Evidence-based Transfer of Success:
Lessons Learned from Community Health Worker Experiments in Bangladesh & Ghana

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Department of Population and Family Health
Columbia University, Mailman School of Public Health
1) Why is there a need for research on CHW?
   - The CHW typology
   - A systems perspective

2) The Bangladesh example:
   - Learning from failure: The Matlab Contraceptive Distribution Project
   - The Matlab Experiment
   - Replication: The MCH-FP Extension Project
   - Scaling up: “Population & Health Project #3”

3) The Ghana example: Learning from Matlab
   - Baobab Planning
   - The Navrongo experiment
   - Nkwanta replication
   - Scaling up: The CHPS Initiative

4) Conclusions & implications
To mobilize the system, curative and preventive services are provided by workers who are...

...“passive” (based in fixed facilities) and....

...“active” (seeking clients in their homes or communities)

When children fall ill or need preventive services, parents...

...are passive about seeking care.

...actively seek services

Developing Demand by improving service quality and health promotion

Type 1: Promoting services

Type 2: Promoting access

Type 3: Accessible community-based services that also foster demand
Health system

WHO

“Pillars”

Communities

Social system

Kindred groups

Extended families

Nuclear family

GOVERNANCE

INFORMATION

FINANCING

SERVICE DELIVERY

MEDICINES and TECHNOLOGIES

HUMAN RESOURCES

INFORMATION

SERVICE DELIVERY

Medical and health technologies

HUMAN RESOURCES

Medicines and health technologies

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Research strategies for dealing with complexity: Phases with Mixed methods

- Experimental research
- Survey research
- Qualitative appraisal
- Systems research

Geographic Location of Navrongo Experimental Cells

- Forest
- Navrongo town
- Mobilizing Ministry of Health outreach
- Mobilizing traditional community organization
- Yes
- No
- Comparison (Cell 4)
- Zurugelu (Cell 1)
- Nurse outreach (Cell 2)
- Zurugelu & nurse (Cell 3)
Overview

1) Why is there a need for research on CHW?
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4) Conclusions & implications
The Matlab Contraceptive Distribution Project (CDP)  
A Plausibility Trial of the Ravenholt Hypothesis

The hypothesis dominated USAID policies in the 1970s: Accelerating access to oral contraception will foster reproductive change.

Assumptions….

- **Crisis.** There is a global population crisis. Careful trial was too time consuming.
- **Push pills.** “Pills for all” will fulfill “latent demand” for contraception.
- **Simplicity.** Access and cost are the key constraints to reproductive change.
- **Vertical programming.** Addressing latent demand does not require attention to distracting complexities (health components, development needs, gender issues)

Problem: Controversy

- Controversy about the “crisis” and how to solve development problems: Bucharest
- Why pills?
- Credibility: Is the problem all that simple?
- What about health?

Solution: Test the hypothesis in a challenging setting
The Matlab Experiments: CDP (1975-77) and FPHSP (1979-2009)

The setting:
- Pervasive poverty & illiteracy
- Geographic isolation
- "Natural fertility" (TFR=6.8)

Matlab Thana
The CDP Approach:

- Challenging & complex setting
- Minimize costs and complexity
- CDP approach utilized TBAs for distribution of family planning
- Demand driven
CDP Results: In the final year, treatment fertility was higher than the comparison!

Conclusion:
- Imported strategies do not work.
- There was a need to develop and test a socially informed alternative to the CDP.
Diagnostic social research to determine what went wrong with the CDP. Evidence-based changes were....

- **Workforce**: Young educated CHW
- **Training**: Extended training
- **Integration**: Health promotion + health care
- **Multiple methods**: “The User’s Perspective”
Family Planning Health Services

Project Results:

The fertility impact of the Matlab experiment was immediate and pronounced:

Total Fertility Rates by Quarter (Matlab Treatment & Comparison Areas)

Contraceptive Prevalence by Method
Matlab, 1977-1988

- Percent Using
- Time

- Others
- Pill
- Copper-T
- Sterilization
- DMPA
Conclusions:
- CHW deployment accelerated under-5 mortality improvement
- As the Government phased in CHW deployment, mortality trends converged.
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4) Conclusions & implications

Transfer the Matlab system to the government operation in Sirajganj...

...and Abhoynagar
Phase 3: Transfer of Matlab worked

Sirajganj  Abhoynagar
Scaling up involved “top down” financing and command-driven action....
1) Translating MCH-FP Extension “Implementation Research” into text for the “World Bank Pop-Health Project #3”
2) Hiring and training 28,000 CHW
3) Deploying CHW with support systems nation-wide
4) Shifting research from operations research in 2 districts to i) process monitoring and ii) national scale-up.

