Today’s topics

• Eduardo Jezierski
• Behavior Change Communication
• Projecting Health
Readings and Assignments

• Readings
  – Literacy Bridge
  – Village Reach
• Homework 8
  – ODK
• Homework 9
  – TBD

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
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<tbody>
<tr>
<td>Jan 7, 2015</td>
<td>Overview</td>
</tr>
<tr>
<td>Jan 14, 2015</td>
<td>Surveillance</td>
</tr>
<tr>
<td>Jan 21, 2015</td>
<td>Tracking</td>
</tr>
<tr>
<td>Jan 28, 2015</td>
<td>Medical records</td>
</tr>
<tr>
<td>Feb 4, 2015</td>
<td>Logistics</td>
</tr>
<tr>
<td>Feb 11, 2015</td>
<td>Patient support</td>
</tr>
<tr>
<td>Feb 18, 2015</td>
<td>Treatment support</td>
</tr>
<tr>
<td>Feb 25, 2015</td>
<td>Health worker support</td>
</tr>
<tr>
<td>Mar 4, 2015</td>
<td>Behavior change</td>
</tr>
<tr>
<td>Mar 11, 2015</td>
<td>Computing and Global Health Panel</td>
</tr>
</tbody>
</table>

CSE 691, Gates Commons
6:30 PM
Behavior Change Communication

• Vast improvements in health possible through behavior change
Sanitation
Disease Prevention
Maternal and Child Health
Lifestyle
Theory

• Social cognitive theory

• Key variables
  – Self-efficacy
  – Outcome expectations
  – Self control
  – Reinforcements
  – Emotional coping
  – Observational learning

• Behavior explained as interaction of personal factors and environment
Theory of Planned Behavior

- Behavior is dependent on intention to perform the behavior
- A person must perceive they have ability to perform behavior
Theory

• Stages of change model
  – By default, people will get stuck in early stages
  – Different types of action empirically shown to help progress
Behavior Change for Newborn Survival

Specific interventions can reduce neonatal and maternal mortality

• Clean delivery, thermal care, breast feeding, folic acid supplementation, antenatal care, tetanus vaccination, awareness of danger signs, extra warmth for low birthweight babies
Behavior change management

1. Identify epidemiologically targeted key behaviors.
2. Identify suitable target groups for a behavioral intervention.
3. Develop appropriate behavior change transaction(s) for each target group.
4. Leverage the influence of social networks to expedite behavior change.
5. Build mechanisms to sustain and institutionalize new behaviors.
## Lifestyle vs Newborn Care Behavior

<table>
<thead>
<tr>
<th></th>
<th>Lifestyle/Addictive</th>
<th>Newborn Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Locus of behavioral action</strong></td>
<td>Individual</td>
<td>Family</td>
</tr>
<tr>
<td><strong>Behavioral context</strong></td>
<td>Psychosocial: rooted in individual experience</td>
<td>Sociocultural: rooted in cultural value system</td>
</tr>
<tr>
<td><strong>Perceived risk</strong></td>
<td>Usually aware of some risk</td>
<td>Not aware of risks</td>
</tr>
<tr>
<td><strong>Perceived barriers</strong></td>
<td>Habit patterns, pleasure/pain choices</td>
<td>Cultural factors enforced by social norms</td>
</tr>
<tr>
<td><strong>Mode of behavioral transmission</strong></td>
<td>Peer-to-peer</td>
<td>Transmitted along generations through familial hierarchy</td>
</tr>
<tr>
<td><strong>Social sanction</strong></td>
<td>Not valued by society as a whole</td>
<td>Usually the norm with universal social sanction</td>
</tr>
</tbody>
</table>
From Digital StudyHall to Digital PublicHealth
The History of D*

- Digital StudyHall pioneered a technology and methodology for remote education with low cost digital video
- D* designated the use of the DSH platform to multiple domains
  - Digital Green (DG) for agriculture
  - Digital PolyClinic (DPC) for health
  - Digital Self Employment (DSE) for livelihood
Digital StudyHall

- Support weak schools with video content from expert teachers
- Local teacher mediates the video content
  - Based on the TVI model
  - Provide better content and support teacher development
- Important to match content with target audience
- Cost realism
DSH History: The Idea

