Health from an Ecological Perspective
Ten Great Public Health Achievements of the 20th Century

- Immunizations
- Motor Vehicle Safety
- Workplace Safety
- Control of Infectious Diseases
- Declines in Heart Disease and Stroke

- Safer and Healthier Foods
- Healthier Mothers and Babies
- Family Planning
- Fluoridation of Drinking Water
- Tobacco as a Health Hazard
Life Expectancy at Birth and Infant Mortality Rates, Selected Years, U.S.
The 10 leading causes of death as a percentage of all deaths,

United States, 1900 and 1997
Crude death rate* for infectious diseases — United States, 1900–1996†

*Per 100,000 population per year.
Number of Reported Mumps Cases by Year, United States, 1980-2006

2 doses of MMR\(^\dagger\) vaccine recommended
Baseline 20th Century Annual Morbidity and 1998 Provisional Morbidity from 9 Diseases with Vaccines Recommended before 1990 for Universal Use for Children, United States

<table>
<thead>
<tr>
<th>Disease</th>
<th>Baseline 20th century annual morbidity</th>
<th>1998 Morbidity</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>48,164</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>175,885</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>147,271</td>
<td>6,279</td>
<td>95.7%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>1,314</td>
<td>34</td>
<td>97.4%</td>
</tr>
<tr>
<td>Poliomyelitis (paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>503,282</td>
<td>89</td>
<td>100%</td>
</tr>
<tr>
<td>Mumps</td>
<td>152,209</td>
<td>606</td>
<td>99.6%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>345</td>
<td>99.3%</td>
</tr>
<tr>
<td>Congenital rubella syndrome</td>
<td>823</td>
<td>5</td>
<td>99.4%</td>
</tr>
<tr>
<td>Hemophilus influenza type b</td>
<td>20,000</td>
<td>54</td>
<td>99.7%</td>
</tr>
</tbody>
</table>
Measuring Health

• Definition drives measures used
  – Shift from mortality based measures to indicators of functionality and healthy lifespan

• Mortality based measures
  – Crude, adjusted, and specific mortality rates
  – Composite measures: life expectancy and years of life lost

• Morbidity, disability and quality measures
  – Disease prevalence
  – Days lost from work or school
  – Self reported health status
Health Problems in the U.S.

**Leading Causes of Death**
United States, 2000

- Heart Disease
- Cancer
- Stroke
- Chronic lower respiratory disease
- Unintentional injuries
- Diabetes
- Pneumonia/influenza
- Alzheimer's disease
- Kidney disease

**Actual Causes of Death**
United States, 2000

- Tobacco
- Poor diet/physical inactivity
- Alcohol consumption
- Microbial agents (e.g., influenza, pneumonia)
- Toxic agents (e.g., pollutants, asbestos)
- Motor vehicles
- Firearms
- Sexual behavior
- Illicit drug use

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Life Expectancy at Birth by Gender and Ranked, Selected Countries, 2001*

