Questions?
Designing a sustainable hand sanitizer intervention for a low-resource community in the Dominican Republic

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Capstone Committee

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- Ben Simasek, Peace Corps Volunteer in Cruce de Blanco, Dominican Republic
Capstone Objectives

- Describe the design for a novel, effective, and sustainable hand sanitizer intervention for a low-resource water-limited community.
- Use the socio-ecological model as the theoretical framework.
- Describe methods for process and outcomes evaluation of future implementation.

Outline of Presentation

- Introduction
  - Capstone objectives
  - Problem & solutions
  - Hand hygiene approaches
  - Program idea & goals

- Background of the Community

- Needs Assessment

- Program Design
  - Evaluation Plans

- Conclusion
  - Strengths/limitations
  - Future work
  - Public Health Implications
Capstone Objectives

- Describe the design for a novel, effective, and sustainable hand sanitizer intervention for a low-resource water-limited community.
- Use the socio-ecological model as the theoretical framework.
- Describe methods for process and outcomes evaluation of future implementation.
The Problem

1 billion people without access to clean water.

Resulting in

Respiratory Disease
Diarrhea

& 4 million annual childhood deaths
Hand hygiene!
Why?

- Reduces diarrheal deaths and respiratory infections
- Most cost-effective intervention

Why not?

Global compliance averages to 40%
Compliance varies by:
- Gender
- Infrastructure
- Education
- Behavioral norms
Hand hygiene Approaches

- Mechanism
- Water vs soap vs types of soap
- Interventions in low-resource countries

- Mechanism
- Interventions
  Why is this novel?
Program Idea

- Teach mothers in the community how to make hand sanitizer
- Modify WHO's formula for hand sanitizer
- Supplement with other components to ensure behavior
- Modify WHO's formula for hand sanitizer
- Supplement with other components to ensure behavior

**GOALS**

This program aims for:
1. Change hand hygiene behavior of mothers in the community, who in turn influence the behavior of their family members.
2. Increase the evidence of diarrheal and respiratory events in community, especially in children.
3. Ensure sustainability of the product and health benefits thereof.
This program aims to:

1. Change the hand hygiene behavior of the mothers in the community, who in turn influence the behavior of their family members.
2. Decrease the incidence of diarrheal and respiratory events in community, especially in children.
3. Ensure sustainability of the product and health benefits of use.
Cruce de Blanco, Dominican Republic
# Timeline for Methods

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td>Month</td>
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<td></td>
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<tr>
<td></td>
<td>A</td>
<td>M</td>
</tr>
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<td>1</td>
<td>2</td>
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<tr>
<td>Week #</td>
<td></td>
<td></td>
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<tr>
<td>Conceived idea</td>
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<tr>
<td>Planning in-country visit</td>
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<tr>
<td>Planning session with mothers</td>
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<tr>
<td>On-site</td>
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<td></td>
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<tr>
<td>Needs Assessment &amp; Evaluation</td>
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<td></td>
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<tr>
<td>Theoretical Framework Development</td>
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<tr>
<td>Development of Program Content</td>
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</tbody>
</table>

*Figure 1. Gantt chart depicting methods. (a) Yearly view from 2011 to present. (b) In-country focused.*
<table>
<thead>
<tr>
<th>On-site timeline (Days)</th>
<th>August</th>
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<tbody>
<tr>
<td></td>
<td>8</td>
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<tr>
<td>Planned meeting</td>
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<tr>
<td>Actual Meeting</td>
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<td>Purchase of supplies</td>
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<tr>
<td>Discussion with Peace Corp Volunteer</td>
<td></td>
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<tr>
<td>Reflection</td>
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</tbody>
</table>
Figure 1. Gantt chart depicting methods. (a) Yearly view from 2011 to present. (b) In-country focused.
Needs Assessment

- **Culture**: Female education, changing roles of women
- **Environment**: Availability of clean water
- **Public Policy**: 1995 Health Reform, Medical schools
- **Community**: Socioeconomic Status, Organizational Interactions
- **Organizational**: Health & Water committees, Mother's club, Clinic, School
- **Interpersonal**: Familismo, social networks and social support
- **Individual**: Maternal Education, Skills/Knowledge