- How can computing systems research be applied to help the very poor?
- Solve the digital content distribution problem to make distance education possible
- Concept paper, Randy Wang et al., Princeton, November 2003
DSH History: Experimentation

• Minimize cost of video playback in the classroom
• Attempt to use low cost television sets
• Target rural schools with irregular power
• Low cost video and audio production
• Develop video production tools based on open source software
• Randy Wang joins MSR (TEM Group)
DSH History: Building the Lucknow hub

- Developed content creation model with a strong school
- Recorded core content for all grades
- Teacher training workshops
- Range of different types of schools
  - Government, private, informal
- Simplification of the technology
  - DVD players instead of computers
- Randy Wang joins TEM Group at MSR
- Expansion to other HUBs
  - Bangalore, Pune, Dhaka, Calcutta
DSH History: Independence

• Relationship with MSR ended in 2008
• Activities in Lucknow continued, but many hubs stopped working
• NSF sponsored study exposed challenges in working with government schools
• Randy Wang moved to Intel, Shanghai in 2010
• New set of projects developed by DSH Lucknow with a new manager
Digital Green

- Video based education for farmers
- Community created videos demonstrating agricultural practices
- Facilitated showings of videos in farmer groups
- Digital Green (NGO) providing technology, training, content archive and advocacy
DG History: The Idea

• Apply Digital StudyHall to agriculture

• Formative research conducted with Bangalore based NGO (Green)
  – Promote organic farming practices
  – Film extension workers introducing practices
  – Public showings in evenings

• Rikin Gandhi started work at MSRI as a volunteer
DG History: Experimentation

• Video creation
  – Wide range of topics and video styles
• Screening methodologies
  – In homes
  – In public square
• Process
  – Hire ‘animators’ responsible for conducting showings and maintaining equipment
  – Follow up from meetings
DG History: Spin Out

- Studies measuring “cost per adoption”
  - Compare DG with extension agent
  - Emphasis on monitoring
- Microsoft identified forming an NGO as a success criteria for the project
- Support from BMGF to form NGO
DG History: Building an NGO

- Business model
  - Partner with NGOs implementing agricultural programs
  - Become trainers and managers of content and technology
- Shift focus to low income states in India
- Strengthen process model
- Process innovation:
  - Shift video creation to the community
- Technology innovation:
  - Pico-projector
DG History: Expansion

- Substantial growth
- Partnership with NRLM in India
- Expansion to projects in Africa
- Identification of other domains
  - Health, Sanitation, Nutrition, Livelihood
Digital Public Health

• Digital Green model applied to community health education

• Community created video content for externally defined health messages

• Video showings in community to promote behavior change

* Now known as Projecting Health
DPH History: Building a Partnership

- PATH/DG partnership established
- DG Video Training workshop for PATH staff
- Identification of possible differences between Health and Agriculture
  - Message review
  - Evaluation of impact
  - Dissemination models
- Funding for pilot
- Identification of implementation partner
Applying the Digital Green model to health

- Digital Green model
  - Participatory process for content production
  - Locally generated digital video database
  - Human-mediated instruction for dissemination and training
  - Regimented sequencing to initiate a new community
  - Integrated performance monitoring
Surestart project

- PATH led project in UP and Maharashtra
- 2006-2011, BMGF Funded
- Community engagement to support maternal and newborn health
  - Governance and public health interventions
  - Mentoring ASHAs
- Maternal health messaging
  - Danger signs
  - Birth preparedness
  - Thermal care
  - Breast feeding
- Mothers’ group
  - ASHA led group of expecting mothers
  - Monthly meeting with activities
Bacchrawan, Raebareli, UP

- Gran Vikas Sanstham
  - Well established local NGO
  - Active since 1977
  - Demonstration site for SureStart
- High performing district
- Project initially covered 20 villages with 54 mothers’ groups
- Direct continuation of Surestart
- Supervisory structure already in place
- Expansion to another 80 MGs’ in 2013
Message creation

• Health messaging developed by experts
  – Standard messaging that has been adopted by health organizations

• List of messages for a topic given to video team
  – Messages must appear in the video

