



Towards

Evidence-based medicine

OSEA CPD

8th July 2010

Pan-Afric Hotel, Nairobi

Dr. Stephen Gichuhi



Statistics

Data

- Collecting
- Summarizing
- Presenting
- Interpreting

Epidemiology – counting events



(Exposure)



(Outcome)

- Risk factor
smoking

- Treatment

- Disease
AMD

- Survival

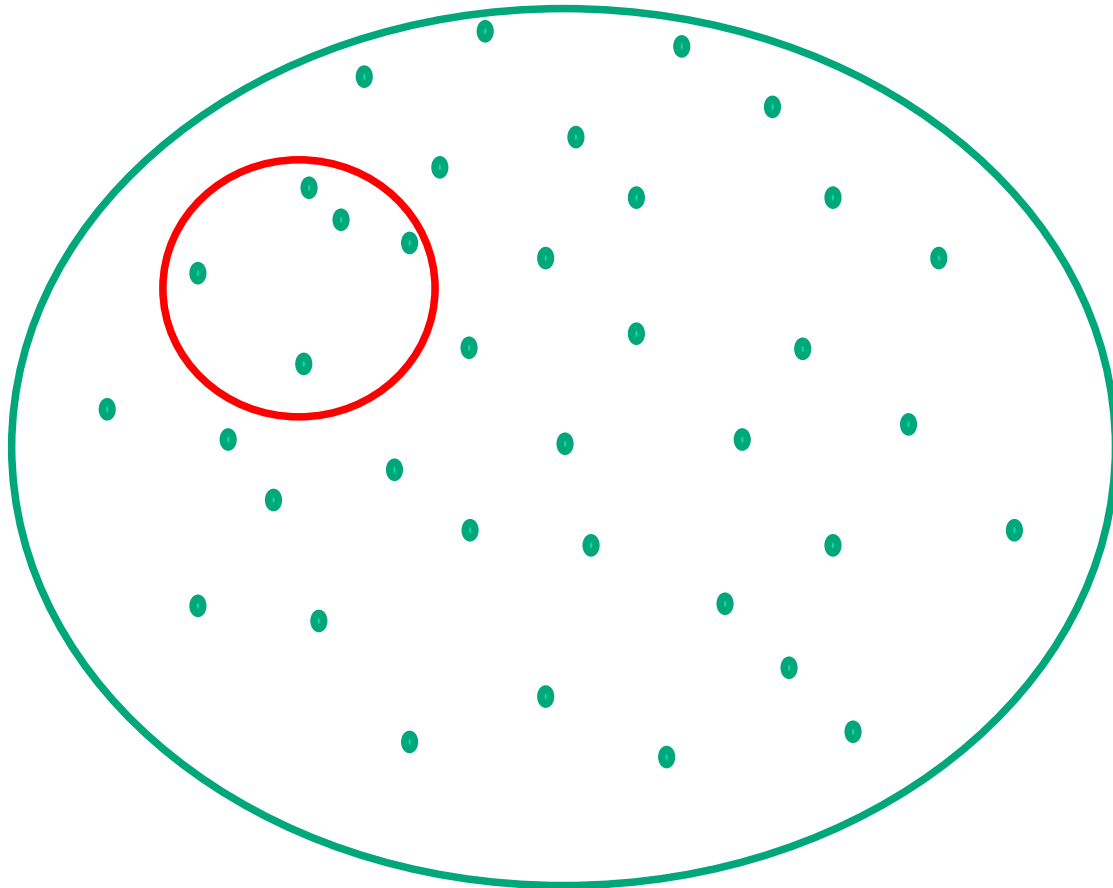
- Size and effect

- Current smoking OR= 1.83 (1.06-3.17)



