



Lightning Learning: DKA in Adults

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East Midlands Emergency Medicine Educational Media



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STOP!

Diabetic ketoacidosis (DKA) is a medical emergency with a significant morbidity and mortality. It should be diagnosed and managed promptly.

How common is DKA?⁽¹⁾

Nearly 4% of people with type 1 diabetes experience DKA each year, about 8% of episodes occur in inpatients who didn't primarily present with DKA.

Diagnostic criteria⁽³⁾ (all 3 must be present)

1. Ketonaemia ≥ 3.0 mmol/L or 2+ ketonuria
2. Blood glucose > 11.0 mmol/L or known diabetes mellitus
3. Bicarbonate < 15.0 mmol/L and/or venous pH < 7.3

Causes of death associated with DKA

- Cerebral oedema
- Hypokalaemia, hypoglycaemia
- Adult Respiratory Distress Syndrome (ARDS)
- Infections/sepsis
- DKA is prothrombotic (e.g. PE/MI)

DKA IS FATAL IF NOT TREATED

LOOK

Aims⁽³⁾

- Replacement of fluid deficit
- Insulin treatment
- Monitoring and maintaining electrolyte, potassium balance
- Avoiding complications of treatment

Management

1. Treat the patient in ER with full monitoring
2. Rapid ABCDE assessment
3. IV access, bloods (e.g. VBG, blood ketones, FBC, U&E, LFT, CRP, coagulation profile, consider blood cultures) & ECG
4. Start DKA care pathway
5. Look for precipitating cause (e.g. infection)
6. Input/output monitoring

DKA treatment pathway: (0-60 minutes)⁽²⁾

- Commence IV 0.9% sodium chloride
- Fixed rate insulin infusion (FRII) at 0.1 units/kg/h
- Give IM/SC actrapid 10 units if delay in diagnosis/commencing FRII.
- Potassium replacement if needed (see DKA chart below)
- Hourly BM, ketones, VBG
- Review IV fluids accordingly
- Give long-acting insulin
- Patients with DKA will be admitted to the Acute Care Bay (ACB) or ITU depending on severity

1) INTRAVENOUS FLUIDS should be commenced via a large IV cannula (green or grey). If there is a problem with intravenous access critical care support should be requested immediately. Be aware of any fluids that may have already been given in the ambulance or ED.

	Sodium chloride 0.9%	Rate mL/hour (circle as appropriate)	Prescriber & bleep No.	Administered by	2nd Nurse check	Time & date commenced
1st Litre over 1hr	Sodium chloride 0.9% 500ml/30mins Sodium chloride 0.9% 500ml/30mins	1000/other *.....				
2nd Litre over 2hrs	Sodium chloride 0.9% 500ml/hr Sodium chloride 0.9% 500ml/hr	500/ other.....				
3rd Litre over 2hrs	Sodium chloride 0.9% 500ml/hr Sodium chloride 0.9% 500ml/hr	500/ other.....				
4th Litre over 4hrs	Sodium chloride 0.9% 500ml/2hrs Sodium chloride 0.9% 500ml/2hrs	250/ other.....				
5th Litre over 4hrs	Sodium chloride 0.9% 500ml/2hrs Sodium chloride 0.9% 500ml/2hrs	250/ other.....				
6th Litre over 6hrs	Sodium chloride 0.9% 500ml/3hrs Sodium chloride 0.9% 500ml/3hrs	166/ other.....				
7th Litre over 6hrs	Sodium chloride 0.9% 500ml/3hrs Sodium chloride 0.9% 500ml/3hrs	166/ other.....				

* A slower rate and reduced volume of infusion should be considered when patients are under 25 years of age or over 70 years of age, pregnant, patients with heart or known chronic kidney failure (eGFR < 30 ml/min and dialysis patients - refer to nephrologist on call), if systolic BP < 90 mmHg give 500ml over 15minutes (see Box A on page 2)

	STANDARD INFUSION RATE; AMEND ACCORDING TO PATIENT FLUID STATUS	Rate mL/hour (circle as appropriate)	Potassium Check potassium & correct as appropriate (circle as appropriate)	Prescriber & bleep No.	Administered by	2nd Nurse check	Time & date commenced
2nd Litre over 2hrs	Sodium chloride 0.9% 500ml/hr Sodium chloride 0.9% 500ml/hr	500/ other.....	Nil/20mmol in 500ml other.....				
3rd Litre over 2hrs	Sodium chloride 0.9% 500ml/hr Sodium chloride 0.9% 500ml/hr	500/ other.....	Nil/20mmol in 500ml other.....				
4th Litre over 4hrs	Sodium chloride 0.9% 500ml/2hrs Sodium chloride 0.9% 500ml/2hrs	250/ other.....	Nil/20mmol in 500ml other.....				
5th Litre over 4hrs	Sodium chloride 0.9% 500ml/2hrs Sodium chloride 0.9% 500ml/2hrs	250/ other.....	Nil/20mmol in 500ml other.....				
6th Litre over 6hrs	Sodium chloride 0.9% 500ml/3hrs Sodium chloride 0.9% 500ml/3hrs	166/ other.....	Nil/20mmol in 500ml other.....				
7th Litre over 6hrs	Sodium chloride 0.9% 500ml/3hrs Sodium chloride 0.9% 500ml/3hrs	166/ other.....	Nil/20mmol in 500ml other.....				

LEARN

DON'T FORGET! Patient education is the best prevention → www.dafne.uk.com

1. Diabetic Ketoacidosis (Patient.info) <http://bit.ly/2YX0Gu3>
2. DKA guideline prescription chart (UHL) <http://bit.ly/34psecE>
3. Guidelines for the management of DKA in adults (UHL) <http://bit.ly/2PDioPg>
4. Diabetic Ketoacidosis in Adults (BMJ clinical review) <http://bit.ly/38oNvGH>

ADULT DIABETIC KETOACIDOSIS