

Developing evidence based guidance in public health: the methodological challenges facing NICE.

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NICE

The National Institute for Health and Clinical Excellence (NICE) is the independent organisation in the UK responsible for providing national guidance to the NHS and the wider public health community on the **promotion of good health and the prevention** and treatment of ill health.



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Public Health at NICE

- To develop guidance on cost effective interventions to prevent disease and promote good health.
- To use a broad range of relevant evidence.
- To attend to the question of health equity.

Methodological principles governing all NICE's work

- **Base recommendations on the best available evidence.**
- **To determine cost effectiveness using the QALY.**
- **To be open and transparent and to involve stakeholders.**
- **To be clear about scientific and other values**
- **To allow contestability.**
- **To be seen to be independent of government and the pharmaceutical industry and other vested interests.**



Some methodological challenges

The importance of clarifying inferential reasoning

- How do we develop recommendations? The evidence never speaks for itself.
- How is the evidence being used by committee?
- How are other judgements being used and what kinds of judgements are these?



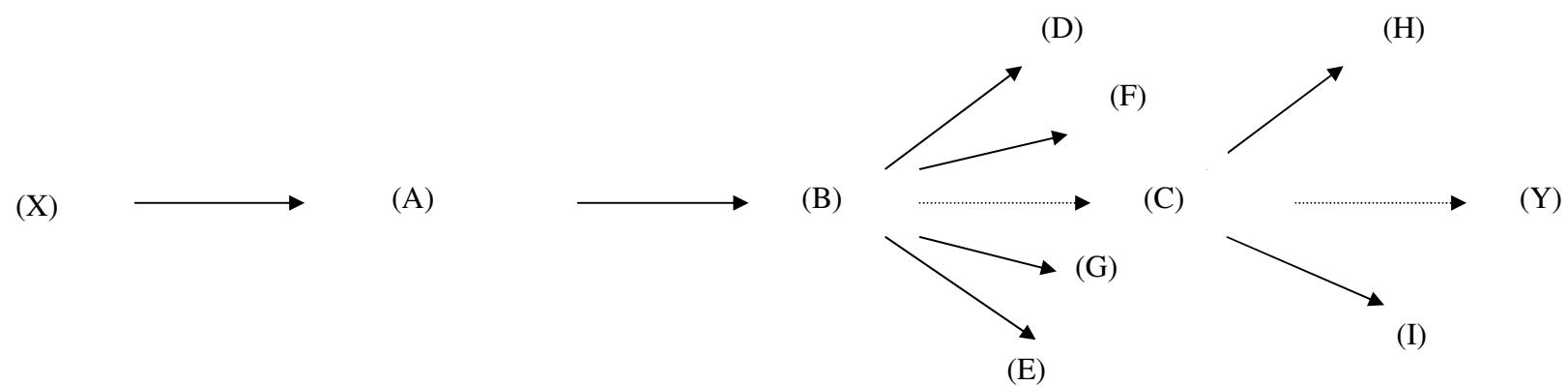
Data presentation and evidence limitations

- Patchy and inconsistent evidence base
- Evidence doesn't reflect the needs of guidance production.
- The strength of evidence can't be measured on a single dimension- the hierarchy of evidence sits uneasily in public health.
- What about multiple hierarchies of evidence?

The relationship between interventions and outcomes

- Where X is, for example, changing the curriculum concerning sex education and Y is condom use on first intercourse.





The relationship between interventions and outcomes

- Long causal chains which are iterative rather than linear.
- The existing evidence base silent on large tracts of the logic models.
- Key points in the logic model involves evidence of a type that had never been near an evidence hierarchy.

The external validity problem

- Lack of good process and implementation data
- The role of nuisance variables
- Implementation as part of the intervention
- Two meanings to external validity

Health economics

- Lack of evidence
- QALYS and public health
- Equity vs efficiency
- Costs and benefits beyond the health sector and across the public sector



Public Health conceptual framework

- Four vectors – population, environment, society and organisation
- Different levels of intervention
- Explanations – of individual differences and of population patterns
- Lifecourse-lifeworld



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AN ENQUIRY CONCERNING
HUMAN UNDERSTANDING



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David Hume (1711-1776) revisited

- Rationalism versus empiricism.
- Is knowledge possible on the basis of *a priori* reasoning in the way rationalists believed?
- For Hume knowledge is only possible on the basis of experience – empirically

Hume's insight

- Ideas cannot be generated *de novo* they are formed from impressions of the external world - empirically.
- Relations of ideas can be known *a priori*.
- Matters of fact can only be known *a posteriori*.
- Matters of fact are not just about ideas but how they work in the real world.