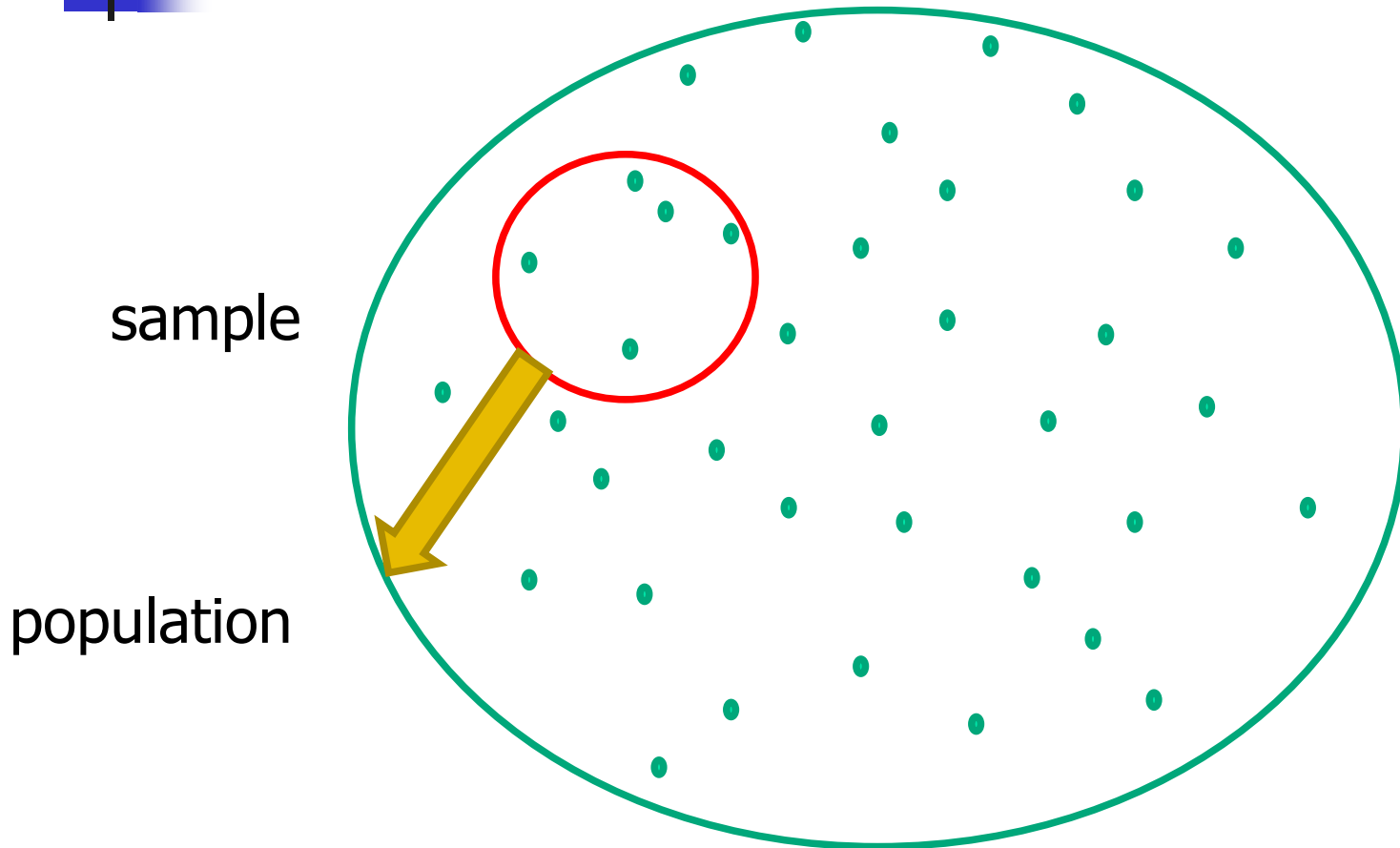
Population sciences

sample



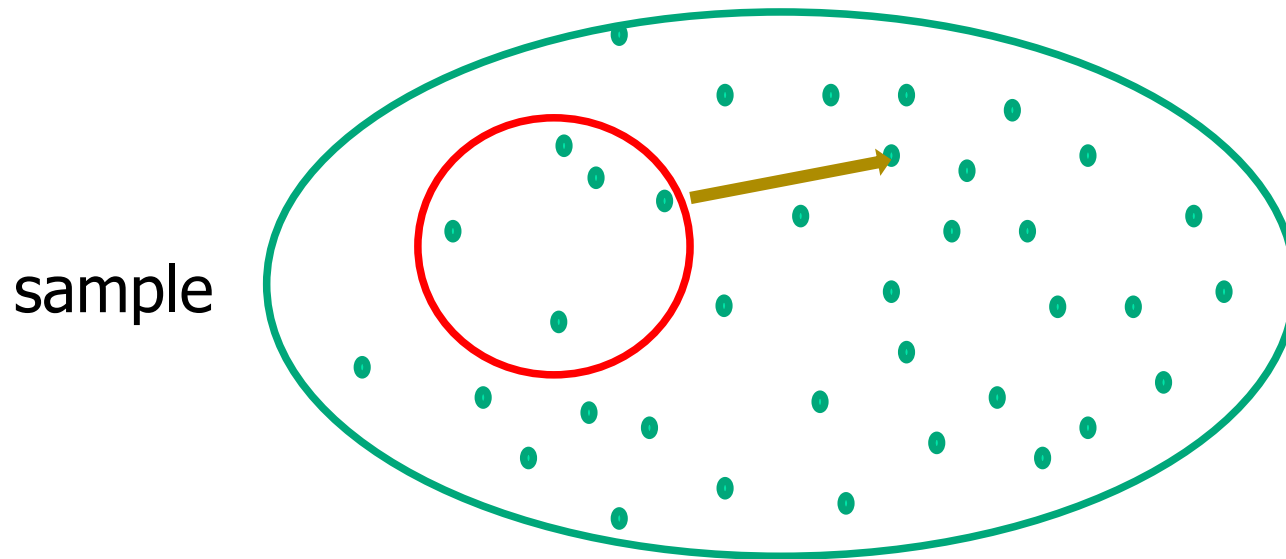


Biostatistics



Clinical epidemiology

