Seeking Correlation then Causality is Essential but not Enough: Attribution is the Goal

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With thanks to J.P Habicht for inspiring and explaining PIPs to the world.

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What We Really Want to Know?

- What interventions have the greatest positive impact on reducing the worst forms of child labor?

- Of the most effective interventions, which is the most cost effective?

- What is the best way of sustaining these interventions that work the best?
  - Impact
  - Cost
  - Sustainability

Criteria of Causality

- Temporality (cause preceded effect)
- Association (example of no association)

Cause Effect	Yes	No
Yes	**3**	30
No	100	1000

- Association not due to other factors

Why Attribution?

- General causality models tell us that one indicator moves at the same time as another

- In the case of multiple child labor interventions, we particularly need to know:

  - Which program contributed the most towards alleviating the problem

The Core Problems With Interventions

- Defining the population served and the population impacted

- Identifying the change in the outcome condition due to the intervention

- Attributing the impact observed to the intervention in question (there are always multiple possible explanations for observed changes)

Fishing for Attribution

- Chart your path – PIP (Program Implementation Pathway), Evaluability Assessment, Feasibility Study
- Collect data from multiple sources on entire population over extended time period
- Stay close to original model in order to measure and manage the proper solution
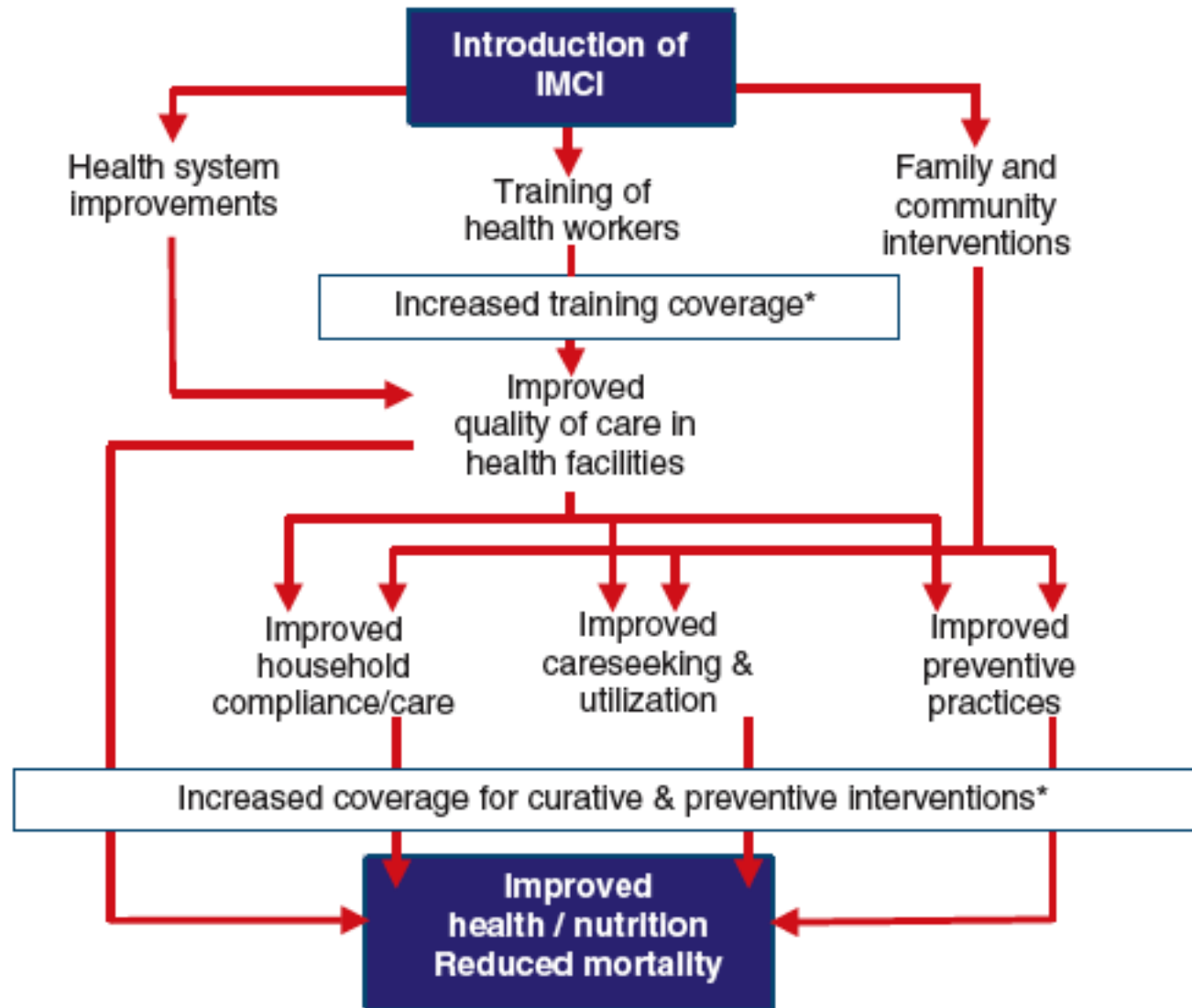
Program Impact Pathway (PIP)

