Making evidence-based decisions: The illusory quest for rigour and certainty
Scope

• All kinds of evidence-based decision-making.

• A normative framework
The Problem
The Problem
Systematic Review
The Problem

• “Interventions” need to function sustainably, at scale in a system
The Problem

• Certainty costs time and money

• Agile, responsive M&E systems result in less certainty
What levels of certainty do we need for which kinds of decisions?
The framework – two elements

1) Identify source of uncertainty (aka lack of rigour) and reduce it

2) Think about consequences – for the outcome, the policy decision
1. Uncertainty

• Statistical uncertainty

• Methodological uncertainty & assumptions

• Transporting findings from one place/time to another
Approaches to Rigour

RCTs

Theory-based methods; assumption testing
Building a case for rigour – systems research
1. Uncertainty from methods/assumptions

Theory-driven approach to uncertainty

Do teachers apply methods after they have been trained?

Do children learn when teachers apply methods?
Theory driven approach – pilot study

- Incentivise method use
- Teacher Training
- Teaching and Learning Materials
- Teachers apply methods
- Children Learn

Reduce uncertainty here ...
... in order to assess this relationship with more certainty
Theory driven approach – scaling up

Monitor whether this happens

Teacher Training

Teachers apply methods

Children Learn

Teaching and Learning Materials

Assume this probability is similar to pilot
2. The consequence of uncertainty

<table>
<thead>
<tr>
<th>Drug</th>
<th>Cure Rate</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notsuridox</td>
<td>0-70%</td>
<td>0%</td>
</tr>
<tr>
<td>Uncertanophil</td>
<td>80-90%</td>
<td>0-5%</td>
</tr>
</tbody>
</table>
We might kill someone
We might waste money

2. Consequences

of:
• Getting it wrong
• Inaction

Assess imperfect evidence, consider context, act & measure

Unequivocal evidence
Implications

1. The silver bullet drug-trial RCT isn’t applicable in education systems research because (a) the issue is more complicated and (b) lives are not at stake.

2. We should pursue greater rigour when there are bigger consequences.
2. The consequences of uncertainty

- Teacher Training
  - Student outcomes
  - Teacher motivation
  - Cost
Consequences for Policy Decision Makers

Teacher Training
- Student outcomes
- Teacher motivation
- Cost

Policy adoption
The Impact of Deworming on Education

Evidence that deworming improves educational outcomes not conclusive

Deworming: A Best Buy for Development

Cochrane Review

J-PAL
Consequences of school-based deworming

- Deworming - > No serious side effects  Certain
- Deworming - > Improved Health  More certain
- Deworming - > Low cost  More certain
- Deworming - > Improved Education  Less certain

Bundy, Kremer, Bleakey, Jukes & Miguel (2009). Deworming and development: asking the right questions, asking the questions right.
Conclusions

Uncertainty..

1a) The case for a rigorous conclusion has many components. Identify and reduce sources of uncertainty

1b) Build a theory and identify which elements are identified with less certainty

.. and its consequences

2a) If consequences are not severe, more uncertainty is tolerable. It is possible to justify building a case for rigour from several lines of evidence (especially if decision is urgent and more evidence is hard to come by)

2b) We need more rigour for elements of a program / outcomes of a program that have greater costs and consequences
Thanks!

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shared.rti.org – blog on evaluation methods