Birth preparedness requires a prior identification of—
a). Skilled, capable and eligible people like doctors, nurse and ANMs to do the delivery;
b). Clean cloth to wrap the baby and the mother;
c). Clean thread to tie the cord;
d). Clean new blade to cut the cord by a trained person;
e). Important phone numbers and address of nearby hospital, ambulance and any such people who has a vehicle to carry the pregnant women in case of emergency to the hospital/doctor;
f). Saving money for such situations.
Video creation

• GVS employees trained in video production and editing
  – No previous background
• Training includes basics of film
  – Different types of shots
• Video team had creative control on videos
• Developed story lines for videos
• Initial videos produced were of high quality
Review

• Critical to ensure accuracy of messaging
• Community advisory board created
  – Health system and community membership
• Approvals
  – Storyboards
  – Final videos
    • Community and PATH review
• Recommendations from CAB have been included in videos
• Errors in videos have been detected
Dissemination

• ASHAs trained to use videos
  – Technical training on Pico projector
  – Training in facilitation

• Videos shown in existing mothers groups
  – Substitute videos for learning activities
  – Attempt to keep format the same
Technology

• Video creation with Kodak playtouch camera
• Edit with Microsoft Movie Maker
  – (sound problems)
• Video sharing for review
• Post to YouTube
• Load on Pico projector for showings
The Projecting Health Process

- Identify topic
- Develop key messages
- Create storyboard and approve
- Identify local actors
- Produce short video
- Share and discuss
- Women identify with actors and issues in videos
- Women discuss and share their knowledge with others
- Women adopt healthier behaviors and practices
## Overall Project Achievements - India

<table>
<thead>
<tr>
<th>Category</th>
<th>Partner 1: GVS</th>
<th>Partner 2: NYST</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villages implemented in</td>
<td>27</td>
<td>57</td>
<td>84</td>
</tr>
<tr>
<td>Community health workers trained</td>
<td>55</td>
<td>81</td>
<td>136</td>
</tr>
<tr>
<td>Number of people in video production teams trained</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Mother’s Groups</td>
<td>55</td>
<td>81</td>
<td>136</td>
</tr>
<tr>
<td>Videos Produced</td>
<td>21</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>Screenings</td>
<td>2,139</td>
<td>2,100</td>
<td>4,239</td>
</tr>
<tr>
<td>Women reached by groups</td>
<td>10,871</td>
<td>13,938</td>
<td>24,809</td>
</tr>
</tbody>
</table>
Projecting Health Videos

Breastfeeding
• Optimal breastfeeding practices
• Exclusive breastfeeding
• LAM

Family planning
• Permanent methods
• Temporary methods
• NSV-No scalpel vasectomy
• IUCD Copper-T

Birth preparedness
• Birth preparedness overview
• Maternal danger signs
• Maternal nutrition
• Newborn danger signs

Thermal care
• Thermal care overview
• Delay bathing

Cord care
• Cord care overview
• Myths and misconceptions

Other
• Immunizations
• Community-based emergency transportation systems
Behavior change messages developed by community delivered through an intervention package: videos, discussion in mothers groups

Resulting in increased adherence/uptake in MNH practices such as:

- Birth preparedness
- Breastfeeding practices
- Thermal Care
- Cord Care
- Family planning

Increased acceptance of messages over time and exposure
Primary objective:

To assess the effectiveness of the PH intervention in increasing knowledge and changing practices of the women between ages 18 and 45 exposed to the video messages on key maternal and neonatal health (MNH) areas.
Endline Evaluation: Key Outcomes

Maternal and neonatal health (MNH) areas and focus outcome indicators

<table>
<thead>
<tr>
<th>Birth Preparedness</th>
<th>Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify a place to deliver</td>
<td>• Gave colostrum</td>
</tr>
<tr>
<td>• Institutional delivery</td>
<td>• Early initiation of breastfeeding within 1 hour of birth</td>
</tr>
<tr>
<td>• Saving money for an emergency</td>
<td>• Exclusively breastfed for 6 months</td>
</tr>
<tr>
<td>• Planning for emergency transport</td>
<td></td>
</tr>
<tr>
<td>• Preparing blade, thread for cord cutting</td>
<td></td>
</tr>
<tr>
<td>• Prepare a clean cloth for wrapping baby after birth</td>
<td></td>
</tr>
</tbody>
</table>
Endline Evaluation: Key Outcomes

