Health Behavior
and the Ecological Model

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Section A

Dimensions of Health Behavior
Disease, Ecology, and Behavior

- Diseases occur within ecological settings and are thus context dependent
- Cultural practices can directly alter ecological relationships between hosts and agents of disease
- Biological and cultural traits with adaptive value against disease will generally be selected
Human behavior plays a significant role in the etiology of every major category of disease.

The understanding of the influence of human behavior on disease requires a sociological perspective.
Behavior Analysis

Filtering behavior to prevent guinea worm

Image Courtesy of the Carter Center
Dimensions of Behavior

● Frequency
  - Every time drinking water is collected from the pond, which could range from daily to a few times a week
Dimensions of Behavior

- **Duration**
  - Each individual filtering session may take 10–15 minutes; filtering as a health habit needs to be practiced for several years until guinea worm is eliminated from the village
Dimensions of Behavior

**Timing**

- Filtering must be done immediately after one reaches home
- with a bucket of pond water
- in order not to give anyone the opportunity to drink unsafe water
Image courtesy of the Carter Center
Form
Filtering Behavior Involves Steps

- Inspect the filter for holes
- Place it right-side-up over the mouth of the pot
- Attach the filter
- Pour the water slowly into the center of the filter
- Remove the filter carefully so as not to allow dirt and cyclops to fall into the pot
- Rinse the filter with “clean” water

Continued
Form
Filtering Behavior Involves Steps

- Dry the filter
- Store the filter in a safe place
- Wash the filter with soap when it’s dirty
- Replace the filter annually or when holes develop
- Continue all steps until the guinea worm is eliminated from the village
More Dimensions

Competition

- There are alternatives for managing domestic water supplies to make these appear acceptable for consumption.
- Most often, people simply allow water to settle before drinking.
- They may also apply a small amount of alum (inexpensive) to precipitate suspended matter in the water.
More Dimensions  
*Complexity*

- Compared to allowing the water to settle, filtering is a more complex behavior.
- The skills needed to attach the filter to the pot depend on the design.
- Other steps in “correct” filtering add to the complexity.
More Dimensions

Congruence

- Within the culture, there is precedent for making water appear more clear before drinking
- The process of filtering or sieving exists as in the making of maize starch porridge
- The concept of filtering to prevent diseases, particularly guinea worm, which is thought to be a natural part of the body, like a vein, is unknown
More Dimensions

 linkage

Behaviors are not isolated events

They are linked with and influence other behaviors and social norms in water collection, water consumption, and other domestic chores
Levels of Health Behavior

- **(Preventive) health behavior**
  - Actions people take to remain well and to prevent illness

- **Illness behavior**
  - Actions taken when people feel indisposed to determine the nature of their problem and to seek solution

Continued
Levels of Health Behavior

- **Sick-role behavior**
  - Actions taken by people to recover from illness (once such illness has been established by a “gatekeeper”)

- **At-risk behavior**
  - Actions taken by people with a chronic condition to maintain health and prevent death
The Social Construction of Illness and Disease

- Patients suffer “illnesses”
- Physicians diagnose and treat “diseases”
- Behavior is influenced by people’s perception of their illness experiences or the illnesses they wish to avoid
The Social Construction of Illness and Disease

- *Illnesses* are experiences of dis-valued changes in states of being and in social function.

- *Diseases*, in the scientific paradigm or modern medicine, are abnormalities in the structure and function of body organs and systems.

- Illness and disease, so defined, don’t stand in a one-to-one relationship.
An Example of Guinea Worm

- **Disease**
  - *Dracunculiasis medinensis*: A meter-long subcutaneous waterborne helminthic infection

- **Illness**
  - *Sobia*: Part of the body that moves around to cause pains and rashes, and later may come out of the body
<table>
<thead>
<tr>
<th>Determinants of Dengue to Infection Among Residents of Charters Towers, Queens Land, Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Prevalence:</strong> 24.6% of 797</td>
</tr>
<tr>
<td><strong>Nearby Dengue Case?</strong></td>
</tr>
<tr>
<td><strong>House Screened?</strong></td>
</tr>
<tr>
<td><strong>Water Tank Nearby?</strong></td>
</tr>
<tr>
<td><strong>Use of Knockdown Spray?</strong></td>
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Section B

Units of Identity and Change
Units of Identity, Practice, and Solution

- Individual
- Family
- Group/association
- Neighborhood
- Organization/institution
- City/county/district
- State/ethnic group/nation/continent, etc
Defining the Units

*Units of identity* are determined by the people themselves—they identity their own sense of “belonging” which expands over life time
Defining the Units

- *Units of practice* are those units of identity that helping professionals chose to work with
Defining the Units

- **Units of solution** are those units of identity that have the skills and resources to solve the problems experienced by the units of practice.
Types and Nature of Change

Natural Change

- Changes that occur due to normal biological and physical processes and people’s adaptation to those changes
- Changes brought about by the aging process—an increase in motor skills as a child grows and a decrease among the elderly
- Changes in activity brought on by seasonal-weather changes
Types and Nature of Change

