

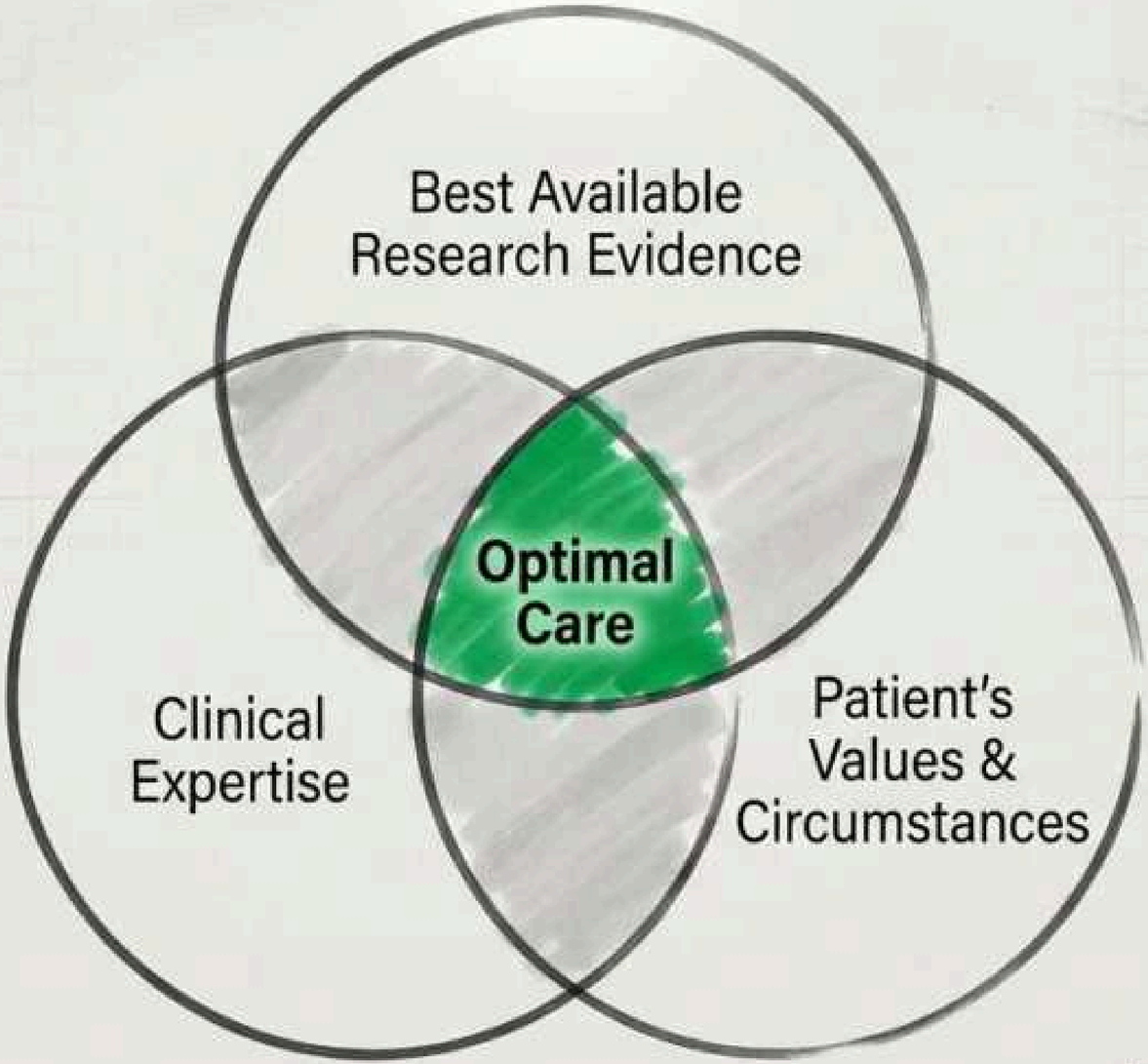
Evidence-Based Medicine and Public Health

From individual clinical practice to population health.