Individual
patient



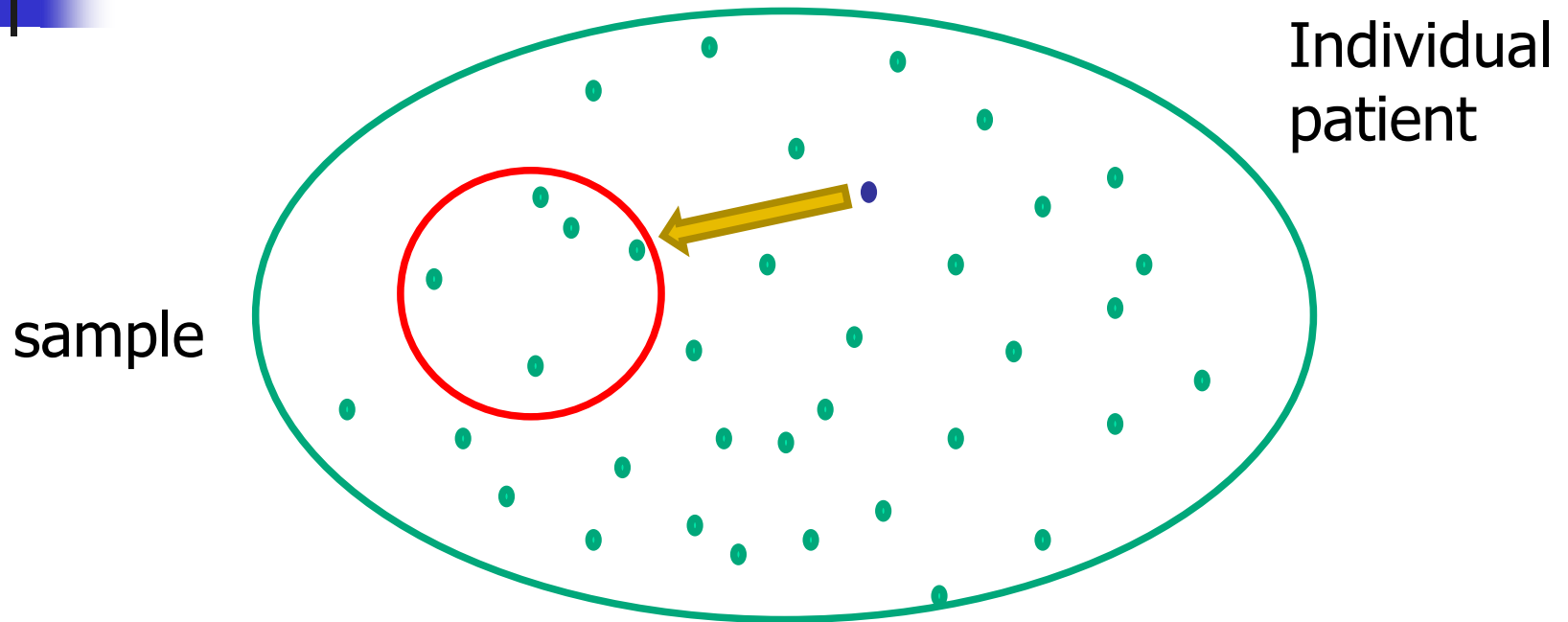
- Making predictions about individual patients from events counted in groups of similar patients



