ADULT DIABETIC KETOACIDOSIS (DKA) – MANAGEMENT CHART

Surname		Reg no	
Forename	Sex	Date of birth	
Address		Cons	
		Ward/Dept	
		Hosp	

DATE:	TIME:	CONS:
CLERKING DR:	GRADE:	BLEEP:

IMMEDIATE MANAGEMENT 0-60 MINUTES

ACTION 1 — **CONFIRM DIAGNOSIS**

ALL 3 OF THE FOLLOWING MUST BE PRESENT TO CONFIRM DKA
1. Capillary blood glucose (CBG) 11.0mmol/L or known diabetes
2. Capillary blood ketones>3.0mmol/L or 2+ ketonuria
3. Venous pH<7.3 and/or venous bicarbonate<15mmol/L

CBG mmol/L
Ketones mmol/L
pH
HCO_3^- mmol/L

ACTION 2 — **BASELINE ASSESSMENT**

Na^+ K^+ Urea Creatinine Chloride eGFR HCO_3^- Lactate Lab glucose GCS EWS

E
M
V

ACTION 3 — **INVESTIGATIONS**

ECG CXR MSU βHCG STOOL MC&S BLOOD CULTURES CT HEAD VTE PROPHYLAXIS GIVEN?
CHECK ANION GAP

ACTION 4 — **PRECIPITATING FACTORS**

INFECTION/SEPSIS STRESS NON-COMPLIANCE IDIOPATHIC OTHERS (STEROIDS, ALCOHOL, PREGNANCY, PUMP FAILURE)

ACTION 5 — **IS THE PATIENT SHOCKED?**

Patient shocked (SBP<90 mmHg) or severe DKA*

YES ☐ Give 500ml 0.9% Sodium Chloride (NaCl) over 15 mins and give another 500ml bolus over 15mins if SBP still<100mmHg (Hypotension is likely to be due to low circulating volume but consider other causes such as sepsis/heart failure etc.)

NO ☐ Give 1L 0.9% Sodium Chloride over an hour

SpR/Consultant informed?
Time:

Severe DKA*
Ketones>6, pH<7.1, HCO_3^-<5, K^+<3.5, GCS<12, SpO_2<92%
SBP<90, Pulse>100/<60
CALL ITU

ACTION 6 — **INSULIN**

Prescribe 50 units of Actrapid in 49.5ml 0.9%NaCl (1unit/ml)
Commence a fixed rate insulin infusion at 0.1unit/kg/hour
Maximum 15ml/hour (starting dose)

Done? ☐ Initial Time

Weight: kg Initial Insulin rate: ml(units)/hour

If patient takes long acting insulin e.g. Insuman Basal or Humulin I or Glargine or Levemir or Degludec or Toujeo continue as normal (circle which applies) ☐ **Dose: Units**

ACTION 7 — **POTASSIUM REPLACEMENT**

Venous potassium level	Potassium Chloride (KCl) replacement
>5.5mmol/L	NONE
3.5-5.5 mmol/L	40mmol/L
<3.5 mmol/L	SENIOR ADVICE, additional K^+ required

☐ Life threatening hypokalemia can occur with insulin infusion. If K^+ infusion is greater than 20mmol/hour cardiac monitoring is needed
DO NOT GIVE KCl IF ANURIC

ACTION 8 — **REASSESS PATIENT**

Poor urine output (<0.5ml/kg/hour)	Persistent vomiting or reduced GCS	SpO_2<94% On Air	Persistent acidosis?	GCS<13	Senior review?
Catheterise	Consider NGT	ABG/CXR	Consider other causes	Consider CT head	Name Time

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MONITORING
HOURLY CBG, CAPILLARY KETONES, Urinary Output
pH – 2, 4, 6, 12, 18, 24 HOURS (or until resolved)
U+Es – 4, 6, 12, 24 HOURS
EWS – hourly

