What is (Impact) Evaluation?
Why Evaluate?

J-PAL
I. What is Evaluation?

II. Components of Program Evaluation
What is Evaluation?

- Evaluation
- Program Evaluation
- Impact Evaluation
- RCTs

Monitoring
Which one of these would make a good question for an impact evaluation?

A. Does nutrition education for pregnant women increase newborns' weight?

B. Do pregnant women have a right to sufficient food?

C. Are trainers spreading misinformation when delivering nutrition education?
Impact evaluation should usually be conducted:

A. Externally and independent from the implementers of the program being evaluated
B. Externally and closely integrated with program implementers
C. Internally
D. Don’t know
I. What is Evaluation?

II. Components of Program Evaluation
Components of Program Evaluation

1. Needs Assessment
2. Theory of Change
3. Process Evaluation
4. Impact Evaluation
5. Cost Effectiveness Analysis
An Example

WATER, SANITATION & HEALTH in a low-income country
What is the best solution for reducing diarrheal disease?

A. Water source infrastructure

B. Supply & subsidization of purification methods (e.g. chlorine, clay filters, stoves to boil water)

C. Education on sanitation

D. Sanitation infrastructure (e.g. latrines)

E. I don’t know / Other
Identifying the Problem

NEEDS ASSESSMENT
Questions answered by a Needs Assessment

• Does the problem we are proposing to solve actually exist?
  – What is the likely source of the problem?
  – What is the extent of the problem?
  – Who is in most need?

• What solutions have been proposed or tried before?
  – Did they work? Why & how?
  – Are they feasible in this context?
Needs Assessment

• Does the problem exist?
  – Diarrheal disease killed approximately 2.6 million people per year between 1990 and 2000
  – 20% of all child deaths (under 5 years old) are from diarrhea

.....what is the likely source?
Price Valuation
Really the source of the problem?

- Water quality helps little without hygiene (Esrey, 1996)
  - 2.3 billion people lack basic sanitation facilities (WHO)

- People are more willing to pay for convenient water than clean water

- Chlorine is very cheap...
  - In Zambia, $0.18 per month for a family of six
  - In Kenya, $0.30 per month

- but less than 10% of households purchase treatment

Potential Solutions
Blueprint for Change

THEORY OF CHANGE
Questions answered by a Theory of Change

• What are the underlying reasons for the current conditions? What is currently lacking?
• How will the program address these needs?
• What are immediate inputs or activities of the program?
• How do these inputs feed into the ultimate goals of the program?
Theory of Change

Contaminated water is primary source of illness

Drink Clean water

Choose to drink only clean water

Understand benefits of clean water

Know which water is clean

Access to clean water

Clean source or purification method

No recontamination

Choose to collect only clean water / purify

Clean method of extracting water

Hygiene practices

Sufficient water

Have clean water at home

Choose to collect only clean water

Less Diarrhea

Clean source or purification method

Hygiene practices

Sufficient water
Need

Input / Activity

Output

Output

Interm. outcome

Interm. outcome

Interm. outcome

Final Outcome

Final Outcome
# Log Frame

<table>
<thead>
<tr>
<th>Final Outcome</th>
<th>Intermediate Outcome</th>
<th>Output</th>
<th>Input (Intervention/Activity)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives Hierarchy</strong></td>
<td><strong>Indicators</strong></td>
<td><strong>Sources of Verification</strong></td>
<td><strong>Assumptions / Threats</strong></td>
</tr>
<tr>
<td>Lower rates of diarrhea</td>
<td>Rates of diarrhea</td>
<td>Household survey</td>
<td>Waterborne disease is primary cause of diarrhea</td>
</tr>
<tr>
<td>Households drink cleaner water</td>
<td>(Δ in) drinking water source; E. coli CFU/100ml</td>
<td>Household survey, water quality test at home storage</td>
<td>Households collect clean water. No recontamination</td>
</tr>
<tr>
<td>Source water is cleaner</td>
<td>E. coli CFU/100ml</td>
<td>Water quality test at source</td>
<td>Knowledge of maintenance. Continued maintenance of water source.</td>
</tr>
<tr>
<td>Source protection is built</td>
<td>Protection is present, functional</td>
<td>Source visits/surveys</td>
<td>Sufficient materials, funding, &amp; labor</td>
</tr>
</tbody>
</table>

**Needs assessment**

**Impact evaluation**

**Process evaluation**
Making the program work

PROCESS EVALUATION
What answers by a Process Evaluation

- Was the program carried out as planned?
  - Are basic tasks being completed?
  - Is the intervention reaching the target population?
  - Is the intervention being completed well or efficiently and to the beneficiaries’ satisfaction?
Process Evaluation

• Inputs:
  – Springs for encasement identified
  – Encasements for springs were built
  – Impact evaluation rollout proceeding as planned
  – Maintenance was performed

• Outputs:
  – 66% reduction in source water e coli concentration
Measuring how well it worked

IMPACT EVALUATION
Questions answered by an Impact Evaluation

• Did the program impact the problem / outcome?
  – Did concrete encasing of the springs impact diarrhea rates?

