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Diabetic Ketoacidosis Recognition and Urine Dipstick

Practical 13 / Skills laboratory simulation

Aim

Recognise possible paediatric DKA and demonstrate urine glucose and ketone testing with a prepared specimen.

Principle

DKA involves ketosis and metabolic acidosis, usually with hyperglycaemia. A urine dipstick is a rapid screening aid and cannot establish acidosis.

Materials and Requirements

- Fictional case chart and prepared control specimen
- Urine dipsticks, timer, colour chart and capillary glucose report

Procedure

1. Ask about thirst, urination, weight loss, vomiting and diabetes medicines. Check breathing, hydration and mental state.
2. Check onset of thirst, excess urine, weight loss, vomiting and medicine history. Record breathing pattern, circulation and alertness and alert the team early if the case is concerning.
3. Verify strip expiry and quality controls. Dip or apply the sample according to the kit instructions and read each pad at the correct time.
4. Check the synthetic specimen and strip lot, expiry and controls. Wet the designated pads using the kit sequence, remove excess as directed and start a timer at the specified point.

Continue with step 5 on the next page.

Procedure Continued

Diabetic Ketoacidosis Recognition and Urine Dipstick

5. Record urine glucose and ketones, capillary blood glucose and clinical observations. Compare to any blood ketone or venous blood gas results.
6. Compare glucose and ketone pads during their own reading windows and record grades. Place bedside glucose and available blood ketones and gas or bicarbonate alongside the urine finding with units.
7. Recognise signs requiring emergency referral. Give the team a clear handover and discuss confirmatory evaluation through the paediatric pathway.
8. Use the case pathway to link symptoms, possible ketosis and acidosis. Recognise limitations of urine results and rehearse urgent transfer for suspected DKA without waiting for every test.
9. Document time, results and referral. Reassess mental state and breathing while awaiting the supervising team.
10. Give a timed handover covering mental state, breathing, perfusion, glucose, ketones and actions. Reassess changes and confirm who owns the next observation or referral.

Precautions

- Use a prepared non-clinical specimen for practice.
- Do not delay escalation when symptoms or observations suggest severe illness.

Observations and Interpretation

Diabetic Ketoacidosis Recognition and Urine Dipstick

Observations and Record

Item	What to record	What it tells you
Clinical findings	Fluid losses, deep breathing and alertness	Identifies urgent DKA concern
Dipstick	Glucose and ketone pads with timing	Screening information
Confirmation and escalation	Blood glucose, ketones, acid–base data and team contact	Supports diagnosis and safe transfer

Worked Example

A child with thirst, weight loss, vomiting and deep breathing has blood glucose 320 mg/dL and urine ketones 3+.

Result and Interpretation

Suspect DKA and refer urgently. Assess blood ketones and metabolic acidosis under the emergency pathway.

Viva Questions and Answers

What acid–base disorder occurs in DKA?

Metabolic acidosis.

What is a limitation of urine ketone testing?

It primarily detects acetoacetate and may lag behind blood ketone changes.

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