13.3 Clinical reasoning and differential diagnosis

Name: _____ Class: _____ Date: _____ **Total: 24 marks**

KEY WORDS differential diagnosis • premature closure

Objective

Rank a differential; name the bias and its antidote.

1 Key knowledge and worked examples

■ The funnel

Complaint → broad list → rank by probability × severity → tests move probabilities (LR+ multiplies pre-test odds) → working diagnosis held until disconfirmed ✓. Must-not-miss stays until excluded.

■ Worked example: biases

Anchoring → require an alternative; availability → base rates vote; premature closure → ask what else; confirmation → seek the disproof; framing → read the data yourself ✓.

2 Practice

2.1 What two factors rank the differential? [3]

2.2 LR+ 9 on pre-test odds 1:9 gives? [3]

2.3 The antidote to premature closure? [3]

3 Exam-style questions

3.1 A fictional case: 58-year-old, sudden breathlessness; candidates – heart failure, infection, clot, anaemia.

Build the rank with one justification each (failure highest prior; clot must-not-miss despite lower prior) ✓. Show two re-orderings: orthopnoea (raises failure), desaturation with a clear chest X-ray (raises clot) ✓. Name the bias most likely if the junior clings to the first diagnosis despite the X-ray (anchoring; antidote: require an alternative) ✓. [8]

3.2 A fictional team stops testing after a first positive and treats.

Explain the probabilistic error (one test updates odds, it rarely rewrites them alone – PPV arithmetic from MED12) ✓. Name two biases at work (premature closure; confirmation) and give each a structural antidote ✓. State what a working diagnosis actually is (the current best, held until disconfirmed, with residue safely disposed) ✓. [7]

Solutions

2.1

- Probability and severity – common heads the list; killers stay on it ✓.

2.2

- $9 \times 1/9 \rightarrow 9{:}9 = 1{:}1 \rightarrow$ probability 50 % ✓.

2.3

- Ask “what else?” – generate the alternative before settling ✓.

3.1

- Rank: failure (highest prior), infection (common), clot (must-not-miss), anaemia ✓.
- Orthopnoea raises failure ✓.
- Clear X-ray with desaturation raises the clot ✓.
- Clinging despite disproof = anchoring; antidote: require an alternative ✓.

3.2

- One test updates odds; alone it rarely rewrites – the PPV arithmetic explains why ✓.
- Premature closure (antidote: what else?); confirmation (seek the disproof) ✓.
- Working diagnosis: current best, held until disconfirmed; residue safely followed ✓.