MED 515 B — Lecture 6

The Triad of Evidence-Based Medicine

[¶ 6.1]



Popularised early 1990s —
McMaster University
(Gordon Guyatt & David Sackett)

Structuring the Question with P.I.C.O.

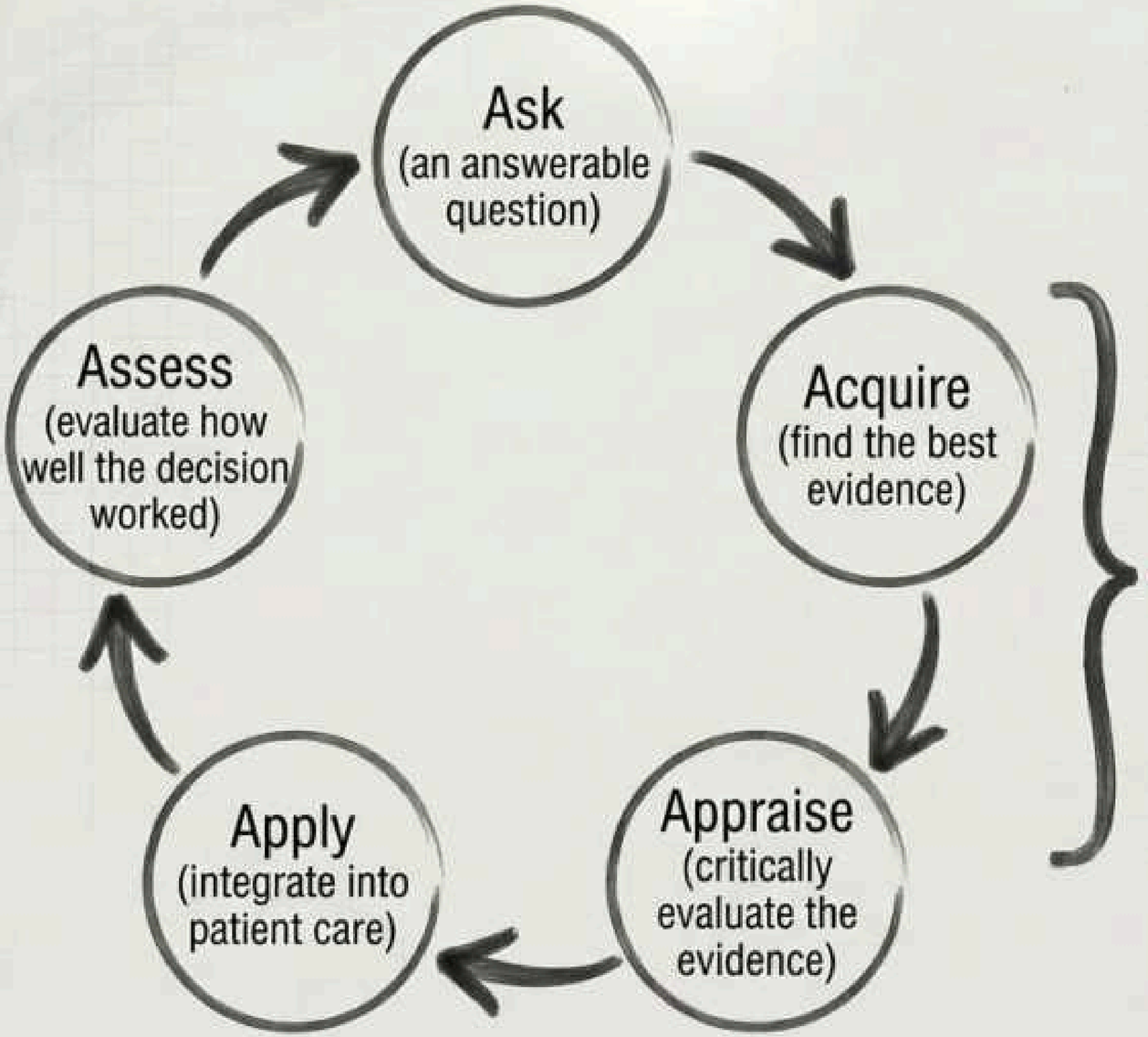
[¶ 6.2]

