Blood Gas every 2 hours x 4, then every 4 hours until anion gap and HCO3 have normalized
☐ Complete Blood Count (CBC) with differential daily

Others

☐ Blood Cultures
☐ Other: _____

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Diagnostic Investigations

Order imaging studies if there is clinical concern for a precipitating cause of DKA

☐ Chest X-ray 2: PA & Lateral (GR Chest, 2 Projections)
☐ Electrocardiogram - 12 lead
☐ Other: _____

Intravenous Therapy

☐ Intravenous Cannula – Insert: Initiate IV

Intravenous Fluid Replacement – Initial Resuscitation

Severe Dehydration/Hypovolemic Shock

☐ IV Bolus: 0.9% NaCl infusion IV 1000 mL over 1 hour
☐ IV Bolus: 0.9% NaCl infusion IV 2000 mL over 1 hour

Mild or Moderate Dehydration

☐ IV Bolus: 0.9% NaCl infusion IV 500 mL over 1 hour for _____ hours and then at 250 mL/hour for _____ hours

Intravenous Fluids Replacement Once Euvolemic – Potassium Added

If plasma corrected Sodium (Corrected plasma [Na+] = Measured [Na+] + [3/10 × ([Glucose (mmol/L)] − 5)] is more than 135 and if plasma osmolality is falling less than 3 mmol/kg/hour; choose the following intravenous solution.
For potassium chloride supplementation – see Potassium Replacement orders below

Reassess fluid rate and type every 2 hours depending on hydration status, serum sodium and serum osmolality.

☐ 0.45% NaCl infusion IV (add potassium chloride supplementation as per potassium replacement orders) at 250 mL/hour ; reassess fluids every 2 hour
☐ IV Fluid (other): _____ infusion IV (add potassium chloride supplementation as per potassium replacement orders) at _____ mL/hour

Medications

Potassium Replacement

Adjust potassium chloride supplementation based on most recent electrolyte results

If Serum potassium is less than 3.3 mmol/L:

☑ HOLD insulin infusion until serum potassium is GREATER than 3.3 mmol/L

Must choose ONE below:

☐ Choose IV solution with potassium chloride 40 mmol/L (maximum rate is 10 mmol/hour in peripheral line)
☐ potassium chloride 10 mmol in sterile water 100 mL IV over 1 hour ; give 3 doses
☐ potassium chloride (liquid) _____ mmol PO every _____ hour(s) for _____ day(s)
☐ potassium chloride (1500 mg tab = 20 mmol) _____ mmol PO every _____ hour(s) for _____ day(s)

If Serum potassium is 3.3 – 5.5 mmol/L:

☐ Choose IV solution with potassium chloride 20 mmol/L
☐ Choose IV solution with potassium chloride 40 mmol/L (maximum rate is 10mmol/hour in peripheral line)

If Serum potassium is greater than 5.5 mmol/L OR if urine output is less than 30 mL/hour:

☐ HOLD potassium chloride in IV solution

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Medications Continued

Sodium Bicarbonate

Consider ONLY if blood pH is less than 7.0 on Arterial Blood Gas or Venous Blood Gas despite fluid resuscitation and potassium replacement.

☐ sodium bicarbonate 50 mmol in 50 mL D5W IV once, infuse over 1 hour

Reassess need for repeat infusion

☐ Repeat arterial blood gas or venous blood gas 1 hour after IV sodium bicarbonate

Magnesium

If clinically indicated, infuse over 2 or 4 hours

☐ magnesium sulphate 2 g in 100 mL 0.9% NaCl IV once, infuse over 1 hours

☐ magnesium sulphate 4 g in 200 mL 0.9% NaCl IV once, infuse over 1 hours

Phosphate

Not recommended unless serum phosphate concentration below 0.32 mmol/L, cardiac dysfunction, anemia, or respiratory depression. If needed use:

☐ Sodium phosphate (15 mmol phosphate, 20 mmol sodium) in D5W 100 mL over 4 hours x 1 dose

Insulin Therapy Infusion

☑ HOLD insulin infusion if serum potassium is less than 3.3 mmol/L (Immediate potassium chloride correction required)

☐ Initiate insulin as soon as serum potassium is more than 3.3 mmol/L, and repeat electrolytes every 2 - 4 hours

