Behavioral Interventions in Public Health

Guest Lecture for Dr. Detels’ PH150
October 23, 2013

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Behavioral vs. Biomedical

• Biomedical interventions
  – Vaccines, pharmaceutical treatments, & medical devices to prevent & treat disease

• Behavioral interventions
  – Programs that help people change their behaviors to prevent & manage disease

• Almost all biomedical interventions require behavior changes – by patients, providers, organizations, etc.
Behavioral vs. Structural

• Behavioral Interventions
  – directly target people to change their behaviors
    • adoption & utilization of tools or services
    • adherence to treatments & lifestyle recommendations

• Structural Interventions
  – change in access, availability, or acceptability
    • Policies, prices, payers, laws
    • Physical & social environments (culture), organizations, communities
Behavioral vs. Structural

• Structural = change in access, avail, accept

• Behavioral = directly target people to change
  – Ex. Condom use, Reduce # Partners, Clean Equip., Service Util.
Behaviorally Targeted Structural Interventions

• E.g., condom or clean syringe access, treatment availability (& use & adherence)

• 100% Condom use program – Top Down

• Community-led structural intervention
  – Mobilization of people and resources
CONSORT Intervention Reporting Domains – Pt. 1

• Content/Elements
  – Content & How Delivered (oral, written, video, computer, text-message)

• Providers
  – Physicians/Experts/Social Workers vs. Peer/Lay/CHW

• Format
  – Self-help, individual, group, telephone

• Setting
  – Clinic, CBO/NGO, school, classroom, workplace, homes, venues (brothels, bars, clubs)
CONSORT Intervention Domains Pt. 2

• Recipients
  – Target populations

• Intensity
  – # of contacts & total contact time

• Duration
  – Period of time & spacing of contacts

• Fidelity
  – Delivered as Intended & Monitored/Measured (M&E)

* Need a science of intervention design & delivery
Behaviors vs. Knowledge, Attitudes, Beliefs (KAB)

- Knowledge may be necessary but is often not sufficient for behavior changes

- Rational Actor Assumptions

- Health Education vs. Beh. Change (Psych, Econ)

- Motivation, Information, Skills, Address Barriers, Support to Sustain change
Evidence-Based Interventions (EBI)

• Systematic programs to support behavior change
  – Typically a manual guides training & implementation
  – more structured than an “Evidence-based Practice”

• Adopted medical “product development” model
  – vaccines, pharmaceuticals, devices

• Rigorous evaluation of risks and benefits
  – At least one RCT, some say 2 RCTs
  – Some say must be “replicated” by other teams
  – Some say large-scale “effectiveness” trial needed
Recipient “Target Population” Risks:

• Diagnosed or Infected
• High-Risk
  – Behavioral, genetic, & epidemiological risk factors
• At-Risk
  – Potential for high-risk or infection if there is shift in behavior, environment, or epidemiology
• Low-risk

* Address stigma & “victim blaming”
Intensity & Duration:

• Brief vs. Comprehensive

• Sustaining Impact ↔ Generalizing Impact

• Duration of behavioral changes

• Breadth of behavioral changes
Delivery Formats:

• Mass Media (inform vs. behavior change)
• Community-level & Networks
• Small Group
• One-on-One

• New Delivery Formats:
  – Mobile Phones & Internet
Providers:

- Professionals (Physicians, Therapists)
  - vs.
- CHWs – Task Shifting
- Self-directed?
- Stigma
Settings:

• Clinical vs. Community (CBO / NGO)

• Disease-Specific vs. Wellness & General Health

• Age & Gender Segregated vs. Family Focused
Content/Elements:

- Almost completely unspecified
  - new work in this area

- Manuals scripted & sequenced

- Theory?
  - Explains hypothesized change process & targets
  - Rarely specifies the content or techniques
  - More in common than different (use multiple)

- Common Elements
  - Principles, Processes, Techniques, Practices,

- Common Factors
  - Standardized Functions
Behavior Change Theories

• Health Belief Model (Becker)
  – Knowledge & beliefs

• Social Learning theory (Bandura)
  – Social norms & rewards

• Stages of Change (Prochaska & DiClimente)
  – Pre-contemplation, contemplation, ready, action, relapse, maintenance

• Diffusion of Innovations (Rogers)
  – Community-level
  – Innovators, early-, middle-, late- adopters
Fidelity:

• Fidelity to what?
  – Scripted manuals
  – Essential practices
  – Common factors, processes, principles

• Adaptation?
  – Is it still an EBI? New trial needed?

• M&E vs. CQI Feedback Systems
Provider-level Intervention

- Behavior Change like any other

- Adopt new practices

- Implement with fidelity

- Adaptation?
Technology – Mobile Phones

• 5 standardized functions for behavioral intv.
  – Inform – about disease risks, protection, services
  – Train - new health behaviors and routines
  – Monitor – behaviors and risks
  – Shape – behaviors over time with feedback
  – Support – from peers/family to sustain behaviors

• Also for care coordination, CHW support, M&E
mHealth

Use mobile devices to enhance health and wellness by extending health interventions and research beyond the reach of traditional clinical care.

our actions

our self report

personal data repository

experience sampling streams

context and activity traces

visualization

aggregate measures, trends, patterns

event detection

processing
Survey Creation

* in progress for release, Dec, 2011

Ramanathan, Selsky, et al
Personal Data Vault (PDV): allow participants to retain control over their raw data by decoupling capture and sharing

**Mobile App**
- Data Capture / Upload (Prompted, Automated)
- Reminders
- Feedback, Incentives

**Personal Data Vault**
- User Identity and Authentication
- Long-term Data Management

**Third Party Services**
- Analytics for Personal Data Streams
- Interface to Clinical Care Plan, Personnel
- Integration with EHR/PHRs
- Cross Patient Aggregation

Well defined interfaces allow mobile functions to be mixed, matched, and shared

Patient defined selective sharing with Open mHealth Server function

Well defined interfaces allow analytics functions to be mixed, matched, shared, compared

**vault + filters = granular, assisted control over what/when you send to whom, what data says about you, whether you reveal who you are or share anonymously, ...**

M. Mun, et al, CONEXT 2010
“Feature” Phone Applications
mHealth CHW System
(from Mobenzi.com; also Dimagi.com)
Fidelity Monitoring & Support for Intervention Deliverers (& Dose/Exp.)

Antenatal
- Alcohol
- Feeding Method
- Healthy Eating
- HIV
- Smoking
- TB

4.9 / 8 Hours Remaining

Postnatal
- Alcohol
- Caring for LBW Baby
- Childcare
- Feeding Method
- HIV – child
- HIV – mother
- Immunisations
- Introducing solids
- Mother’s Health
- TB
- Weight Gain of Child

1.9 / 10 Hours Remaining
If we build it, will they come?

• Hard to reach populations (stigma)

• Engagement Strategies

• Costs & Cost-effectiveness

• Payers & Sustainability