GUAM MEMORIAL HOSPITAL AUTHORITY
DIABETIC KETOACIDOSIS PROTOCOL

_____ **DATE:** _____
ADMITTING PHYSICIAN

_____ **TIME:** _____
ADMITTING DIAGNOSIS

Admit Patient to Inpatient Status: ☐ ICU ☐ Telemetry

	☐ **DKA**	☐ **HHS**
Blood Glucose (mg/dL)	> 250	> 600
Serum bicarbonate (mEq/L)	≤ 18	> 18
Serum pH	≤ 7.3	> 7.3
Anion Gap	>10	variable
Serum Osmolality (mOsm/kg)	variable	> 320

OTHER COMORDID DISEASES:
☐ MRSA ☐ Pneumonia ☐ Urinary Tract Infection
☐ Pregnant ☐ Other: _____ ☐ Pressure Ulcer: _____ (location)

ALLERGIES: ☐ NKDA ☐ YES _____ **Specify reaction:** _____

HEIGHT: _____ft _____in **WEIGHT:** _____ kg

CONDITION ☐ Fair ☐ Serious ☐ Critical

ACTIVITY ☐ Bed Rest **DIET** ☐ NPO

RESPIRATORY ☐ _____ L/min NC ☐ Titrate to keep O_2 sat>94% ☐ VentiMask _____%
☐ NRB ☐ BiPaP _____

NURSING ☐ Strict I/O ☐ Vital signs per protocol
☐ Foley Catheter ☐ Q1 hour neurochecks while on insulin infusion

NOTIFY PHYSICIAN (any of the following)
- HR<50 or HR>120
- RR<12 or RR>32
- UOP<0.5ml/kg/hr
- SBP<90 or SBP>160
- Temp>100.3F (new onset)
- Change in mental status
- DBP>110
- O_2 sat<90%
- Resolution of DKA/HHS

LABS ☐ Basic Metabolic Panel (Chem7) ☐ Complete Metabolic Panel (Chem20)
☐ CBC with auto differential ☐ ABG every 2 hours until serum pH≥7
☐ Urinalysis ☐ Acetone, serum
☐ Renal Panel (BUN, SCr) ☐ Magnesium
☐ Repeat Chem7 every ____ hours
☐ Serum osmolality every 4 hours until serum osmol ≤ 320mOm/kg

Physician initial: _____

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IV FLUIDS

A. BOLUS
- ☐ 0.9% NaCl 1000mL over 1 hour x _____ liters
- ☐ Other _____ at _____ ml/hr x _____ liters

B. MAINTENANCE (Corrected Na = serum Na + [0.016 x (serum glucose mg/dL -100)]
- ☐ 0.9% NaCl at _____ ml/hr (recommended for corrected Na<136mmol/L)
- ☐ 0.45% NaCl at _____ ml/hr (recommended for corrected Na≥136mmol/L)
- ☐ Other _____ at _____ ml/hr

**** Change to dextrose containing IVF once BG<250 for DKA and BG<300 for HHS ****
- ☐ D5-1/2NS at _____ ml/hr
- ☐ Other _____ at _____ ml/hr
- ☐ Add _____ mEq KCl to MIVF when K ≤ 5.2mmol/L
- ☐ Discontinue KCl from MIVF if K ≥ 5.2mmol/L

INSULIN INFUION

- **TARGET BLOOD GLUCOSE 140-180mg/dL (ICU) preprandial <140 (non-ICU)**
- Do not initiate insulin if K ≤ 3.3mmol/L
- Accuchecks every hour while on insulin infusion.
- Start insulin infusion of Regular insulin 100units/NS 100mL (1unit/mL)
  - ☐ Bolus=0.1unit/kg IV x _____ kg = _____ units **(PHYSICIAN MUST COMPLETE)**
  - ☐ Infusion=0.1unit/kg/hr IV x _____ kg = _____ units/hr (**PHYSICIAN MUST COMPLETE)**
  - ☐ Hold insulin if K ≤ 3.3mmol/L

INSULIN DRIP RATE ADJUSTMENT PROTOCOL

BLOOD GLUCOSE RANGE	INSULIN DRIP RATE ADJUSTMENT
BG < 70mg/dL	Hold Insulin Drip Implement GMH Hypoglycemia protocol
BG 70-100mg/dL	Hold insulin drip and repeat BG level every 30min until BG>180mg/dL and then restart drip at 50% of the previous rate
BG 100-140mg/dL	decrease drip rate by 25%
BG 140-180mg/dL (TARGET RANGE)	**KEEP CURRENT RATE**

IF BG>180mg/dL Adjust per Rate of Change from previous BG level	If BG>180mg/dL Insulin Drip Rate Adjustment
Δ BG < 25mg/dL	increase drip rate by 50%
Δ BG 25-50mg/dL	increase drip rate by 25%
Δ BG 50-75mg/dL	**KEEP CURRENT RATE**
Δ BG 75-100mg/dL	decrease drip rate by 25%
Δ BG > 100mg/dL	decrease drip rate by 50%

Physician initial: _____

ADJUSTING THE INFUSION

- **If patient remains in goal range, do not adjust the rate until the BG falls out of goal range.**
- **If BG remains >180mg/dL and is elevated from previous accucheck, increase insulin drip rate by 50% and recheck in one hour per protocol.**
- If nutritional therapy (eg. TPN or tube feeds) is discontinued or slightly reduced, decrease insulin infusion rate by 50% and reinstate hourly blood glucose checks.

Hypoglycemia (capillary BG < 70mg/dL) – HOLD INSULIN DRIP.

- Implement GMHA hypoglycemia protocol.
- Once BG>200mg/dL, resume infusion at 50% of previous infusion rate.

Notify the physician

- BG remains over 350mg/dL.
- Hypoglycemia (BG<70mg/dL)
- DKA resolved (stop insulin drip)

DKA Resolution	HHS Resolution
• BG < 200mg/dL • Serum bicarb ≥ 15mmol/L • Anion gap ≤ 12 **[AG = Na – (Cl+CO2)]**	• Serum osmol<320mOsm/kg • Normal mental status

IV to SQ INSULIN TRANSITION

- Evaluate patient's nutritional intake to calculate the Total Daily Dose (TDD) of insulin.
- Step 1: Average the rate of insulin infusion when BG has stabilized.
- Step 2: Multiply by 24 hours. Multiply the 24 hour insulin requirement by 75% = TDD.
- Step 3: Divide the TDD into the appropriate insulin regimen.
  (**See sample calculations below)**
  - 50% basal insulin + 50% prandial insulin
  - Prandial insulin dose divided TID if tolerating meals or Q6H if on continuous tube feeds.

Example: Average rate of insulin infusion is 2units/hr.
TDD = 2units/hr x 24hrs = 48units x 75% = 36units TDD
50% TDD = 18units given as basal insulin (NPH, Lantus, Levemir, Tujeo)
50% TDD = 18units divided TID as prandial insulin = 6units TID
*If on tube feeds = 18 units divided Q6H as prandial insulin = 5units Q6H

Physician: _____

Date: _____ Time: _____