Results: Dramatic reproductive and child health improvement
Lessons from the Bangladesh experience: Phased research

**PRODUCT**
- The failed CDP
  - Culturally appropriate System
- The Matlab Trial
  - Mortality and fertility impact
- Replication (MCH-FP Extension)
  - Replicable strategy
- National Scale-up: Pop&health 3
  - Sustainable System Reform

**PARADIGM**
- Diagnostic social research on a failed experiment
- Plausibility trial
- Implementation research
- Organizational change and development

**QUESTION**
- What went wrong?
- Does the candidate system work?
- Is the system replicable?
- Is coverage expanding?

**STAGES**
- Stage I: 1976-1978
- Stage II: 1979-1999
- Stage III: 1982-1987
- Stage IV: 1984-1989

Lessons from the Bangladesh experience: Phased research

PRODUCT

PARADIGM

QUESTION

STAGES

Stage I: 1976-1978

Stage II: 1979-1999

Stage III: 1982-1987

Stage IV: 1984-1989
Outline

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4) Conclusions & implications
Can the “Matlab Model” work in Africa?
<table>
<thead>
<tr>
<th>STAGES</th>
<th>Navrongo Pilot</th>
<th>Navrongo Experiment</th>
<th>Replication (Nkwanta)</th>
<th>National Scale-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT</td>
<td>Culturally appropriate System</td>
<td>Mortality and fertility impact</td>
<td>Replicable strategy</td>
<td>Coverage</td>
</tr>
<tr>
<td>PARADIGM</td>
<td>Open-systems micro pilot</td>
<td>Plausibility trial</td>
<td>Implementation research</td>
<td>Organizational change and development</td>
</tr>
<tr>
<td>QUESTION</td>
<td>What a culturally appropriate system of care?</td>
<td>Does the candidate system work?</td>
<td>Is the system replicable and sustainable?</td>
<td>Is coverage expanding?</td>
</tr>
</tbody>
</table>

Avoiding the Bangladesh mistakes: Phased research in Ghana
Phase I: "Baobab Planning"

The Navrongo approach: Phased development of a national system
Mixed Methods (Baobab planning):
Qualitative & quantitative

Diagnose problems, develop strategies, develop hypotheses

Describe problems, test hypotheses, evaluate solutions
The Zurugelu dimension mobilizes traditional...
The Zurugelu dimension

Women's groups

Volunteers

Health committees

Zurugelu = Bamako Initiative
The community health service dimension

**Health infrastructure**

**Community-constructed health centers**

**Relocated nurses**

**Essential equipment**
## Phase II: Will the system work?  
The Navrongo Experiment

<table>
<thead>
<tr>
<th>Mobilizing resident community nurse health services</th>
<th>Mobilizing Traditional Community organization &amp; deploying volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Comparison 4</td>
</tr>
<tr>
<td>Yes</td>
<td>Nurses resident in community 2</td>
</tr>
<tr>
<td></td>
<td>Zurugelu 1</td>
</tr>
<tr>
<td></td>
<td>Combined 3</td>
</tr>
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### Mobilizing Ministry of Health outreach

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<td>No</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>Comparison</td>
</tr>
<tr>
<td>No</td>
<td>Zurugelu</td>
</tr>
<tr>
<td>Yes</td>
<td>Nurse outreach</td>
</tr>
<tr>
<td>Yes</td>
<td>Zurugelu &amp; nurse</td>
</tr>
</tbody>
</table>

- **No**: 4
- **Comparison**: 1
- **Zurugelu**: 3
- **Zurugelu & nurse**: 2

**Phase 2: The Navrongo Experiment**

- Forest
- Navrongo town
- Comparison (Cell 4)
- Zurugelu (Cell 1)
- Nurse outreach (Cell 2)
- Zurugelu & nurse (Cell 3)
Phase 2: The Navrongo Experiment

The UNICEF “Bamako Initiative” model

The Matlab model

Mobilizing Ministry of Health outreach
Mobilizing traditional community organization

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<th></th>
<th>Comparison (Cell 4)</th>
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<th>Nurse outreach (Cell 2)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Yes</td>
<td>2</td>
<td>3</td>
<td></td>
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The Matlab model

The UNICEF “Bamako Initiative” model
**Age specific fertility rates by Navrongo experimental cell**

**Conclusion:**

1) Putting nurses in communities with Matlab-like services will not work.
2) “Zurugelu” Volunteers without nurses failed to have an impact.
3) Zurugelu social engagement + nurse services can have an impact.
Trends in the Under-5 mortality rate, by Cell 1995-2010

Zurugelu volunteers had no impact. In fact, in the long term, the Zurugelu approach was less effective than no community based services.

