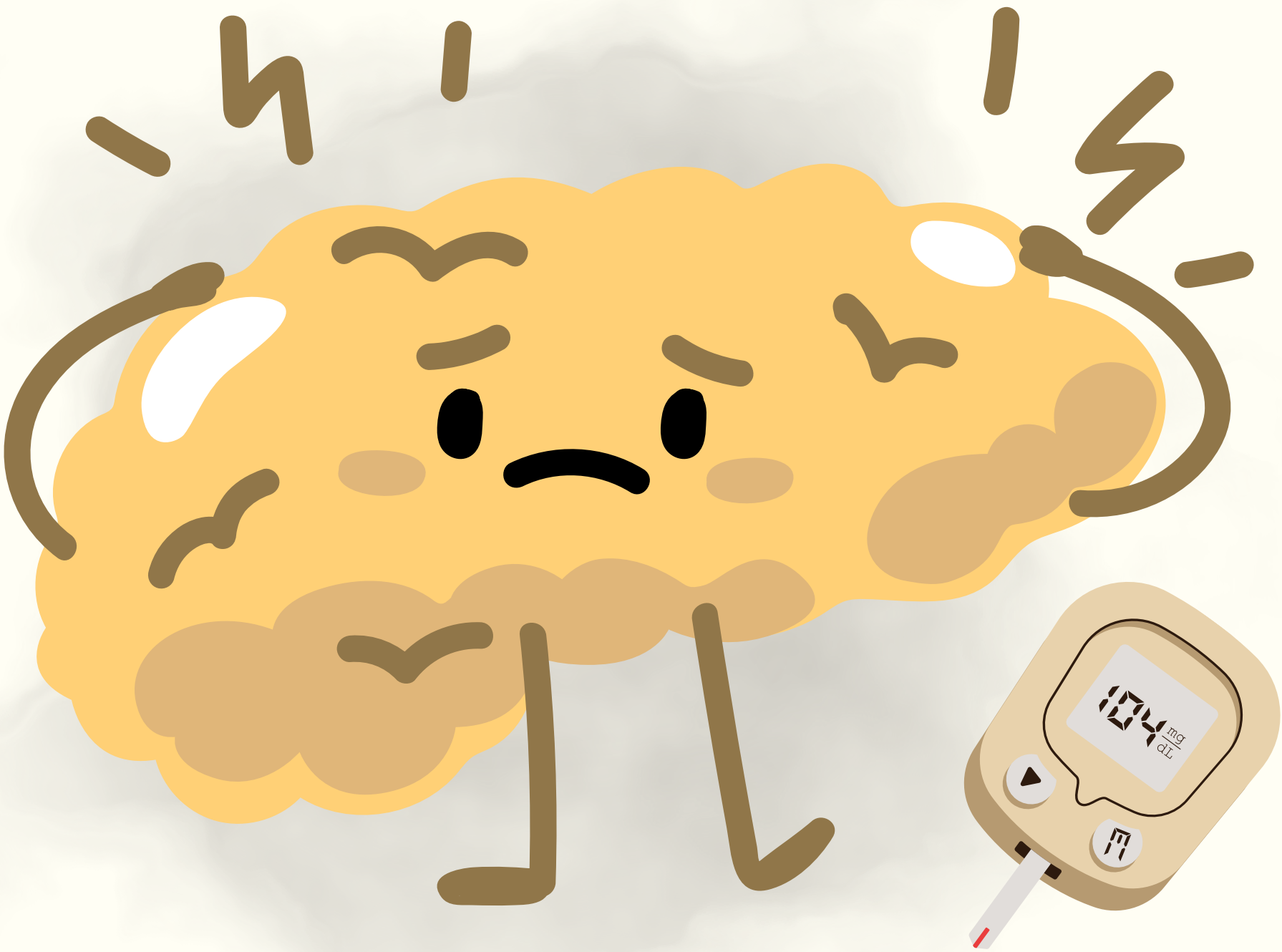
Matrix unlocked

DKA VS HHS



MUM IMs

DKA VS HHS

Diabetic ketoacidosis		Hyperosmolar hyperglycemic state
	**More common in**	
Absolute deficiency	**Insulin status**	Relative deficiency
Present	**Ketones**	Absent/minimal

Precipitants - Mnemonic "5I's"