Clinical epidemiology

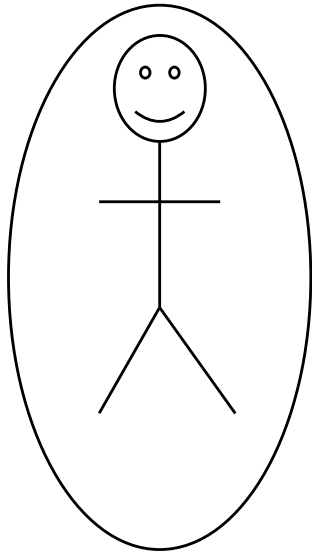
- Clinical –clinical questions
- Epidemiology –methods were developed by epidemiologists.
- Care within the context of the larger population

Evidence-based medicine



- Application of clinical epidemiology to the care of patients

Clinical encounter



- 28yr old, visual loss, OS
- 3 days
- Relative afferent pupil defect
- No history of optic neuritis
- no evidence of a systemic disease that might be associated with the optic neuritis
- no previous treatment with corticosteroids for MS or optic neuritis



What types of questions arise?

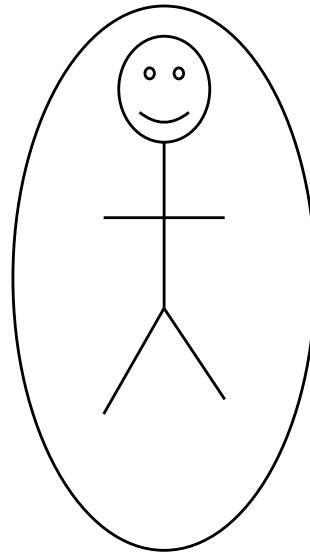
- Diagnosis
- Treatment
- Prognosis
- Iatrogenic harm
- Quality of life
- Health economics



1. The Clinical question

Ask a clinical question

? ↑ PICO

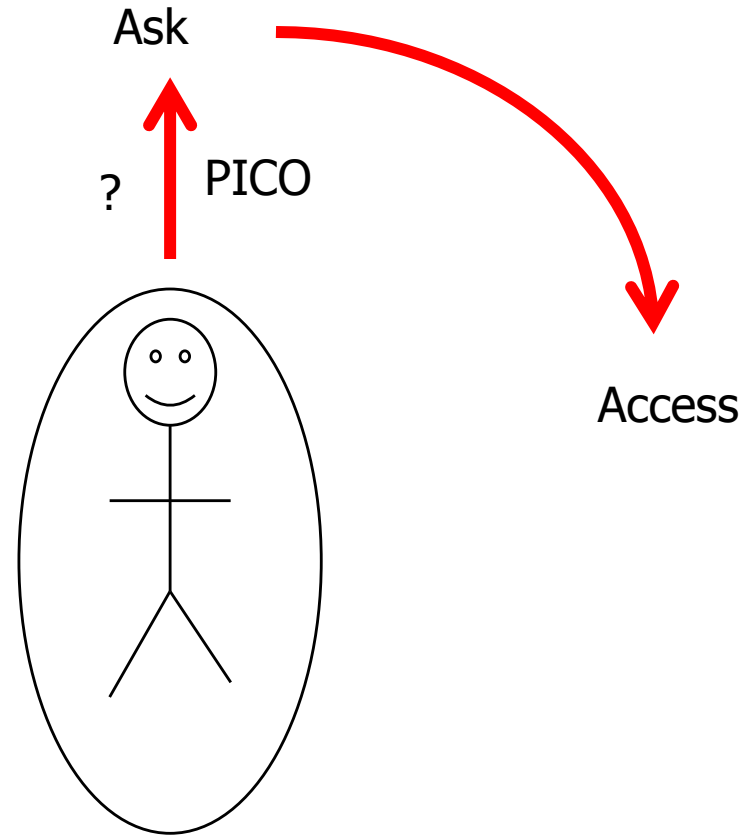




Asking clinical questions- PICO

- **P**atient (young adult, optic neuritis, OU)
- **I**ntervention (steroid)
- **C**omparison (nothing)
- **O**utcome (recovery of visual acuity)