<table>
<thead>
<tr>
<th>Thermal Care</th>
<th>Cord Care</th>
<th>Family Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bathed baby between 3 - 7 days after birth</td>
<td>• Cord was cut using a clean blade and tied</td>
<td>• Using a family planning method</td>
</tr>
<tr>
<td>• Held baby skin to skin or wrapped in a clean</td>
<td>with a clean cord</td>
<td>(temporary or permanent)</td>
</tr>
<tr>
<td>cloth after birth</td>
<td>• Nothing was applied to the cord</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Evaluation design

• Comprehensive evaluation (July 2013-July 2014)
• Post-only study design with 3 arms:

![Diagram showing evaluation design](attachment:image.png)
Methods

• Household survey with structured questionnaire among women between 18-45 years
  – Participants selected using set criteria, intervention arms recruited from participant list, and comparison arm from a household listing exercise
• Semi-structured interviews with community healthcare workers (ASHA)
• Ethical approval from REC and the local UP-based IRB
• Data collected by external organization, June-July 2014
Sample villages

Block: KHIRO

Block: SARENI

Intervention Arm A  Intervention Arm B  Comparison arm C
Findings overview

• Practices of women
• Knowledge of women (spontaneous response)
• Source of knowledge
• Sharing of messages with others
### Respondents

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Projecting Health</th>
<th>Standard MG</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (n)</strong></td>
<td>309</td>
<td>321</td>
<td>327</td>
</tr>
<tr>
<td><strong>Mean age of respondents (years)</strong></td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td><strong>Mean number of live births (n)</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Literacy : Illiterate (%)</strong></td>
<td>33</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td><strong>Occupation: Housewife (%)</strong></td>
<td>90</td>
<td>93</td>
<td>88</td>
</tr>
<tr>
<td><strong>Religion : Hindu (%)</strong></td>
<td>94</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td><strong>Religion: Muslim (%)</strong></td>
<td>6</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>
Self reported practices

![Bar chart showing percentages of women in different categories.](chart.png)

- **Birth preparedness**: Projecting Health (309) = 84%, Standard MG (321) = 77%, Comparison (327) = 71%
- **Breastfeeding**: Projecting Health (309) = 75%, Standard MG (321) = 59%, Comparison (327) = 49%
- **Family planning**: Projecting Health (309) = 58%, Standard MG (321) = 50%, Comparison (327) = 54%

*p<0.001
Birth Practices:
Women Who Delivered at Home

<table>
<thead>
<tr>
<th>Percentage of women</th>
<th>Cord care</th>
<th>Thermal care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projecting Health (51)</td>
<td>Standard MG (49)</td>
</tr>
<tr>
<td></td>
<td>82*</td>
<td>46.9</td>
</tr>
<tr>
<td></td>
<td>63*</td>
<td>32.7</td>
</tr>
</tbody>
</table>

*p < 0.001
Breastfeeding:
Uptake of Optimal Practices

Started breastfeeding within one hour:
- Projecting Health (309): 76%
- Standard MG (321): 60%
- Comparison (327): 52%

Fed colostrum:
- Projecting Health (309): 98%
- Standard MG (321): 92%
- Comparison (327): 87%
Birth Preparedness: Change in Knowledge

<table>
<thead>
<tr>
<th>Activity</th>
<th>Projecting Health (309)</th>
<th>Standard MG (321)</th>
<th>Comparison (327)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified a place for delivery</td>
<td>22</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Identify and arrange for skilled birth attendant</td>
<td>14</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Identify emergency transport</td>
<td>61</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>Save money for birth and emergencies</td>
<td>76</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Prepare thread, soap, and blade</td>
<td>96</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Arrange a clean cloth for drying and wrapping baby</td>
<td>96</td>
<td>78</td>
<td>56</td>
</tr>
</tbody>
</table>
Current work
Next week

• Panel discussion, CSE 691
  – Cliff Schmidt, Literacy Bridge
  – Emily Bancroft, Village Reach
  – Brian Taliesin, PATH