- A PIP specifies the flow of changes that are supposed to happened because of a program
- All program planning, implementation and evaluations are based on PIPs
  - When a PIP is wrong, no impact
  - When PIPs are wrong, no external validity

Ex: Utilization PIP outline

- Accessability + affordability

- Coverage for degree of accessibility

- Behavior Change Communication (BCC)
  – Received, understood,acceptable, actionable, acted on

- Supplies (crucial for actionability)
  – Received, actionable, acted on

PIP for evaluation of WHO's IMCI

2005 Bryce,Victora,Habicht, et al. Programmatic pathways to child survival: results of a multi-country evaluation of Integrated Management of Childhood Illness. Health Policy and Planning 2005;20:5-17.

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What about Evaluation PIPs?

- In fact not a single large scale RCT in nutrition that we studied (2006) had satisfactory PIPs see also Leroy 2009

- Poster child: Progressa study (Mexico)
    Conditional food transfer to improve child nutrition
  - perfect PIP portion for economic behavior
  - inadequate for intra-household behavior

PIP Must be Based on Evidence for Feasibility

- Is the program feasible?
  - formative research of *delivery* PIP

- Is household behavior likely?
  - formative research for *uptake and utilization* PIP

What Else Belongs in a PIP?

- PIP must also include pathways of:
  - Synergisms & antagonisms
    - Potential to benefit
    - Social and structural factors
  - Undesirable outcomes
    - Behavior
    - Displace previous institutions
  - Happenings in control areas

Evaluation

- Effectiveness depends on correct PIP
- Evaluation therefore depends on a correct PIP
  - Often inadequate, especially in randomized control trials which claim certainty of effectiveness without a PIP

Level of Certainty About Impact

- Lower: Adequate impact (relative to criterion)
- Moderate: Plausible impact
  - Depends in major part on PIP analyses
  - Discard other reasons for impact
  - Probability design strengthens plausibility
- Highest: Probable impact
  - Claimed because confounding is randomized
  - Plausibility "**always**" necessary
  - Plausibility analyses to reveal impact
  - Weakens (destroys) probability inference

Lesser Degrees of Certainty for Action (1)

- Improve present program:
  - Operational research of PIP = process indicators + ethnography

- Justify present program
  - Adequacy, politics determine level of certainty demanded

- Extend program to similar areas
  - Adequacy, moderate plausibility, generalizability

Moderate Degree of Certainty for Action (2)

- Extend program elsewhere?
  - Adequacy
  - Very high plausibility to extend PIP to new areas
  - Added value of probability statement?

High Degree of Certainty for Action (3)

- Set international policy?
  - Adequacy
  - Very high plausibility especially to take into account differences in contexts, programs and populations, and to support "probability" inference
  - Certainly need probability statement of impact (but how often?)

RCT Very Useful for Crucial PIP Components

- When:
  - part of PIP is unproven
  - RTC results can be extrapolated to an expanded program or a new program
- RCTs are used to show impact of:
  - Biological effect of biological agent (clinical efficacy of drug or supplement)
  - Market effect of behavior (e.g. feeding)
  - Behavioral (biological?) response to Behavior Change Communications

When There Can be No Randomized Controlled Trials

- Use longitudinal entire population surveys
- Quasi-experimental methods
- Cross sectional studies
- Case studies

Generalizability and External Validity

- Can the program impact be reproduced elsewhere?

  How different is elsewhere?

  How plausible is extension of the PIP?

  – Biology (Can cacao be produced profitably in this environment?)
  – Description of intervention (environment = context)
  – Utilization (Intervention Database)
    - Feasibility + learning-motivational curves
  – Delivery system
    - Structure, personnel, etc
  – Political and higher bureaucratic support

Major Issues Usually Addressed in Evaluations Nowadays

- Measurement of outcome but
  - not adequacy or attribution
- Certainty of impact but
  - not amount of certainty necessary for action by policy makers
- Process evaluation
  - but without adequate PIP explication
  - without considering PIP needs for external validity
  - without integrating PIP into plausibility analyses including:
    why did it fail? = usual RCT result of complex program

Thank you!