2. Search the literature for relevant information





Factors other than EBM that may influence clinical decisions

- Eminence-based practice (the senior)
- Anxiety-based practice (fear)
- Confidence-based practice (bravado)
- Providence-based practice (Almighty)
- Profit-based practice (Vitamin ***M***)



Sources of information

- MEDLINE
- Recent reviews & textbooks
- Expert advise
- Reference list of articles found
- Databases of articles (Cochrane Library)
- Clinical trial registers – ongoing trials



What is the best evidence?

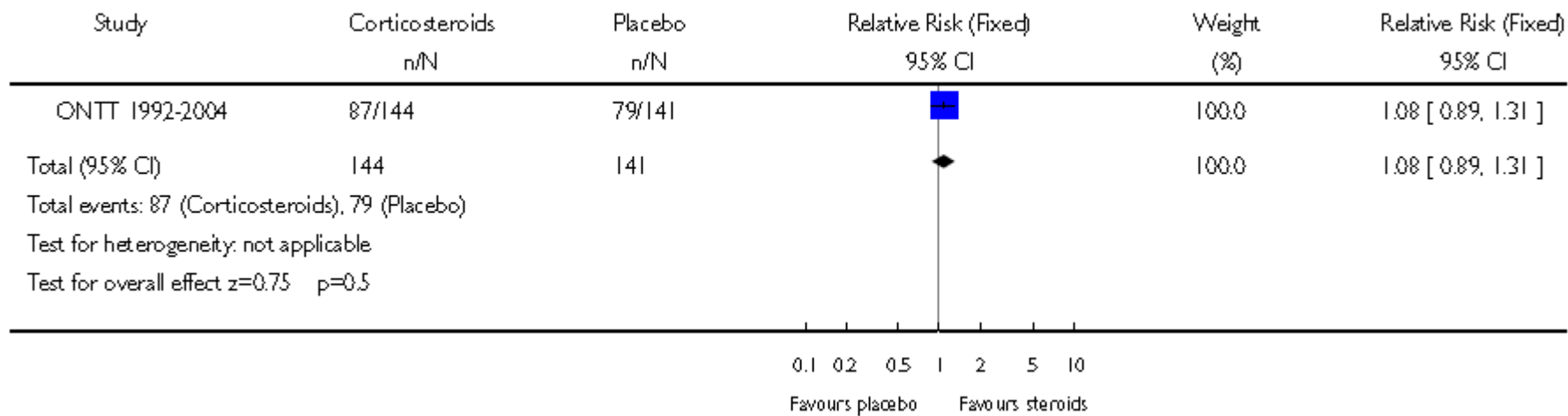
- Diagnosis – X section,
- Treatment – systematic review, RCT
- Prognosis – cohort study
- Iatrogenic harm – cohort, RCT
- Quality of life – qualitative analysis
- Health economics – eg. CEA



Corticosteroids for treating optic neuritis (Cochrane Review)