Figure 2. SEM model for literature-based needs assessment.
Figure 3. Diseases reported in local clinic in 2003 (DelToro, 2009)
### Needs Assessment

<table>
<thead>
<tr>
<th>Culture</th>
<th>Female education, changing roles of women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Availability of clean water</td>
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<tr>
<td>Public Policy</td>
<td>1995 Health Reform, Medical schools</td>
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<td>Community</td>
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<td>Interpersonal</td>
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<tr>
<td>Individual</td>
<td>Maternal Education, Skills/Knowledge</td>
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</tbody>
</table>

*Figure 2. SEM model for literature-based needs assessment.*
Focus Group
- Mother's Club
- Attendance & Demographics
- Topics for discussion

Results
- Misconceptions
- Little evidence of germ theory knowledge
Focus Group

- Mother's Club
- Attendance & Demographics
- Topics for discussion

Results

- Misconceptions
- Little evidence of germ theory knowledge
- Dynamics
Theoretical Frameworks

Social Cognitive Theory

- Diffusion of Innovations
- Community-based Participatory Research

Focus Group
- Method of use
- Attendance & Demographics
- Experts for discussion

Results
- Misconceptions
- Little evidence of germ theory
- Knowledge
- Dynamics

Behavior

Individual

Environment
Figure 4. Conceptual Map of Theories and Activities. Arrows indicate which theoretical constructs affect the activity.
## Program Activities and Evaluations

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
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<tr>
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<td>A</td>
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<td>Meeting A</td>
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<td>Meeting B</td>
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<td>Meeting C</td>
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<td>House visits</td>
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<td>Clinic data</td>
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<tr>
<td>School data</td>
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<tr>
<td>Data Dissemination</td>
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<tr>
<td>Analyze Data</td>
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<tr>
<td>Share findings</td>
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</table>

**Figure 5. Gantt chart depicting planned program activities and simultaneous evaluation over one year.**
This program aims to:

1. Change the hand hygiene behavior of the mothers in the community, who in turn influence the behavior of their family members.

2. Decrease the incidence of diarrheal and respiratory events in community, especially in children.

3. Ensure sustainability of the product and health benefits of use.
Program Objectives for Evaluation

1. By the end of the first implementation visit, stakeholders and mothers will have made final decisions and received appropriate training.

2. The mothers will be between the "early majority" to "late majority" stage by the end of the first half of the year.

3. By the end of the year-long intervention, diarrheal rates will have reduced by 1/2, respiratory disease will have reduced by 1/3 from the baseline values retrieved from clinic records.
Evaluation Framework

Aims
1. Evaluate extent of behavioral change and sustainability
2. Capture the value of the product in domestic lifestyle
3. Assess the health impact of using the product

Some evaluation themes
- Satisfaction
Some evaluation themes

- Satisfaction
- Perception
- Usefulness
- Need
- Expectation
- Quality of life
Strengths

1) Utilizes community capacity and stakeholders to engage target population
2) Focus group provided necessary data and perspective to predict outcomes of a program
3) Evaluation occurs simultaneously with program activities
4) Program designed around concept of sustainability to ensure health outcomes will extend beyond program implementation.

Limitations

1) Current program activities are dependent on community
Limitations

1) Current program activities are dependent on community approval and are subject to change at any time.
2) Data may be biased for the uncontrolled environment.
3) Logistical issues within program design affecting the health outcome evaluation.
4) Program designed around concept of sustainability to ensure health outcomes will extend beyond program implementation.
Future Work

- Implementation of program
- Address other community resources
- National campaign
Public Health Implications

- Presents a novel hand hygiene health promotion program that removes dependency of user on environment for resources
- Addresses sustainability of hand hygiene interventions and adds to existing literature on domestic hand hygiene.
- Improves quality of life in Cruce de Blanco community for all members
  - Could potentially be applied to other low-resource countries that are water-constrained.
Questions?