

Exercise walk-through

13.7

Public health and health systems

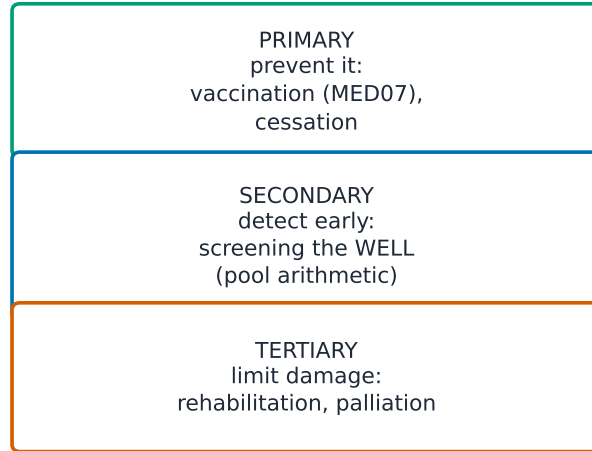
University Medicine

Public health and health systems: populations and financing

- 1 **Levels** Primary prevents (vaccination), secondary screens the well, tertiary limits damage - three denominators.
- 2 **Screening** Important, treatable-early, valid, acceptable + pool arithmetic: yield is PPV (MED12), **over-diagnosis** counts as harm.
- 3 **Systems** Beveridge (taxation, national service) · Bismarck (social insurance) · private · out-of-pocket - coverage, payment, gatekeeping.

The prevention levels

the prevention levels



one disease, three levels

screening criteria + arithmetic

important condition · treatable early · valid test
· acceptable · pre-clinical pool real

yield = PPV, and PPV lives on prevalence
(MED12 §4) — count over-diagnosis too

financing models shape access

Beveridge — general taxation, national service
Bismarck — social insurance from wages
private insurance · out-of-pocket

they set coverage, point-of-care payment,
gatekeeping — every consultation inherits

Primary stops the disease, secondary catches it early, tertiary limits its damage.

Check yourself

- The four **capacity** elements...? (Understand, retain, weigh, communicate.)
- SPIKES letters...? (Setting, Perception, Invitation, Knowledge, Empathy, Strategy.)
- A must-not-miss diagnosis is dropped when...? (Only when excluded — never by rarity.)
- Beveridge vs Bismarck...? (Tax-funded state vs wage-funded insurance.)

Exercises 2.1-2.3

2.1 Which level is smoking-cessation advice? [3]

2.2 Why does a screen test “the well”? [3]

2.3 Name the two financing models built on pooled public funds. [3]

Exercises 2.1-2.3

2.1 Which level is smoking-cessation advice? [3]

2.1

- Primary – it prevents the disease occurring ✓.

2.2 Why does a screen test “the well”? [3]

2.2

- Screening tests asymptomatic people; testing the symptomatic is diagnosis ✓.

2.3 Name the two financing models built on pooled public funds. [3]

2.3

- Beveridge (general taxation) and Bismarck (social insurance) ✓.

Exercise 3.1

3.1 A fictional country considers a screening programme for a common cancer: prevalence of detectable pre-clinical disease 2 %; test Se 90 %, Sp 90 %.

Compute the yield per 1,000 screened (20 diseased $\rightarrow$ 18 TP; 980 well $\rightarrow$ 98 FP $\rightarrow$ PPV $18/116 \approx 15.5$ %) ✓. Judge against the criteria (condition important ✓; treatable early – is the pool real?) and count the harm (98 false positives per 1,000, over-diagnosis risk) ✓. State the one design lever that most changes the yield (the screening interval – the pre-clinical pool) ✓.

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3.1

- 20 diseased (2 %) $\rightarrow$ 18 TP, 2 FN ✓.
- 980 well $\rightarrow$ 98 FP; PPV = $18/116 \approx 15.5$ % ✓.
- Criteria: importance ✓; treatable-early needs a real pool; harm: 98 false positives + over-diagnosis per 1,000 ✓.
- Lever: the interval – the pre-clinical pool sets prevalence and thus PPV ✓.

Exercise 3.2

3.2 Two fictional systems: Beveridge-funded with gatekeeping generalists; Bismarck-funded with free specialist access.

Contrast coverage and payment at the point of care (tax-funded, free at use vs wage-funded insurance) ✓. Predict one access consequence of each (gatekeeping delays but coordinates; free access raises use and cost) ✓. State in one line why every consultation inherits these macro-choices ✓.

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3.2

- Beveridge: tax-funded, free at the point of use; Bismarck: wage-funded insurance funds ✓.
- Gatekeeping coordinates but can delay; free access raises use and cost ✓.
- Every consultation inherits what is covered, who pays, who gates ✓.