• If so, how much impact did the program have?
  – How much did diarrhea rates decrease?
What was the impact?

• Intermediate outcome:
  – 24% reduction in household E coli concentration

• Outcomes:
  – 25% reduction in incidence of diarrhea
## Making Policy from Evidence

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Impact on Diarrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring protection (Kenya)</td>
<td>25% reduction in diarrhea incidence for ages 0-3</td>
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</table>
## Making Policy from Evidence

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<tbody>
<tr>
<td>Spring protection (Kenya)</td>
<td>25% reduction in diarrhea incidence for ages 0-3</td>
</tr>
<tr>
<td>Source chlorine dispensers (Kenya)</td>
<td>20-40% reduction in diarrhea</td>
</tr>
<tr>
<td>Home chlorine distribution (Kenya)</td>
<td>20-40% reduction in diarrhea</td>
</tr>
<tr>
<td>Hand-washing (Pakistan)</td>
<td>53% drop in diarrhea incidence for children under 15 years old</td>
</tr>
<tr>
<td>Piped water (Urban Morocco)</td>
<td>0.27 fewer days of diarrhea per child per week</td>
</tr>
</tbody>
</table>
Evidence-Based Policymaking

COST-EFFECTIVENESS ANALYSIS
Cost-Effectiveness Diagram

Cost-Effectiveness: Diarrheal Incidents Avoided per $1000
Sensitivity to Population Density

- Source improvements
- Changing behavior
- Chlorine treatment

1. Free Chlorine Dispensers at Water Sources, Kenya
2. Free Home Delivery of Chlorine, Kenya
3. Encasing Water Sources in Concrete, Kenya
4. Free Home Delivery of Chlorine, Pakistan
5. Handwashing Promotion with Free Soap, Pakistan
What is the best solution for reducing diarrheal disease?

A. Water source infrastructure

B. Supply & subsidization of purification methods (e.g. chlorine, clay filters, stoves to boil water)

C. Education on sanitation

D. Sanitation infrastructure (e.g. latrines)

E. I don’t know / Other
Running Randomized Evaluations

Evaluation Design

- Theory of Change
- Evaluation Question (Causal Hypothesis)
- Intervention
- Target Group
- Outcomes
- Random Assignment
- Sample Selection
- Survey Design/Admin Data

Intervention Implementation

- Monitoring
- Data Collection

Evaluation Implementation

- Data Analysis
- Results
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday June 10</th>
<th>Tuesday June 11</th>
<th>Wednesday June 12</th>
<th>Thursday June 13</th>
<th>Friday June 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 9:00</td>
<td>Registration/Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
</tr>
<tr>
<td>9:00 – 9:40</td>
<td>Opening remarks</td>
<td>Lecture 3: Why Randomize</td>
<td>Lecture 5: Sampling &amp; Sample Size</td>
<td>Lecture 6: Threats and Analysis</td>
<td>Lecture 8: Generalizability</td>
</tr>
<tr>
<td>10:30 – 10:45</td>
<td>Coffee Break</td>
<td>Group work on presentation: Indicators</td>
<td>Group Case Study 4: Threats &amp; Analysis</td>
<td>Group Case Study:</td>
<td>Group Case Study 2: Why Randomize</td>
</tr>
<tr>
<td>11:00 – 12:00</td>
<td>Group introductions</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
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<tr>
<td>12:00 – 1:00</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:00 – 2:30</td>
<td>Lecture 2: Measurement: Outcomes, Impact, and Indicators</td>
<td>Lecture 4: How to Randomize</td>
<td>The RCT Experience from a Practitioner’s Perspective</td>
<td>Lecture 7: Start-to-Finish</td>
<td>Group presentations</td>
</tr>
<tr>
<td>2:30 – 2:45</td>
<td>Coffee Break</td>
<td>Joseph Doyle</td>
<td>Antonio Gullierez Saga Innovations</td>
<td>Dan Keniston</td>
<td>Group presentations</td>
</tr>
<tr>
<td>2:45 – 4:00</td>
<td>Group work on presentation: Theory of change, research question</td>
<td>Group Exercise: Randomization Mechanics</td>
<td>Group Exercise: How to do Power Calculations</td>
<td>Group work on presentation: Finalize presentation</td>
<td>Group presentations</td>
</tr>
<tr>
<td>4:00 – 5:00</td>
<td>Group Case Study 2: Why Randomize</td>
<td>Group Case Study 3: How to Randomize</td>
<td>Group work on presentation: Randomization Design, Power and sample size</td>
<td>Group work on presentation: Finalize presentation</td>
<td>Closing remarks</td>
</tr>
<tr>
<td>5:00 – 8:00</td>
<td>Happy Hour Glass House</td>
<td></td>
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</tbody>
</table>
References, Reuse, and Citation

J-PAL, 2019
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