Vedula SS, Brodney-Folse S, Gal RL, Beck R

Outcome: 63 Participants with normal visual acuity at 1 month

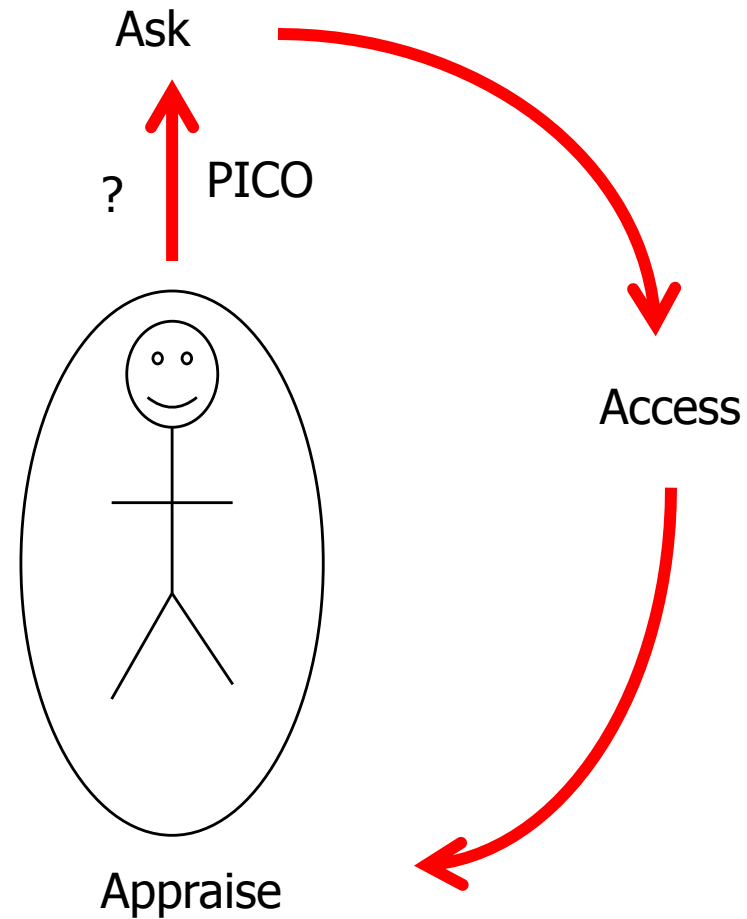




Criteria for useful sources of information

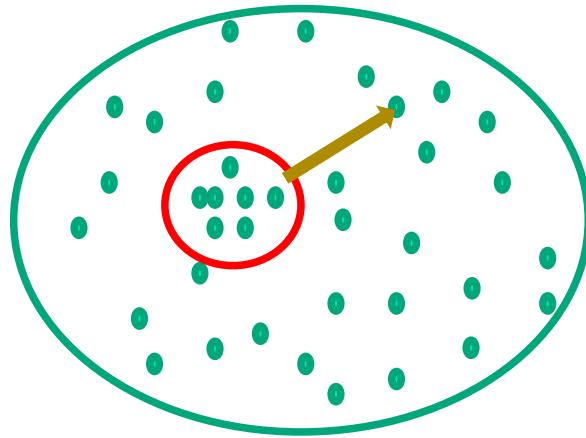
- Rapid access
- Up to date
- Can be tailored to specific questions
- Can be sorted by scientific strength
- portable

3. Appraise the information



Does the general finding apply to my patient?

sample



Individual patient

- Patient demographics ?– age, sex, ethnic group
- Risk factors? – smoking, obesity
- Bias? – selection, measurement
- Confounding?
- Chance?



Risks of expert opinion or single/famous studies

- Low statistical power
- Researcher/Expert bias
- Contextual variability
- Methodological and theoretical incompleteness



BUYER BEWARE

Not all reviews are systematic!

MAJOR REVIEW

Tumors of the Conjunctiva and Cornea

Carol L. Shields, MD, and Jerry A. Shields, MD

- 44/98 (45%) self references



Personal bias

“The invited review? or, my field, from my standpoint, written by me using only my data and my ideas, and citing only my publications.”

Caveman A. Cell Sci 2000



Use of evidence in WHO recommendations



Andrew D Oxman, John N Lavis, Atle Fretheim

Summary

Background WHO regulations, dating back to 1951, emphasise the role of expert opinion in the development of recommendations. However, the organisation's guidelines, approved in 2003, emphasise the use of systematic reviews for evidence of effects, processes that allow for the explicit incorporation of other types of information (including values), and evidence-informed dissemination and implementation strategies. We examined the use of evidence, particularly evidence of effects, in recommendations developed by WHO departments.

Methods We interviewed department directors (or their delegates) at WHO headquarters in Geneva, Switzerland, and reviewed a sample of the recommendation-containing reports that were discussed in the interviews (as well as related background documentation). Two individuals independently analysed the interviews and reviewed key features of the reports and background documentation.

Findings Systematic reviews and concise summaries of findings are rarely used for developing recommendations. Instead, processes usually rely heavily on experts in a particular speciality, rather than representatives of those who will have to live with the recommendations or on experts in particular methodological areas.