*Planned Change*

- The intentional effort of human beings to bring about changes in their physical and social environments to achieve their goals.
- Can also be referred to as *interventions*; includes efforts to “help” others.
Different Approaches to Planned Change

- Power-coercive
- Empirical-rational
- Normative-reeducative
Power-Coercive

- The perspective that change occurs primarily when force is applied
- This may be physical or legalistic
- It may also occur because of the power struggle between haves and have nots
Power-Coercive

- Strategies can be non-violent but involve confrontation
- One may also work within the political system and through the power elite
- The basic philosophical assumption about change is that people will not change unless pushed
Empirical-Rational

- The perspective that human beings are rational decision makers and will act in their best interest when appropriate information is presented to them by experts.

- Changed strategies draw on basic research and rely on dissemination of knowledge, personnel management, systems analysis, etc.
Empirical-Rational

- The basic philosophical assumption about change is that people, once provided with scientifically correct information, will rationally choose the “best” course of action.
Normative-Reeducative

- A view that people are self-actualizing and capable of diagnosing and solving their own problems
- The change agent facilitates self-examination and commitment to action
- These strategies stress dialogue
- There is a collaborative approach between client and change agent
Normative-Reeducative

- Behavioral and social science methods are particularly important
- There is an emphasis on developing problem-solving capacities and personal/system growth
- The basic philosophical assumption is that people are self-actualizing
<table>
<thead>
<tr>
<th>Author</th>
<th>Approaches</th>
<th>Approaches</th>
<th>Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chin &amp; Benne</td>
<td>Power-Coercive</td>
<td>Empirical-Rational</td>
<td>Normative-Reeducative</td>
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<tr>
<td>Kellman</td>
<td>Compliance</td>
<td></td>
<td>Internatization</td>
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<tr>
<td>Schaller</td>
<td>Externally Motivated</td>
<td>Externally Motivated</td>
<td>Internally Motivated</td>
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<tr>
<td>Rothman</td>
<td>Social Action</td>
<td>Social Planning</td>
<td>Locality Development</td>
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Order of Change

- **First order**
  - Changing from one way of behaving to another (substituting); for example, change from smoking cigarettes to chewing nicotine gum
Order of Change

- **Second order**
  - Change in ways of doing things, ways of living; for example, cigarette smoker changes lifestyle to reduce stress and pressure to smoke
Section C

Examples and Links
## An Example

<table>
<thead>
<tr>
<th>In the Clinic</th>
<th>First Order Change</th>
<th>Second Order Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro Change</td>
<td>The health worker substitutes a video for providing health information to patients instead of individual instruction</td>
<td>The health worker involves the patient through counseling in identifying his/her own problems and finding solutions</td>
</tr>
<tr>
<td>Macro Change</td>
<td>Administrators design a new record keeping that format that is substituted for the old forms</td>
<td>The clinic institutes home-based records</td>
</tr>
</tbody>
</table>
# A Malaria Example

<table>
<thead>
<tr>
<th>Malaria Treatment</th>
<th>First Order Change</th>
<th>Second Order Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro Change</td>
<td>Substitute herbs for ‘modern’ anti-malarial drugs</td>
<td>Mothers raking initiative to seek prompt treatment from village health worker instead of waiting passively for illness to progress</td>
</tr>
<tr>
<td>Macro Change</td>
<td>Provision of Clinics by government as an alternative to indigenous practitioners</td>
<td>Community participation in organization and management of local drug revolving fund to ensure supplies of anti-malarial drugs</td>
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</tbody>
</table>
## More Links among Theories

<table>
<thead>
<tr>
<th>Bienen’s Model</th>
<th>ORDER of CHANGE</th>
<th>TYPE of CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modernization</td>
<td>First Order Change</td>
<td>Planned Change</td>
</tr>
<tr>
<td>Transformation</td>
<td>Second Order Change</td>
<td>Planned Change</td>
</tr>
<tr>
<td>Survival Adaptation</td>
<td></td>
<td>Natural Change</td>
</tr>
</tbody>
</table>
Levels of Prevention

- What health technologies are available to prevent or ameliorate problems?
Levels of Prevention/intervention

- **Health promotion**
  - Developmental, a wide impact on health

- **Specific protection**
  - Preventive specific diseases—for example, polio immunization

- **Early detection**
  - Identify asymptomatic stage treated more effectively
Levels of Prevention/intervention

- **Limitation of disability**
  - Prompt treatment to prevent complications

- **Rehabilitation**
  - Interventions to ameliorate complications, disability

- **Maintenance**
  - Chronic conditions, prevent crises and premature death
# Comparing Levels of Health Behavior and Levels of Prevention/Intervention