P — Patient / Problem *Example: Older adults with high blood pressure.*	**I** — Intervention *Example: A particular drug.*
C — Comparison *Example: No drug.*	**O** — Outcome *Example: Stroke reduction.*

A clear question makes the search for evidence far more efficient.

The Core Cycle of Clinical Inquiry

[¶ 6.3]



Clinicians lack time to appraise every study → High reliance on Systematic Reviews & Clinical Guidelines.

Clinical Practice Guidelines & GRADE

[¶ 6.4]



GRADE system

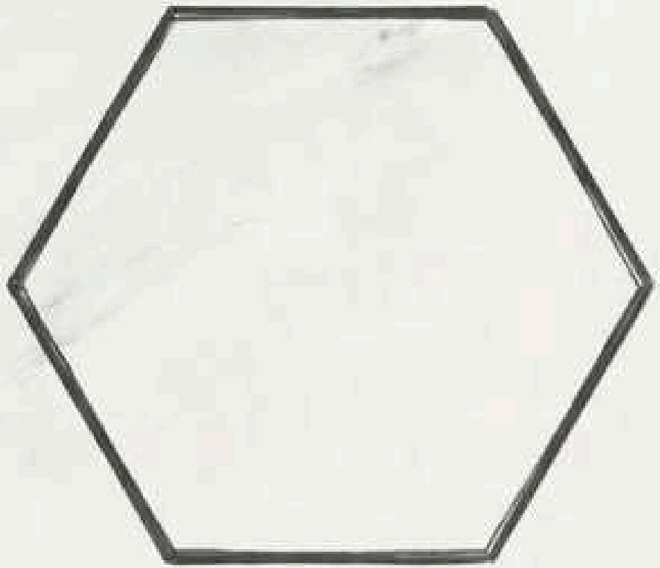
MANDATORY: Declare Conflicts of Interest.

Crucial because guidelines influence the care of millions of patients.

Guidelines are Tools, Not Rules

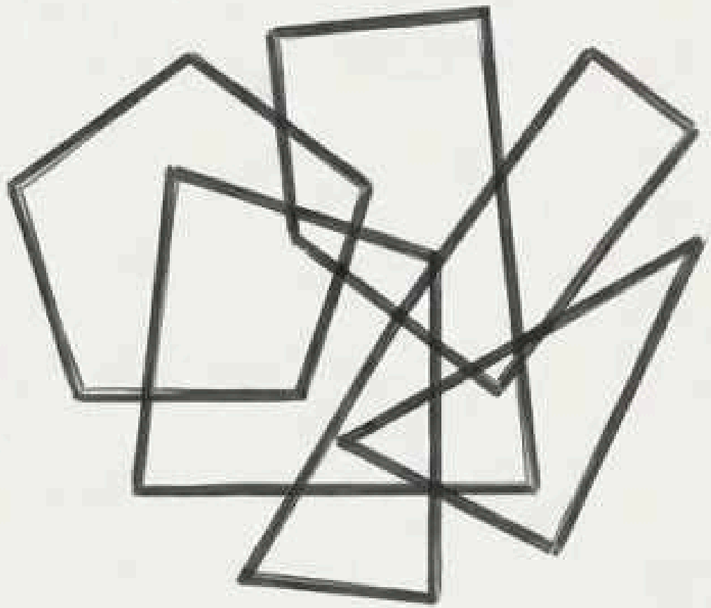
[¶ 6.5]

The Typical Patient



Built for averages and generalized evidence.