Interpretation Progress in the development, adaptation, dissemination, and implementation of recommendations for member states will need leadership, the resources necessary for WHO to undertake these processes in a transparent and defensible way, and close attention to the current and emerging research literature related to these processes.

Lancet 2007; 369: 1883–89

Published Online May 9, 2007
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See [Comment](#) page 1842

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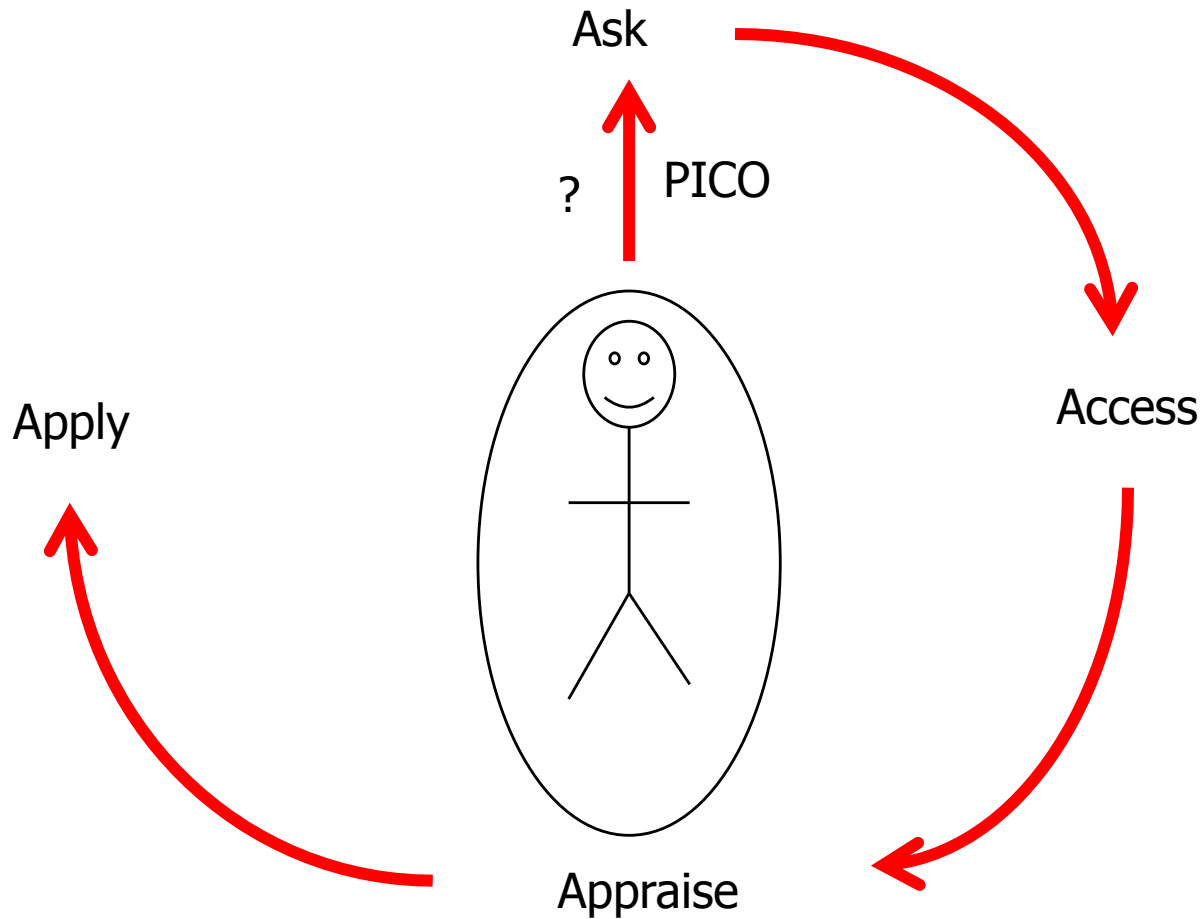
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WHO rarely uses evidence!

Findings Systematic reviews and concise summaries of findings are rarely used for developing recommendations. Instead, processes usually rely heavily on experts in a particular specialty, rather than representatives of those who will have to live with the recommendations or on experts in particular methodological areas.