Demonstrative reasoning and factual reasoning: Hume's fork

- Demonstrative reasoning is deductive and involves relations between ideas.
- This type of reasoning can proceed with absolute certainty based on the logical relations between ideas.
- Factual reasoning is inductive and involves drawing apparently reasonable but not logically certain conclusions based on the evidence, experience or testimony.



- To learn from what we have observed we must extrapolate beyond experience to draw out factual or inductive inferences from that which we have observed to that which we have not.
- Such inferences are contingent because the future may not resemble the past.

A template for guidance production?

- We assume causal relations on the basis of past experience – but such conceptual models are contingent.
- We deal in ideas and matters of fact.
- We use demonstrative reasoning with ideas – which include mathematical and statistical techniques.
- We use factual reasoning with respect to evidence.
- That evidence may be in the form of systematic experimentation and observation.
- It may also be derived from testimony, anecdote, etc

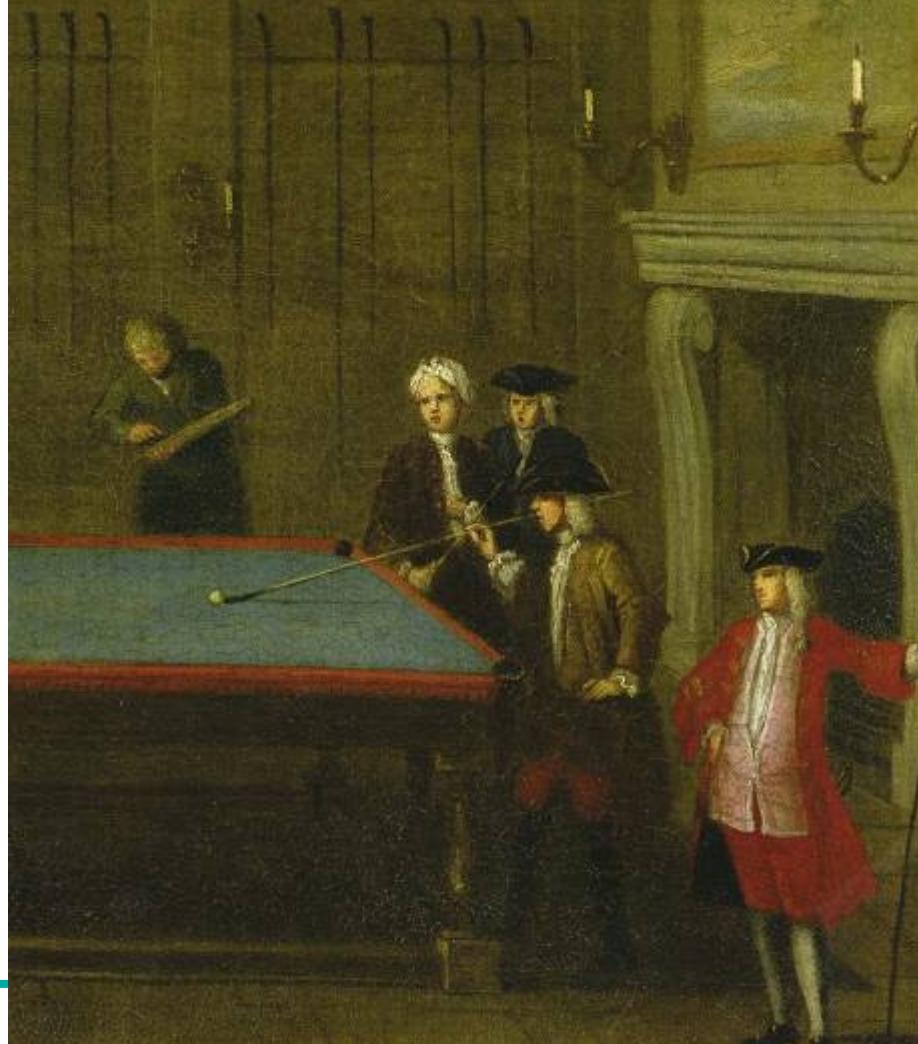
Conclusion

- So the dichotomy between factual evidence and other forms of information is false although it dominates much thinking about guidance production.
- However, following Hume we will pay more attention to factual evidence derived via replicable methods whatever they are rather than unsubstantiated opinion masquerading as fact.
- The true dichotomy is between factual reasoning and *a priori* demonstrative reasoning.
- The problem is that the idea of the hierarchy of evidence is based on *a priori* demonstrative reasoning rather than the operation of the ideas in the real world.

- In turn that is why guidance production in which demonstrative reasoning – the hierarchy of evidence and certain mathematical techniques masquerade as factual reasoning causes so much difficulty; and
- It is therefore an unsuitable basis on its own for making real world recommendations.

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