The Particular Patient

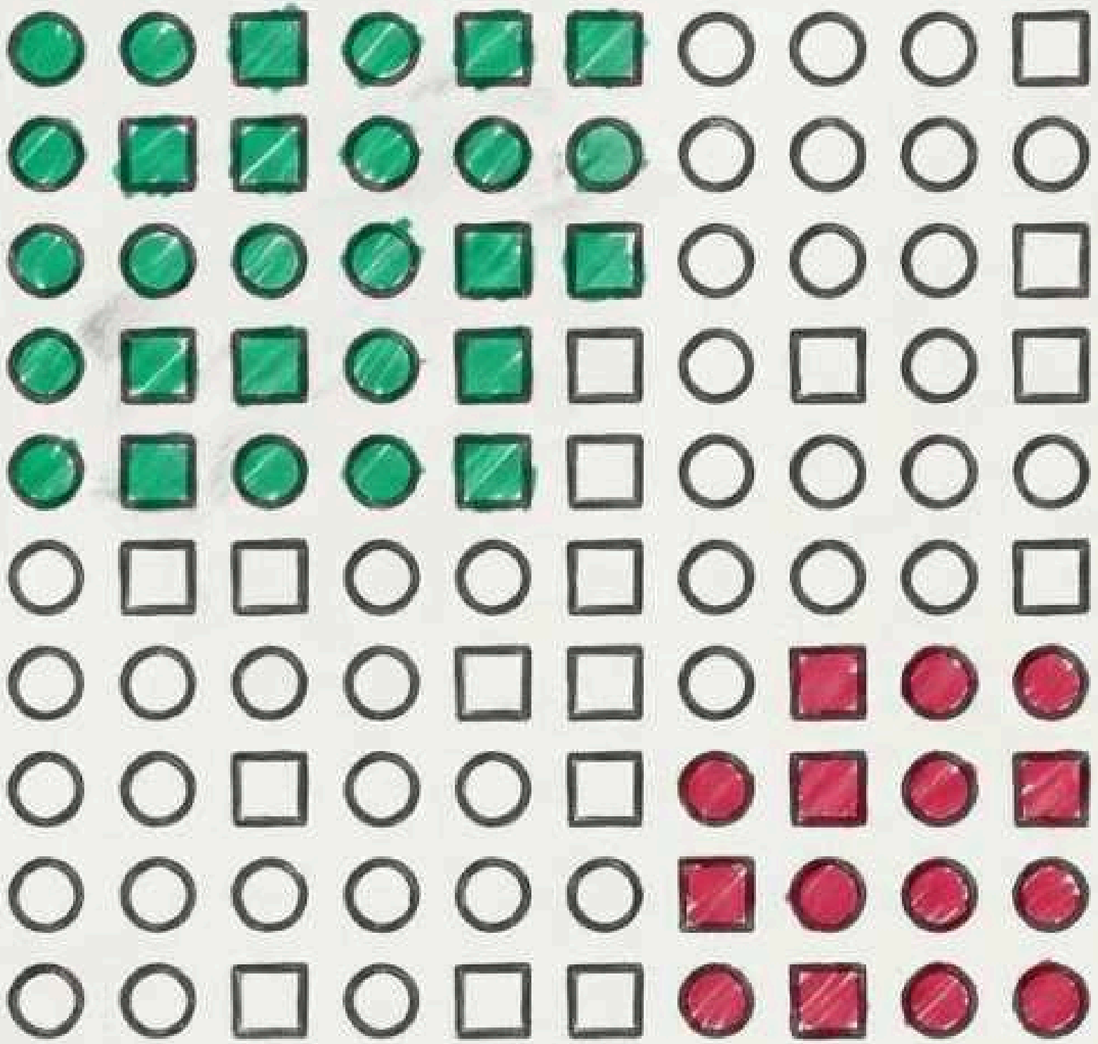


Overlapping comorbidities, different risks, and unique priorities.