4. Apply the evidence

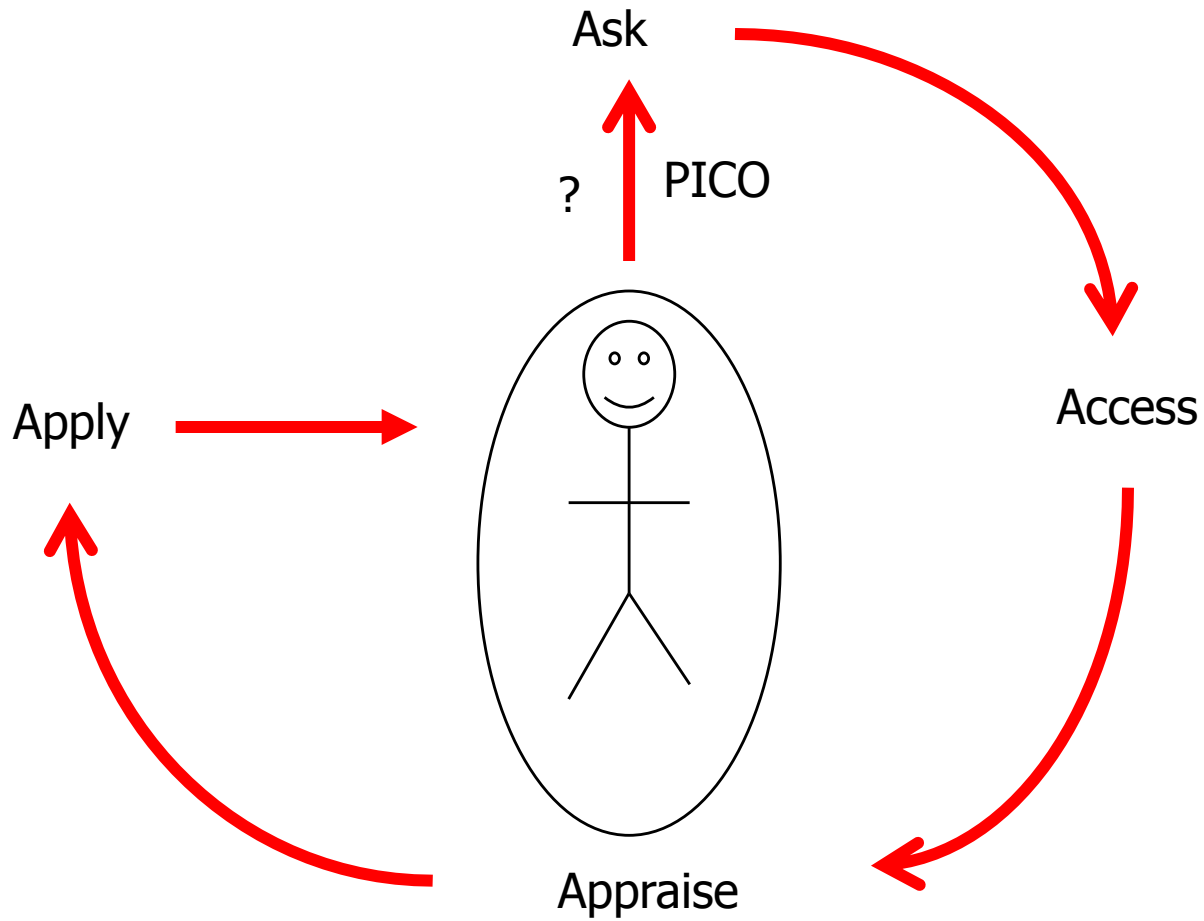




Applying

- Clinical expertise
- Patient values – preferences, concerns
- Patient circumstances

Evaluate the effect





What is evidence-based medicine?

The practice of making clinical decisions based on

- Best research evidence
- Clinical expertise
- Patient values
- Patient circumstances



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What is evidence-based medicine?

The practice of making clinical decisions based on

- **Best research evidence - appraisal**
- Clinical expertise
- Patient values
- Patient circumstances



Drivers of change in medical practice

- Our daily need for information – Dr, Pt
- Inadequacy of traditional sources of information
- Increasing disparity between skill & judgement which increase with experience and up to date knowledge which decline with time



Drivers of change in medical practice

- Increasing litigation
- 3rd party payers
- Economic decline – do more with less
- Online information for patients