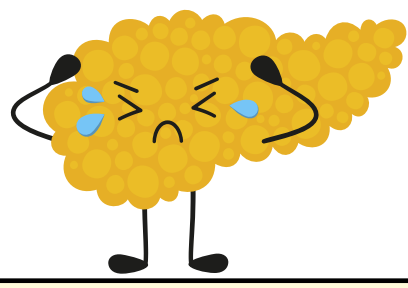
Infection

Insulin omission

Ischaemia (myocardial infarction, cerebrovascular events)

Inflammation (pancreatitis)

Intoxication (steroids, cocaine, alcohol use)



MUM IMS

DKA VS HHS

Diabetic ketoacidosis *Rapid onset (hours/days)*		Hyperosmolar hyperglycemic state *Gradual onset (days/weeks)*
Mnemonic "DKA" **D**eadly, **D**elirium, **D**ehydration **K**ussmaul breathing with fruity breath odour (exhaled acetone) **A**bdominal pain/**A**ching muscles & fatigue	**Clinical features**	• Polyuria • Polydipsia • Neurological deficits (confusion, seizures, coma) • Signs of profound dehydration

Pathogenesis

MUM IMS

Diabetic ketoacidosis

Lack of insulin → Lipolysis → Free fatty acids → Metabolic acidosis

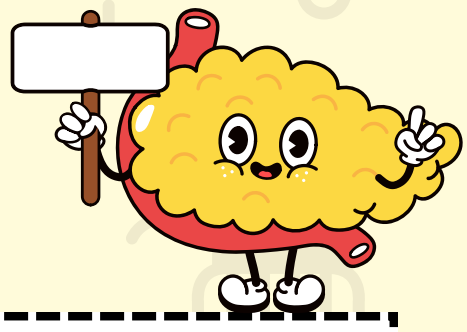
Hyperosmolar hyperglycemic state

Severe hyperglycemia → Osmotic diuresis → Profound dehydration and increased serum osmolarity

and

Some insulin present → Inhibits lipolysis / ketogenesis

Diagnostic criteria



Diabetic ketoacidosis

- Capillary plasma glucose > 11.1 mmol/L
- Capillary ketones > 3 mmol/L or urine ketones ≥ 2+
- Venous pH < 7.3 and/or bicarbonate < 15 mmol/L

Hyperosmolar Hyperglycemic State

- Severe dehydration
- Plasma glucose > 30 mmol/L
- Increased serum osmolarity (>320 mOsm/kg)

MUM IMS

Management

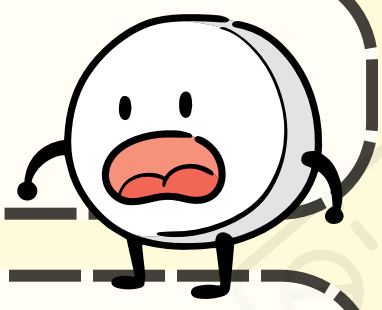
IV fluid resuscitation

- 0.9% normal saline bolus, then maintenance
- Target SBP > 90 mmHg
- Switch to 5% dextrose + saline once glucose < 14 mmol/L (to prevent hypoglycemia)

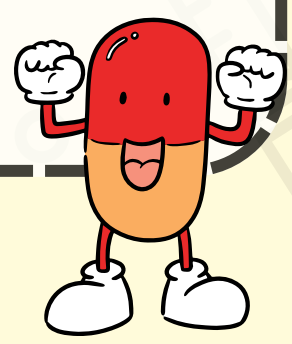
Insulin Therapy

- IV insulin infusion (0.1 U/kg/hr)
- Transition to subcutaneous insulin when patient is alert and able to eat
- Avoid rapid correction of fluids and insulin → risk of cerebral edema

Potassium replacement (if K^+ < 5.5 mmol/L)



Treat underlying cause/precipitants (e.g. antibiotics for infection)



Prophylactic low molecular weight heparin (LMWH)
Recommended for HHS unless contraindicated (dehydration effects of HHS increases thromboembolism risk)

References

1. Malaysia CPG Management of Type 2 Diabetes Mellitus (6th Edition)
2. https://www.moh.gov.my/moh/resources/Penerbitan/CPG/Endocrine/CPG_T2DM_6th_Edition_2020_13042021.pdf
3. AMBOSS
4. eTG

MUM IMS