

# diabetic ketoacidosis (DKA)

a medical emergency that is characterised by hyperglycaemia (**blood glucose above 11mmol/L**) in individuals with diabetes – occurs when the body produces **high levels of ketones due to a lack of insulin**

DKA is most common in **type 1 diabetes** due to the complete **absence of circulating insulin**. type 2 diabetes typically involves some degree of insulin production, which prevents the complete absence of circulating insulin necessary for the development of DKA.

the presence of **ketones** may sometimes be detected by a **sweet smelling breath**

ketone level can be assessed in blood or urine.

elevated blood ketones may exceed **3mmol/L**  
urine ketones are elevated to **>++**

reduced blood pH (**<7.3**), a very negative base excess (**<-2mmol/L**), and lowered serum bicarbonate levels (**<15mmol/L**) indicate **acidosis**

signs of dehydration:

- sunken eyes
- loss of skin elasticity
- excessive thirst
- dry mouth.

elevated due to **dehydration**

blood sugar levels in DKA are usually high, often **exceeding 20mmol/L**

Test	Result	Normal Range
Blood Glucose	25 mmol/L	4.0 - 7.8 mmol/L
Serum Ketones	5 mmol/L	< 0.6 mmol/L
Urine Ketones	>+++	Negative
Arterial Blood pH	7.15	7.35 - 7.45
Serum Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	10 mmol/L	22 - 28 mmol/L
Base Excess	-12 mmol/L	-2 to +2 mmol/L
Serum Potassium (K <sup>+</sup> )	4.0 mmol/L	3.5 - 5.0 mmol/L
Serum Sodium (Na <sup>+</sup> )	150 mmol/L	135 - 145 mmol/L
Serum Creatinine	120 µmol/L	60 - 110 µmol/L

**sodium-glucose cotransporter-2 (SGLT2) inhibitors, used to treat type 2 diabetes, may lead to diabetic ketoacidosis**

**Patient:** Mr D

**Diagnosis:** Suspected Diabetic Ketoacidosis