

Exercise walk-through

12.7

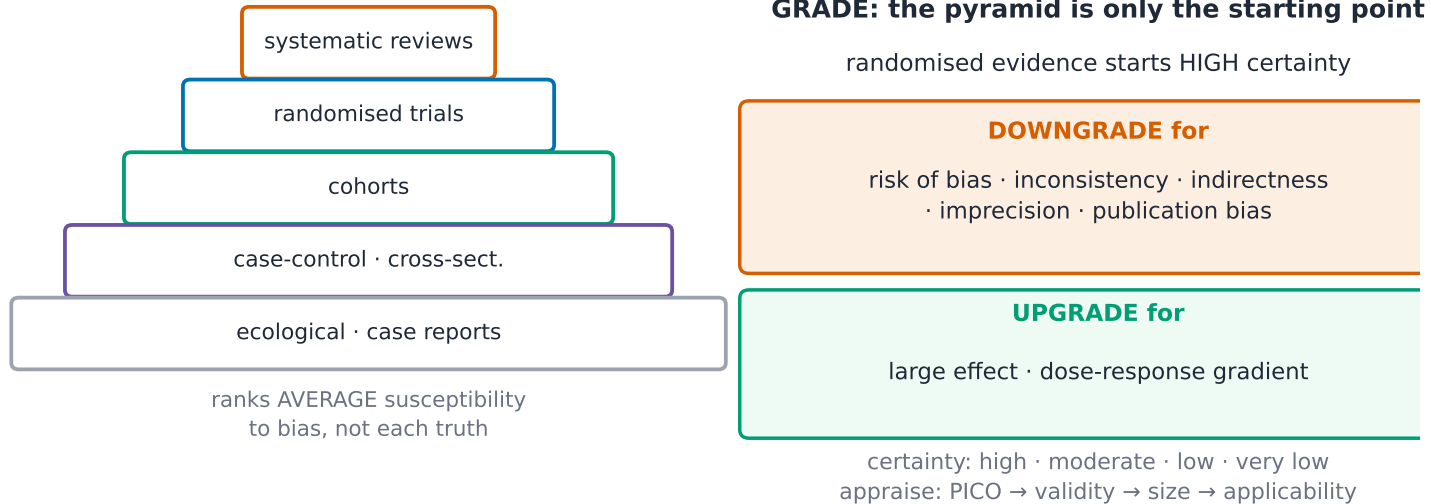
Critical appraisal and applying evidence

University Medicine

Critical appraisal and applying evidence

- 1 **Spine** PICO frame; validity (bias?); size (RR 0.75, 0.60–0.94 in the fictional abstract); applicability (was my patient enrolled?).
- 2 **GRADE** Start from design; downgrade for bias, inconsistency, indirectness, imprecision; upgrade for large effects.
- 3 **Apply** Recompute absolutes: at baseline risk 5 percent the same RR turns ARR 8 percent into 2 percent and NNT 13 into 50.

The evidence hierarchy with caveats



The pyramid ranks average susceptibility to bias, not the truth of each study.

Check yourself

- 40 new cases in 2,000 people-year...? (2 % per year.)
- $Se = Sp = 90\%$ at 1 % **prevalence**: PPV...? (8.3 %.)
- ARR 8 % $\rightarrow$ NNT...? (12.5 $\rightarrow$ 13.)
- The **Kaplan–Meier** rule after 1/8 at risk...? ($\times 7/8$.)

Exercises 2.1-2.3

2.1 Name the four PICO elements.

[3]

2.2 Give two GRADE downgrades.

[3]

2.3 Why is a valid-but-tiny effect still weak evidence?

[3]

Exercises 2.1-2.3

2.1 Name the four PICO elements. [3]

2.1

- Population, intervention, comparison, outcome ✓.
-

2.2 Give two GRADE downgrades. [3]

2.2

- Any two: risk of bias, inconsistency, indirectness, imprecision, publication bias ✓.
-

2.3 Why is a valid-but-tiny effect still weak evidence? [3]

2.3

- Importance needs size: a valid but trivial effect doesn't change decisions ✓.

Exercise 3.1

3.1 A fictional abstract: randomised, double-blind, $n = 400$; RR 0.75 (95 % CI 0.60–0.94); the studied patients were older and sicker than your clinic's.

Appraise in order: validity (randomised, blinded – good), size (25 % relative reduction; interval excludes 1), applicability (older, sicker population) ✓. Grade the certainty (starts high; no obvious downgrade features stated) and name what would lower it (small n imprecision, surrogate outcome, industry reporting) ✓. [8]

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3.1

- Validity: randomised + double-blind – strong ✓.
- Size: RR 0.75, CI 0.60–0.94 excludes 1 ✓.
- Applicability: older, sicker – my patient may differ ✓.
- Certainty: starts high; imprecision ($n = 400$) mild; surrogate outcomes or selective reporting would lower it ✓.

Exercise 3.2

3.2 The same trial's control event rate was 20 % (treated 15 %).

Compute ARR (5 %) and NNT ($1/0.05 = 20$) in the trial population ✓. Your patient's baseline risk is 4 %: with the same relative risk reduction, $ARR = 5 \% \times 4/20 = 1 \% \rightarrow$ NNT 100 ✓. State what else must be weighed before applying (harms, patient values, alternatives) ✓.

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3.2

- $ARR = 20 \% - 15 \% = 5 \%$; $NNT = 20$ ✓.
- At baseline 4 %: $ARR = 5 \% \times 4/20 = 1 \% \rightarrow NNT = 100$ ✓.
- Weigh harms, patient values and alternatives before applying ✓.