

Exercise walk-through

10.7

Laboratory medicine and the pathology report

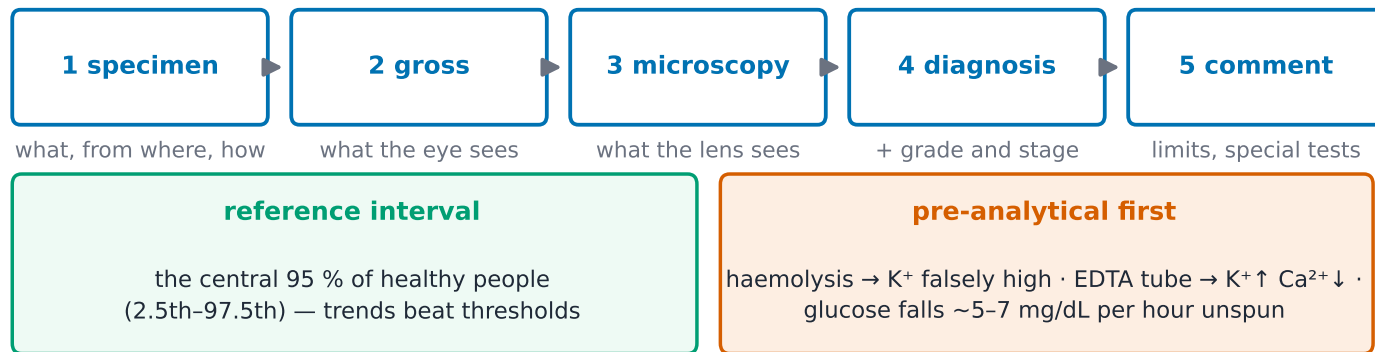
University Medicine

Laboratory medicine: the tube first

- 1 **Interval Reference interval:** the central 95 % of healthy people (2.5th-97.5th percentiles) - 2.5 % of healthy outside by definition; trends beat thresholds.
- 2 **Pre-analytical Haemolysis** → K^+ falsely high · EDTA tube → $K^+ \uparrow$ $Ca^{2+} \downarrow$ · glucose falls ~5-7 mg/dL/h unspun.
- 3 **Report** Specimen → gross → microscopy → diagnosis (+ grade/stage) → comment; glucose mmol/L $\times 18 =$ mg/dL.

The structured pathology report

the report is the deliverable: five stations, each catching a different error



units are content: glucose $5.5 \text{ mmol/L} \times 18 \approx 99 \text{ mg/dL}$ — the same concentration, two conventions
an unexplained result is first a SAMPLE question (how did it travel?), then a patient question

Specimen, gross, microscopy, diagnosis, comment — five stations, each catching a different error.

Check yourself

- The point of no return is...? (Membrane damage with Ca^{2+} influx.)
- Wound strength at 3 months...? (~80 %, never 100 %.)
- The nephrotic line...? (Proteinuria ≥ 3.5 g/day.)
- Glucose 5.5 mmol/L in mg/dL...? (≈ 99 .)

Exercises 2.1-2.3

2.1 What share of healthy people sits inside a reference interval? [3]

2.2 Name the five report stations in order. [3]

2.3 Glucose 5.5 mmol/L in mg/dL? [3]

Exercises 2.1-2.3

2.1 What share of healthy people sits inside a reference interval? [3]

2.1

- The central 95 % (2.5 % outside at each end) ✓.
-

2.2 Name the five report stations in order. [3]

2.2

- Specimen, gross, microscopy, diagnosis, comment ✓.
-

2.3 Glucose 5.5 mmol/L in mg/dL? [3]

2.3

- ≈ 99 mg/dL ($\times 18$) ✓.

Exercise 3.1

3.1 A fictional laboratory panic list: K^+ 8.2 with a calm ECG (shaken tube); calcium 1.9 from an EDTA tube; glucose 2.8 after a 3-hour unspun delay.

For each, name the pre-analytical mechanism and the fix (re-draw unhaemolysed; re-draw in the correct tube; separate cells promptly) ✓. State the rule the three share (the analyser reports the TUBE faithfully – sample questions precede patient questions) ✓.

Exercise 3.1

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For each, name the pre-analytical mechanism and the fix (re-draw unhaemolysed; re-draw in the correct tube; separate cells promptly) ✓. State the rule the three share (the analyser reports the TUBE faithfully – sample questions precede patient questions) ✓. [8]

3.1

- K^+ 8.2: haemolysis burst red cells – re-draw gently ✓.
- Ca^{2+} 1.9: EDTA chelates calcium – chemistry needs the correct tube ✓.
- Glucose 2.8: cells consumed ~5–7 mg/dL/h unspun – separate promptly ✓.
- Shared rule: the analyser reports the tube; ask how the sample travelled first ✓.

Exercise 3.2

3.2 A fictional structured report reads: specimen, core biopsy; gross, 1.8 cm firm white focus; microscopy, infiltrating glands, poorly differentiated; diagnosis, adenocarcinoma grade 3 (Gleason 8), pT3 N1 M0.

Walk the five stations and identify where grade (Gleason 8 – appearance) and stage (pT3 N1 M0 – reach) live ✓. Explain what the comment station should add (limits of sampling, special tests pending) ✓.

Exercise 3.2

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Walk the five stations and identify where grade (Gleason 8 – appearance) and stage (pT3 N1 M0 – reach) live ✓. Explain what the comment station should add (limits of sampling, special tests pending) ✓. [7]

3.2

- Stations: specimen (core) → gross (1.8 cm focus) → microscopy (infiltrating glands) → diagnosis → comment ✓.
- Grade = Gleason 8 (appearance); stage = pT3 N1 M0 (extent) – two axes ✓.
- Comment adds: sampling limits, special stains or tests pending ✓.