Following a guideline blindly can be as harmful as ignoring it.

Shared Decision-Making in Absolute Terms

[¶ 6.6]



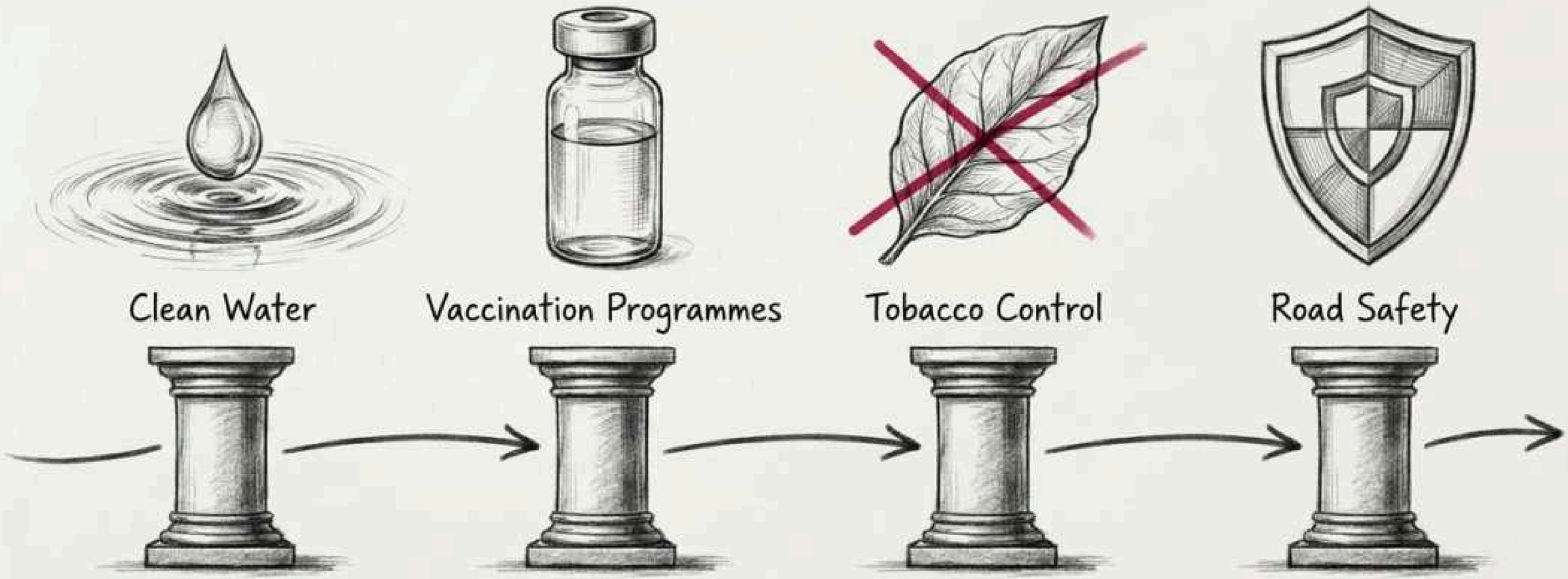
Doctor provides honest estimates of benefits and harms in absolute terms (including the option of doing nothing).

Patient brings their values and preferences.

Decision aids (like the 100-person chart shown) anchor the conversation.