<table>
<thead>
<tr>
<th>Females</th>
<th>Country</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>84.9</td>
<td>Japan</td>
<td>78.1</td>
</tr>
<tr>
<td>84.6</td>
<td>Hong Kong</td>
<td>78.4</td>
</tr>
<tr>
<td>83.0</td>
<td>Switzerland</td>
<td>77.4</td>
</tr>
<tr>
<td>82.9</td>
<td>Spain</td>
<td>75.6</td>
</tr>
<tr>
<td>82.9</td>
<td>France</td>
<td>75.5</td>
</tr>
<tr>
<td>82.8</td>
<td>Italy</td>
<td>76.7</td>
</tr>
<tr>
<td>82.4</td>
<td>Australia</td>
<td>77.0</td>
</tr>
<tr>
<td>82.2</td>
<td>Canada</td>
<td>77.1</td>
</tr>
<tr>
<td>82.1</td>
<td>Sweden</td>
<td>77.6</td>
</tr>
<tr>
<td>81.6</td>
<td>Israel</td>
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</tr>
<tr>
<td>81.5</td>
<td>Norway</td>
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</tr>
<tr>
<td>81.5</td>
<td>Finland</td>
<td>74.6</td>
</tr>
<tr>
<td>81.3</td>
<td>Austria</td>
<td>75.6</td>
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<tr>
<td>81.1</td>
<td>Germany</td>
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<tr>
<td>81.1</td>
<td>Singapore</td>
<td>76.5</td>
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<tr>
<td>80.9</td>
<td>Belgium</td>
<td>74.9</td>
</tr>
<tr>
<td>80.7</td>
<td>New Zealand</td>
<td>76.0</td>
</tr>
<tr>
<td>80.7</td>
<td>Netherlands</td>
<td>75.8</td>
</tr>
<tr>
<td>80.6</td>
<td>Greece</td>
<td>75.4</td>
</tr>
<tr>
<td>80.3</td>
<td>England and Wales</td>
<td>76.0</td>
</tr>
<tr>
<td>80.1</td>
<td>Portugal</td>
<td>73.5</td>
</tr>
<tr>
<td>80.0</td>
<td>Northern Ireland</td>
<td>75.2</td>
</tr>
<tr>
<td>79.9</td>
<td>Puerto Rico</td>
<td>71.0</td>
</tr>
<tr>
<td>79.8</td>
<td>Costa Rica</td>
<td>75.6</td>
</tr>
<tr>
<td>79.7</td>
<td>United States</td>
<td>75.4</td>
</tr>
<tr>
<td>79.3</td>
<td>Ireland</td>
<td>74.4</td>
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<tr>
<td>79.2</td>
<td>Denmark</td>
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<tr>
<td>78.8</td>
<td>Cuba</td>
<td>74.7</td>
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<tr>
<td>78.7</td>
<td>Scotland</td>
<td>73.3</td>
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<tr>
<td>78.5</td>
<td>Chile</td>
<td>72.7</td>
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<tr>
<td>78.3</td>
<td>Czech Republic</td>
<td>72.1</td>
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<tr>
<td>77.7</td>
<td>Poland</td>
<td>72.1</td>
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<tr>
<td>76.4</td>
<td>Slovakia</td>
<td>70.2</td>
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<tr>
<td>75.4</td>
<td>Hungary</td>
<td>69.6</td>
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<tr>
<td>75.0</td>
<td>Bulgaria</td>
<td>68.1</td>
</tr>
<tr>
<td>72.3</td>
<td>Romania</td>
<td>68.6</td>
</tr>
<tr>
<td></td>
<td>Russia</td>
<td>67.7</td>
</tr>
</tbody>
</table>

Life expectancy (yrs)
Total Life Expectancy and Years Healthy Life by Race and Hispanic Origin, U.S., 1998

- All persons: 76.7 years healthy life, 65.2 total life expectancy
- White: 77.3 years healthy life, 66.1 total life expectancy
- Black: 71.3 years healthy life, 57.8 total life expectancy
- Hispanic: 82.1 years healthy life, 66.3 total life expectancy
Leading Causes of Death Among U.S. Children

Deaths per 100,000 children Ages 1-4 year, 2000

- Unintentional Injury: 12
- Birth Defects: 3
- Cancer: 2
- Homicide: 1
- Heart Disease: 1
- Pneumonia/Influenza: 1
U.S. Infant Mortality Rates by Race

Deaths under 1 year per 1,000 live births


All races

Black

White

NOTE: Infant deaths are classified by race of decedent.
Americans’ Views of Health Problems, 2001

“Issue is 1 of 2 or 3 most important health problems” (%)

- Cancer: 50%
- Heart Disease: 24%
- HIV/AIDS: 23%
- Diabetes: 11%
- Obesity: 7%
- Smoking: 7%
- Health problems from terrorist attacks: 6%

Note: Sums up to more than 100% because each respondent was asked to give up to three different answers.