Where nurses were posted childhood mortality rapidly declined.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate per 1000 person years</th>
</tr>
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<tbody>
<tr>
<td>1994</td>
<td>350</td>
</tr>
<tr>
<td>1996</td>
<td>300</td>
</tr>
<tr>
<td>1998</td>
<td>250</td>
</tr>
<tr>
<td>2000</td>
<td>200</td>
</tr>
<tr>
<td>2002</td>
<td>150</td>
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<tr>
<td>2004</td>
<td>100</td>
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<tr>
<td>2006</td>
<td>50</td>
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<tr>
<td>2008</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
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Mobilizing resident community nurse health services
- No
- Yes
Mobilizing Traditional Community organization & deploying volunteers
- No
- Yes

Comparison
- Zurugelu
- Nurses resident in community
- Combined

Cell 1 Q5
- Predicted q5
- Cell 1 predicted q5

Cell 2 Q5
- Predicted q5
- Cell 2 predicted q5

Cell 3 Q5
- Predicted q5
- Cell 3 predicted q5

Cell 4 Q5
- Predicted q5
- Cell 4 predicted q5
The Navrongo project is ended by gradually posting nurses to all communities. When the project scaled up within the study district, mortality began to fall in the comparison area.

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Where nurses were posted childhood mortality rapidly declined.
### Phase II: Results

**The Navrongo Experiment**

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<tr>
<td>No</td>
<td>No impact</td>
</tr>
<tr>
<td>Yes</td>
<td>Matlab in the Sahel</td>
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<tr>
<td></td>
<td>Limited fertility impact but major mortality impact</td>
</tr>
<tr>
<td></td>
<td>Combined:</td>
</tr>
<tr>
<td></td>
<td>Fertility + major mortality impact</td>
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</table>
Phase 3: Transferring the Navrongo model to Nkwanta: The creation of CHPS

Research results from Navrongo lacked credibility. Establishing impact was not sufficient

- Would the system work in a setting that lacked research resources?
- Was the model uniquely suited to the Navrongo cultural environment?
- How do you scale up Navrongo?
Phase 3 research in Nkwanta:

1) Survey research assessed the replicability of Navrongo results and the sustainability of the model in a non-research environment.

2) Implementation research determined the appropriate steps in transferring CHPS from one district to another.

3) Qualitative research identified strategies for adapting the Navrongo model to complex socially diverse circumstances.
Lesson learned: If implementation adaptations are made to local conditions, Navrongo effects are replicable.
Phase 3: Replication research starts with transfer to Nkwanta

Phase 4: National Scale-up with CHPS
Community-based health planning and services scaled up most rapidly in Ghana’s poorest Regions.

Scaling up is virtually non-existent in the most populous and prosperous regions: Greater Accra, Ashanti, Brong Ahafo.
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4) Conclusions & implications
Navrongo Pilot
Culturally appropriate System
Open-systems micro pilot
What a culturally appropriate system of care?

GEHIP Project
Mortality and fertility impact
Plausibility trial
Does the candidate system work?

GEHIP Replication
Replicable strategy
Implementation research
Is the system replicable and sustainable?

National Scale-up
Coverage
Organizational change and development
Is coverage expanding?

Model for accelerating CHPS
Systems diagnosis
How can systems strengthening accelerate CHPS?

Now what?
1 2 3 4 5
The global initiative approach is a “Top Down” approach that is driven by an answer to a major challenge or question.

**Idea** about ways to develop systems

Consensus building conference

Regional Program & Budget

Country program, country planning conference, national action agenda

Implementation at the periphery

Evaluation

Questions come last

The evidence-based alternative is a “Bottom-Up” model that is motivated by questions at each stage.

**Evaluation**: Are people better off?

**Scale up**: Is change happening? What is the pace, coverage, and content of change?

**Replication**: Is it transferable? Sustainable?

**Trial**: Does it work?

**How can it be implemented?**

Micro-implementation & qualitative appraisal

**Evaluation**: Are people better off?

The global initiative approach is a “Top Down” approach that is driven by an answer to a major challenge or question.
Conclusion:
The Exchange worked, but...

Importing a high profile strategy is risky, even if advocates are internationally acclaimed and well financed.

- The process of developing an appropriate system is transferable but service strategies are not.
- Controlled trial is essential, but
- A phased evidence-based process approach is more likely to succeed than a single study.
- Community-based primary health care is complex: Mixed method research offsets risk.
Thank you

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