The Macro Shift: Public Health Interventions

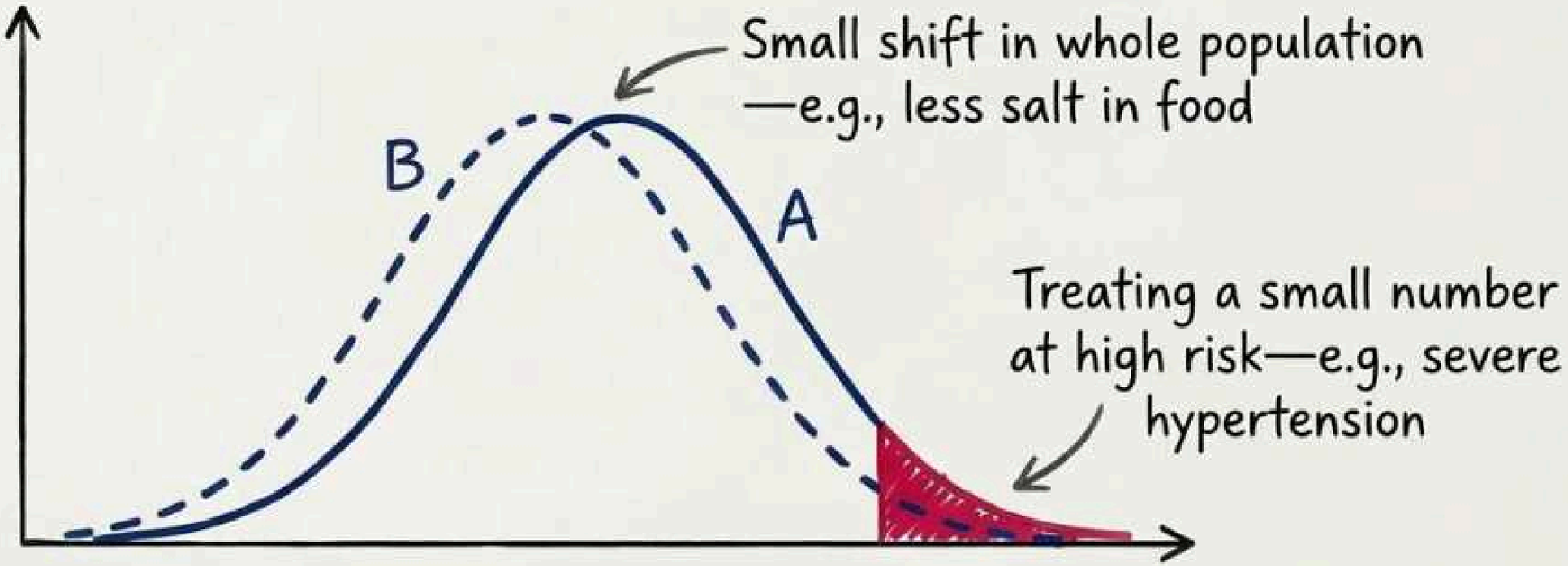
[¶ 6.7]



The largest gains in life expectancy over the past two centuries came from these population measures rather than from treating individuals.

Geoffrey Rose's Paradox (1985)

[¶ 6.8]



The Paradox Statement:

A large number of people at a small risk generate more total cases of disease than a small number of people at high risk.

The Population Surveillance Pipeline

[¶ 6.9]

- Disease Registries ✓
- Death Records ✓
- Reporting Systems ✓



Spotting unusual patterns

Epidemiological investigation using core study designs to guide action.

Surveillance: The ongoing collection and analysis of health data to detect problems.

Surveillance: The ongoing collection and analysis of health data to detect problems.

Health Economics and Ethical Allocation

$$\text{QALY} = \text{Quality} \times \text{Quantity of Life}$$

Limited Resources
(funding treatments)

