

Exercise walk-through

13.3

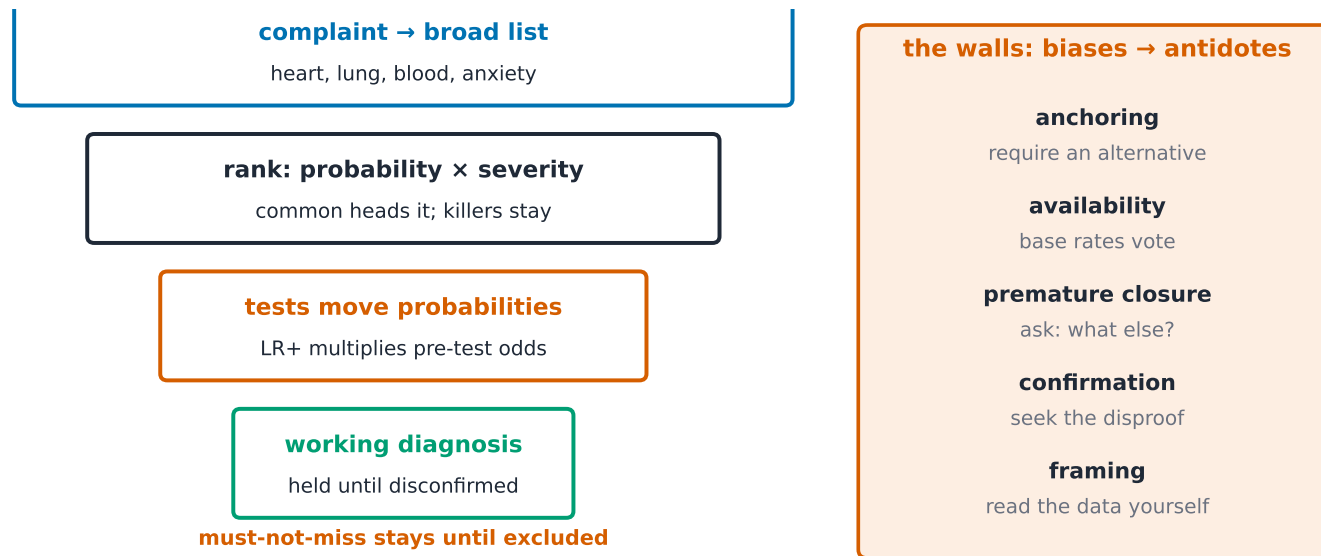
Clinical reasoning and differential diagnosis

University Medicine

Clinical reasoning and differential diagnosis: the funnel

- 1 **Funnel** Complaint → broad list → ranked (must-not-miss stays) → tests as LR multipliers → working diagnosis held until disconfirmed.
- 2 **Biases** Anchoring (require an alternative) · availability (base rates) · **premature closure** (what else?) · confirmation · framing.
- 3 **Case** Breathless 58-year-old: orthopnoea raises failure; desaturation with a clear X-ray raises the clot.

The differential funnel



Broad to ranked to tested to working - the walls are the biases.

Exercises 2.1-2.3

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]

Exercises 2.1-2.3

2.1 What two factors rank the differential? [3]

2.1

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

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

2.2

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

2.3 The antidote to premature closure? [3]

2.3

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

Exercise 3.1

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]

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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 ✓.

Exercise 3.2

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]

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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 ✓.