<table>
<thead>
<tr>
<th>Levels of Health Behavior</th>
<th>Levels of Prevention/Intervention</th>
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<tbody>
<tr>
<td></td>
<td>Health Promotion</td>
</tr>
<tr>
<td>Preventive health behavior</td>
<td>✓</td>
</tr>
<tr>
<td>Illness behavior</td>
<td></td>
</tr>
<tr>
<td>Sick-role behavior</td>
<td></td>
</tr>
<tr>
<td>At-risk behavior</td>
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</tbody>
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Measuring Health Behaviors at the Different Levels

From CDC’s Behavior Risk Factor Surveillance System
Health Promotion Behaviors

Eating 5+ servings of fruits & vegetables daily

Source: CDC – Behavior Risk Factor Surveillance System
Specific Protection Behaviors

Flu Vaccine Past Year

Source: CDC – Behavior Risk Factor Surveillance System
Early Detection Behaviors

Having a BP check in the past year

Source: CDC – Behavior Risk Factor Surveillance System
Limitation of Disability Behavior

Did Cost Prohibit Health Service Seeking? (percent who said yes)

Source: CDC – Behavior Risk Factor Surveillance System
Section D

The Ecological Model: Avoiding Blaming the Victim by Identifying the Locus of Needed Change
Ecological Model

- Intrapersonal factors
  - Characteristics of the individual
- Interpersonal processes and primary groups
  - Formal and informal social networks and support
- Institutional factors
  - Organizational characteristics and rules

Continued
Ecological Model

- **Community factors**
  - Relationships among organizations and networks

- **Public policy and laws**
  - At local, regional, and national levels
Example: Adolescent Sexual Behavior

- **Intrapersonal**
  - Beliefs about vulnerability; gender differences in sexual initiation and attitudes

- **Interpersonal**
  - Peers validate sexual behavior; families may influence sexual initiation

Continued
Example: Adolescent Sexual Behavior

- **Institutional**
  - Poor access to reproductive health services; clinics not “youth friendly”
- **Community norms**
  - Double standards for male and female
- **Public policy**
  - Punitive instead of educational approach; public avoidance of information sharing
Example: Teenage Drinking

**Institutional**
$700$ million/yr in beer advertising; how much spend on drug education in schools?

**Policy**
88% US Senators accepted alcohol PAC money in 1998; drinking age restriction laws; laws viz drunk driving - all focus on individual

**Intrapersonal**
10 million teens drink, 1/3 binged in past month, risk beliefs, etc.

**Community**
Alcohol easily available; norms for alcohol drinking - social, stress, etc.

**Interpersonal**
only 3% parents think their teen drinks; others help buy the drinks as underage
Example: Insecticide-Treated Nets

- **Intrapersonal**
  - Net use, beliefs, perceptions

- **Interpersonal**
  - Household power issues

- **Community**
  - Ability to organize

Photo: CDC
Example: Insecticide-Treated Nets

- Organizational
  - Public resources, private sector role

- Policy
  - Taxes, tariffs, priorities on prevention

Photo: CDC
ITNs in Context

- Nets come in various sizes and cost $3.00
- Insecticide treatment with deltamethrin takes place every six months and costs $0.50 per net each time
ITNs in Context

- Community-based distribution programs take many forms including local distributors, local production, community involvement.
- Cultural contrast—Herbs are the best prevention since one cannot avoid “causes” of hard work in the hot sun.
Intrapersonal-Level Questions

- What are the perceived benefits?
  - Beautify home
  - Keep warm
  - Give privacy
  - Kills other insects
Intrapersonal-Level Questions

- What are perceived constraints?
  - Costs, continual
  - Heat in dry season
  - Perceived need lower when mosquitoes few
  - Prefer alternatives: Window screens, aerosols
Interpersonal-Level Questions

- What is the family structure?
  - Decision making
  - Allocation of resources
  - How many nets needed?
  - Can we re-treat all nets?
Interpersonal-Level Questions

- Small children are most at risk, but do they get priority in the household?
- What social groups in community promote nets and other health innovations?
Community-Level Questions

- Are there local marketing mechanisms?
- Are there associations that could take responsibility?
- Is there a history of participation and organization?
- How will overall leadership structure impact on programs?
- Are there sub-group or ethnic tensions?
Re-treatment Can Be a Community Affair If One Accounts For …

- Subsections and neighborhoods
- Locations where there is water and a place to dry
- Ethnic groups
- Gender roles
- Leadership
Organizational-Level Questions

- Is malaria (and prevention) a priority for the health services?
  - Will nets be free, subsidized, or at cost?
  - Will distribution be house-to-house or central?
- What funds and staffing are allocated to malaria control?
Organizational-Level Questions

- Is there planning and monitoring capacity?
- What is the potential role of the private and NGO sectors?
- What of other development sectors—finance, education, commerce, development, etc.?
How Health System Organizes Delivery Mechanism Affects Retreatment

Kilifi District, Kenya: Snow et al., 1999
Policy-Level Questions

- Is there a national malaria policy?
- Is provision of nets and insecticides part of government policy, including pricing issues?
- Is the private sector included?
- What are customs regulations concerning import of net materials—taxes, tariffs?
- Who makes these decisions—what vested interests?