HSPH/RWJF/ICR poll, November/December 2001

“Issue is 1 of 2 or 3 most urgent health problems” (%)

- Bioterrorism/Anthrax/Smallpox: 22%
- Healthcare costs/Insurance: 19%
- Cancer: 19%
- Other: 17%
- AIDS: 7%
- Heart Disease: 6%
- Alcohol/Drug abuse: 1%
- Smoking: 1%

Gallup poll, November 8–11, 2001
Determinants of Disease

- Behavior/Lifestyle: 48%
- Genetic Composition: 25%
- Environment: 16%
- Lack of Access to Medical Care: 11%
Historical Themes in Public Health

• Individual Frames or Perspectives
• Sanitation / Housing
• Cleanliness / Godliness
• Causation of Illness
  – Balance (Man and Nature)
  – Climate, soil, water, mode of life, nutrition
  – 19th Century Bacteriology/Immunology
• Classification of Illness
• Effective Prevention / Treatment
Historical Themes in Public Health

- Responsibility (Public / Private)
  - Sanitation
  - Control of Epidemic
  - Worker’s health
  - Provision of medical care
    - Priests, physicians, etc.
    - Funding of hospitals
  - City administration / medical police
  - Quarantine
  - Social Determinants of Health
  - Built Environment
## Public Health Eras in America

<table>
<thead>
<tr>
<th>Era</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1850</td>
<td>Battling Epidemics</td>
</tr>
<tr>
<td>1850-1949</td>
<td>Building State and Local Public Health Infrastructure</td>
</tr>
<tr>
<td>1950-1999</td>
<td>Filling Gaps in Medical Care Delivery</td>
</tr>
<tr>
<td>After 1999</td>
<td>Preparing for and Responding to Community Health Threats</td>
</tr>
</tbody>
</table>
Unique Features of Public Health

“Science and Social Values”

• Social Justice Perspective
• Inherently Political
• Evolving Expectations = Expanding Agenda
• Link with Government
• Grounding in Science
• Focus on Prevention
• Uncommon Cultures
Steps to health equity

- Increase Organizational Capacity (including assuring competent professionals)
- Engage Community Members
- Develop Partnerships and coalitions
- Identify and Analyze Health problems
- Select, Design and implement strategies
- Develop Effective Communication Efforts
- Conduct Evaluations
Competencies Categories

- Analytical/Assessment Skills
- Policy Development/Program Planning Skills
- Communication Skills
- Cultural Competency Skills
- Community Dimensions of Practice Skills
- Public Health Science Skills
- Financial Planning and Management Skills
- Leadership and Systems Thinking Skills.
Competencies Tier 1 Level

Tier 1

Front Line Staff/Entry Level.
Tier 1 competencies apply to public health professionals who carry out the day-to-day tasks of public health organizations and are not in management positions. Responsibilities of these professionals may include data collection and analysis, fieldwork, program planning, outreach, communications, customer service, and program support.
Competencies Tier 2 Level

Tier 2

Program Management/Supervisory Level. Tier 2 competencies apply to public health professionals in program management or supervisory roles. Responsibilities of these professionals may include developing, implementing, and evaluating programs; supervising staff; establishing and maintaining community partnerships; managing timelines and work plans; making policy recommendations; and providing technical expertise.
Competencies Tier 3 Level

Tier 3

Senior Management/Executive Level.
Tier 3 competencies apply to public health professionals at a senior management level and to leaders of public health organizations. These professionals typically have staff who report to them and may be responsible for overseeing major programs or operations of the organization, setting a strategy and vision for the organization, creating a culture of quality within the organization, and working with the community to improve health.
An fundamentally important skill of public health professionals is to appropriately apply public health models, theories and frameworks in a practice setting. The first model we will examine is the Ecological Model:
1. The individual, intrapsychic system
2. The family system
3. Extended family and close friends
4. Other face-to-face groups—school, church, clubs, etc.
5. Larger (more impersonal) community systems—e.g., political and governmental organizations
6. State, national, and international and transnational systems
7. The planetary ecosystem
Ecological Model: Family

What is a family?
Family

• the basic unit in society traditionally consisting of two parents rearing their children
• a group of individuals living under one roof and usually under one head
• a group of persons of common ancestry
• a people or group of peoples regarded as deriving from a common stock
• a group of people united by certain convictions or a common affiliation

— Merriam-Webster Dictionary
Family

“Any group of people related either biologically, emotionally, or legally.”

– McDaniel, Campbell, et al
• “primary social agent in the promotion of health and well-being”
  – WHO
How does a family influence the health of an individual?
Immunizations

**Family Factors:**
- Vaccine impact throughout life
- Infant, adolescent, adult, elderly
What are traits of resilient families?

- Commitment
- Time Together
- Respect
- Spirituality
- Connectedness
- Adaptability
- Communication
- Cohesion

All families have strengths, all experience stress.