RESOLUTION OF DKA: Blood ketones<0.3/L AND pH>7.3

TREATMENT AIMS:
1. Blood ketones to fall by at least 0.5mmol/L/hour
2. Venous bicarbonate to rise by at least 3mmol/L/hour
3. Blood glucose to fall by at least 3mmol/L/hour

IF THIS IS NOT BEING ACHIEVED, CHECK LINES, THEN INCREASE RATE OF INSULIN BY 1-2unit/hour

Hours from start of treatment (h)		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Actual Time																										
Capillary Blood Glucose (mmol/L)	>20																									
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	2																									
	1																									
Start 10% Glucose at 100ml/hour when CBG<14																										
Blood ketones (mmol/L)																										
Insulin rate (mL/h)																										
0.9% NaCl (mL/h)																										
10% Glucose rate (mL/h)																										
Urine output (mL/h)																										
Venous pH																										
Venous K^+																										
Venous HCO_3^-																										

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60 MINUTES TO 6 HOURS – ADMIT TO Monitored Bay

ACTION 1	CBG/BLOOD KETONES	VBG	U&Es	FLUID BALANCE	EWS
MONITORING	HOURLY	2, 4, 6, 12, 18hrs	6, 12, 24hrs	HOURLY	HOURLY

PLEASE CHART THESE VALUES ON THE MONITORING CHART

ACTION 2

IV FLUIDS

1L 0.9% sodium chloride +/- KCl over 2hrs (500ml/hour)
1L 0.9% sodium chloride +/- KCl over 2hrs (500ml/hour)
1L 0.9% sodium chloride +/- KCl over 4hrs (250ml/hour)

☐ NOTE – Caution in elderly, CCF, ESRF adolescence, pregnancy (risk of cerebral and pulmonary oedema)

When CBG<14.0mmol/L add 125ml/hour of 10% glucose to run alongside 0.9% Sodium Chloride
(consider reducing rate of 0.9% sodium chloride to reduce risk of fluid overload)

ACTION 3

Continue 0.9% sodium chloride (+KCl) as required to restore circulating volume

IV FLUID ADJUSTMENTS

Reassess patients volume status frequently (HR, BP, Urine Output, JVP, chest auscultation) and adjust fluid appropriately

When CBG<14.0mmol/L start 10% Glucose IV at 125ml/hour alongside 0.9% sodium chloride + potassium chloride

ACTION 4 **Ensure treatment targets are being met**

TREATMENT TARGETS

1. Fall in CBG of >3mmol/L (until CBG<14.0mmol/L)
2. Fall in capillary blood ketones of >0.5mmol/L/hour
3. Rise in venous bicarbonate of >3.0mmol/L

If the patient is not improving as expected, check the patency of the lines, check infusion pumps BEFORE increasing insulin by 1-2unit (ml)/hour

6 -12 HOURS

ACTIONS

1L 0.9% sodium chloride + /- potassium chloride over 4hours (250ml/hour)
1L 0.9% sodium chloride +/- potassium chloride over 6hours (125ml/hour)
If CBG<14.0mmol/L add 10% glucose 125 ml/hour, **using a separate port**
Reassess CV status
Check CBG, blood ketones, VBG, chloride,U&Es as above and signs of DKA resolution
Ensure early referral to ThinkGlucose (TG) Team

BEYOND 12 HOURS

RESOLUTION OF DKA

Resolution of DKA is defined as pH>7.3 and blood ketones<0.3 mmoll/L

1. If DKA has resolved and the patient is eating and drinking – switch to SC insulin (refer to TG team or DKA guideline on intranet)
2. If DKA has resolved but the patient cannot eat OR has another indication for IV insulin (severe sepsis/MI)- use a VRI infusion (see Medical guidelines)
3. Inform DSN/ThinkGlucose Team

By 24 hours ketonaemia and acidosis should have been resolved. Seek senior review or Diabetes Team support if not improving

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