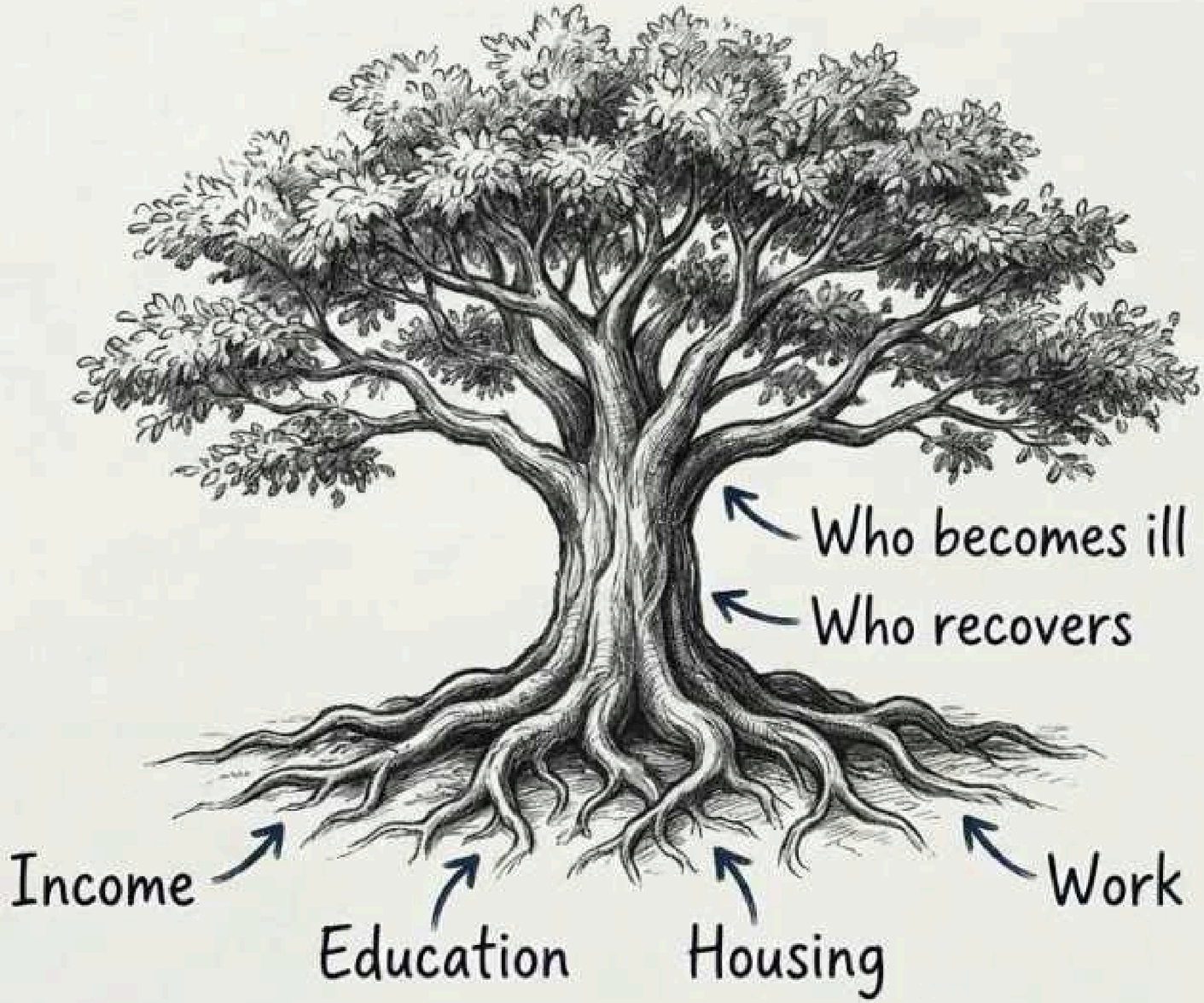


Fairness and
Health Needs

Deciding who benefits and by how much relies heavily on rigorous epidemiological evidence to calculate Quality-Adjusted Life Years (QALY).

The Social Determinants of Health

[¶ 6.11]



Health is shaped by forces far beyond medical care. Good doctors keep these wider forces in view.

Course Synthesis: The Six Commandments

¶ 6.12

✓ 1. Count disease carefully.	✓ 4. Treat tests as updates to probability.
✓ 2. Choose the study design to fit the question.	✓ 5. Demand outcomes that matter to patients.
✓ 3. Look hard for bias and confounding.	✓ 6. Combine evidence with the patient's values.

Questions or feedback: garyanderson at mail dot grokbot dot com | X: @garyanderson