☑ Notify Authorized Prescriber if blood glucose is less than 7 mmol/L at anytime

For patients on Sodium-glucose co-transporter 2 (SGLT2) inhibitors SGLT2 and in DKA

For patients on SGLT2 inhibitors with Blood Glucose less than 14 mmol/L refer to – ***Ongoing Insulin Management – Start once blood glucose is LESS THAN 14 mmol/L for 2 consecutive readings*** *AND* refer to ***Intravenous Fluid Replacement Orders (Glucose less than 14 mmol/L)***

For patients on SGLT2 inhibitors with Blood Glucose equal to or greater than 14 mmol/L refer to -

Initial Insulin Management – When blood glucose is EQUAL to or GREATER than 14 mmol/L

☐ Hold SGLT2 (complete medication name, dose, route, frequency): _____

Initial Insulin Management – When blood glucose is EQUAL to or GREATER than 14 mmol/L

When glucose is less than 14 mmol/L for 2 consecutive readings, proceed to order section ***Ongoing Management*** *for fluid, electrolytes and insulin replacement orders.*

☑ Regular insulin (HumuLIN ®R) at _____units/hour IV infusion (mix 100 units of Humulin R in 100 mL D5W) and adjust based on every 1 hour capillary blood glucose results as follows:

- If glucose decreases by 1 to 4 mmol/L, continue current insulin IV rate
- If glucose fail to decrease on 2 consecutive readings, double insulin IV rate
- If glucose decreases by more than 4 mmol/L, reduce insulin IV rate by half

Ongoing Insulin Management – Start once blood glucose is LESS THAN 14 mmol/L for 2 consecutive readings

The goals are to maintain glucose between 12-14 mmol/L until acidosis is reversed (when CO2 is or HCO3 are normalized and to continue insulin infusion until acidosis is resolved.

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Medications Continued

Intravenous Fluid Replacement Orders (Glucose less than 14 mmol/L)

If plasma corrected Sodium (Corrected plasma [Na+] = Measured [Na+] + [3/10 × ([Glucose (mmol/L)] − 5)] is more than 135 and if plasma osmolality is falling less than 3 mmol/kg/hour; choose the following intravenous solution

☐ D5W – 0.45% NaCl infusion (add potassium chloride supplementation as per potassium replacement orders)

☐ D5W – 0.9% NaCl at _____ mL/hour (add potassium chloride supplementation as per potassium replacement orders)

Insulin Infusion (Glucose less than 14 mmol/L)

☐ Decrease current insulin infusion rate by 50%, then adjust to maintain glucose at 12-14 mmol/L based on hourly glucose monitoring:

Glucose (mmol/L)	Insulin Adjustment
Less than 7 (any time)	Hold Insulin infusion and Contact Authorized Prescriber
7 - 9.9	Decrease rate by 1 unit/hour
10 - 11.9	Decrease rate by 0.5 units/hour
12 - 14	Maintain current rate
14.1 - 16	Increase rate by 1 unit/hour
Greater than 16	Increase rate by 2 units/hour

☐ Contact Authorized Prescriber to change insulin order or IV fluid orders if:

- *Glucose is out of range (12-14 mmol/L) for 2 consecutive readings*
- *Subcutaneous Insulin should be started once acidosis is resolved (pH greater than 7.3, normalized anion gap and CO2 , or HCO3) and when patient is tolerating oral diet (subcutaneous insulin to be initiated)*

Subcutaneous Insulin Orders

Start basal insulin (long acting) two hours prior to stopping IV insulin infusion

☐ Continue IV insulin infusion for 2 hours post subcutaneous basal insulin and then discontinue IV insulin

☐ Continue home insulin (type/dose) _____

☐ Basal Bolus Insulin Therapy (BBIT) Order Set

☐ In-Hospital Orders for Self-Management of Insulin Pump Order Set

☐ Other(s) _____

Transitions and Referrals

☐ Consult Dietitian

☐ Consult Social Worker

☐ Consult/Referral to Diabetic Education Program/Health Care Team (resources as applicable)

☐ Other: _____

Prescriber Signature	Date *(dd-Mon-yyyy)*	Time *(hh mm)*