

Guidelines for the Emergency Management of Diabetic Ketoacidosis

(This chart relates to patients over 17 years only)

Name:

Date of Birth: DD / MM / YYYY

MRN Number:

NHS Number:

(OR AFFIX HOSPITAL LABEL HERE)

Date: DD / MM / YYYY

Please discuss with ITU if: pH less than 7, age less than 17 or greater than 75, cardiac or renal failure, pregnant, Na less than 120 mmol/L, K greater than 6 mmol/L, septic, hypotensive, acute cardiac event

Diagnostic tests	Result	Investigations
Laboratory Blood Glucose (not capillary) mmol/L		U+E, HCO ₃ <input type="checkbox"/> CXR <input type="checkbox"/>
Venous blood gas (ABG only if sats less than 90%)		FBC <input type="checkbox"/> MSU <input type="checkbox"/>
Venous pH: less than 7.3		Troponin T <input type="checkbox"/> Blood Cultures <input type="checkbox"/>
Venous HCO ₃ : less than 15mmol/L		ECG <input type="checkbox"/>
Capillary ketone level: more than 3mmol/L (Refer to Ketone Protocol) or Urine ketones 2+ or more		

Insulin Infusion Prescription

- Continue long acting insulin i.e. Lantus or Abasaglar (Glargine), Levemir (Detemir), Tresiba (Degludec), Toujeo (Glargine U300). Discontinue rapid acting and mixed insulins. For a patient presenting with a new diagnosis of T1DM in DKA commence Glargine 10 units once daily alongside intravenous insulin.
- Start Insulin infusion at: 0.1 units/kg/hour – Continue this rate until pH more than 7.3, Bicarbonate more than 18mmol/L, and Capillary Ketones less than 0.6mmol/L
- Once pH more than 7.3, Bicarbonate more than 18mmol/L, and Capillary Ketones less than 0.6mmol/L, switch to the sliding scale given on Trust Chart X544 Intravenous Infusion of Insulin **IF patient not eating and drinking**

IV Fluid Regimen	Potassium								
<p>For resuscitation</p> <p>1L 0.9% Sodium Chloride 1 hour 1L 0.9% Sodium Chloride 2 hours 1L 0.9% Sodium Chloride 2-4 hours* 1L 0.9% Sodium Chloride 4 hours* 1L 0.9% Sodium Chloride 4-6 hours*</p> <p>* according to response caution in 17-25 years old, elderly, pregnant, heart or renal failure</p> <p>To maintain blood sugar while still acidotic To maintain blood sugar while still acidotic 10% dextrose initially at 100mL/h if capillary glucose less than 15mmol/L, to run alongside resuscitation fluids if still dehydrated.</p>	<p>20mmol/L KCl/hour in first bag then modify according to regime below</p> <table border="1"> <tr> <td>Plasma Potassium</td> <td>Add KCl</td> </tr> <tr> <td>less than 3.5mmol/L</td> <td>40mmol/L</td> </tr> <tr> <td>3.5-5.0mmol/L</td> <td>20mmol/L</td> </tr> <tr> <td>more than 5.0mmol/L</td> <td>Nil</td> </tr> </table> <p>Bicarbonate (SpR/Consultant only) HDU/ITU only Only if pH less than 7.0 250-500mL 1.26% of bicarbonate over 4 hour</p>	Plasma Potassium	Add KCl	less than 3.5mmol/L	40mmol/L	3.5-5.0mmol/L	20mmol/L	more than 5.0mmol/L	Nil
Plasma Potassium	Add KCl								
less than 3.5mmol/L	40mmol/L								
3.5-5.0mmol/L	20mmol/L								
more than 5.0mmol/L	Nil								

Other issues	Monitoring
<p>You may need to consider another fluid regime if electrolytes imbalanced Consider CVP line if poor LV or renal function Urinary catheter NG tube if drowsy/vomiting Treat any precipitating event LMW heparin (prophylactic dose) - as per current Trust guideline Oxygen If in doubt ask for senior review</p>	<p>See page 2 for suggested biochemical review regime Hourly pulse / BP / Blood Glucose / Urine output Check Capillary Ketones 1-2 hourly Document results and clinical review in hospital notes as well as on proforma</p>

Inform diabetes Team of Admission by e-referral via Trust intranet

Cheltenham General Hospital ext: 3157 / 3680

Gloucestershire Royal Hospital ext: 8602 / 8606

Monitoring for Diabetic Ketoacidosis							
Time	0	1 hour	2 hours	6 hours	12 hours	18 hours	24 hours
Actual time							
Glucose (Lab) mmol/L							
Sodium mmol/L							
Potassium mmol/L							
Urea mmol/L							
Creatinine μ mol/L							
pH (Venous)							
HCO ₃ mmol/L							
Urinary or Capillary Ketones mmol/L							
Doctor signature							
Print name							

If not improving, continue to check 2 hourly

Record vital observations on usual charts – hourly pulse, blood pressure, urine output, capillary glucose and capillary ketones

NB: Blood glucose meter may be inaccurate in Ketoacidosis; therefore, laboratory blood glucose monitoring should be undertaken.

Aim Blood glucose level fall – 3-5 mmol/L/Hour.	After recovery
<p>If no Improvement in Blood Glucose or pH/HCO₃ Check:</p> <ul style="list-style-type: none"> • Patency of cannula • Pump operation • Insulin addition • Laboratory glucose • If all above satisfactory then increase insulin infusion rate by 1 - 2 units/hour • Discuss with registrar or consultant 	<ul style="list-style-type: none"> • Consider transfer to s/c insulin when patient able to eat plus blood ketones less than 0.6mmol/L. Bicarb more than 18 and pH greater than 7.3 • If patient unable to eat and not in DKA switch to variable rate insulin infusion • Stop IV insulin at meal time 30 minutes after s/c injection of rapid acting insulin has been given • Refer all these patients to the Diabetes Team for education and review via Trust e-referral system. (Tel: CGH 3157 / 3680 or GRH 8602 / 8606)

NB: Change to 10% dextrose when Blood Glucose less than 15mmols and still acidotic if still requiring fluid resuscitation, patient may require simultaneous saline and dextrose infusions. Monitor fluid balance carefully.

Date		00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24		
Blood Glucose (mmol/L)																											Total
Units of insulin/hour																											
Syringe Volume																											
Ketones																											
Initials																											

NB: *indicates total units of insulin in 24 hours

Date		00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24		
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