Equity in Health and Health Services

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Primary Care Course
(Based on Cape Town, South Africa, 2007; and Barcelona, Spain, 2009)
This presentation first provides a definition of equity that is amenable to measurement of ill health. It then discusses major findings concerning influences on equity in health, findings from research on achievement of equity in health in various countries, and indicators of equity for future studies of equity in health.
Equity in health is the absence of systematic and potentially remediable differences in one or more aspects of health across population groups defined geographically, demographically, or socially.
What Are “Systematic” Differences?

“Systematic” means consistent differences and is at the heart of the distinction between inequalities across individuals and inequities. What makes differences “systematic” is a pattern of influences that operate similarly to create differences in health.
Equity Research Is Not the Same as Social Determinants Research

• Social determinants research assumes an individual model of health.
• Equity research assumes a population model of health.
• Social determinants research generally neglects types of influences on health that are other than social.
• Equity research includes consideration of political, policy, environmental, and health systems effects, and their inter-relationships.
Social Influences on the Health of Individuals

Shading represents degree to which characteristics are measured at the ecological level (lighter color) or at the individual level aggregated to community.

"Health" has two aspects: occurrence (incidence) and intensity (severity).
Characteristics of Social Influences on Health

• They are interactive. Mechanisms of effect cannot be specified, except theoretically, and may differ from one population to another.
• Their relative frequency varies from one population to another so that relative risk, but not attributable risk, is the focus of attention.
Life Course Influences on Health

1. Early influences
   - On growth and development, e.g., manifested in intrauterine growth retardation, short stature, neonatal mortality, coronary artery disease
   - On infections and their sequelae, e.g., chronic respiratory disease, rheumatic heart disease, gastric cancer, hemorrhagic stroke, hypertension

2. Later influences
   - Interactions of sociodemographic (i.e., age) characteristics and socioeconomic status, and other “social” determinants (e.g., almost all diseases)
   - Preventive health services (e.g., immunizations, screening for early detection)

Generalizations from Equity Research

Variability in health across geographic areas is greatest among the lower social classes.

The level of geographic aggregation influences the nature and extent of inequities.

The weakest association between income and health is in old age. Social advantage is damaging at any stage in life, but is especially harmful when experienced early in life.

The effects of social class appear to be cumulative over the life course.

Generalizations from Equity Research

People in lower social strata have not only more illnesses, but also more comorbidity.

Differences in health across the social strata are greater for severity than for occurrence of illness.

Generalizations from Equity Research

Socioeconomic differences in disability-free life expectancy are more pronounced than differences in life expectancy.

Mortality rates are higher in lower SES for almost all causes.

The contributions of specific causes to differences in total mortality varies between countries.

Self-Rated Health and Individual Household Income

The income-poor health curve is shifted up in the states with the highest income inequity for almost the entire population.

Errors of Commission: Birth Trauma Injury per 1,000 Live Births by Area Income, 2001

Errors of Commission: Birth Trauma Injury per 1,000 Live Births by Race/Ethnicity, 2001

Health services exert their effect primarily on equity in progression of illness and case-fatality rates.

Occurrence of illness is primarily affected by other types of influences.

Mortality rates and life expectancy are influenced by both, so that it is more difficult to sort out mechanisms of effect.
Generalizations from Equity Research

Disadvantaged populations do not do better living in advantaged areas (US data).

Wealthier people living in disadvantaged areas have compromised ACCESS to health services and consequent poorer health potential (US data).

Generalizations from Equity Research

Different types of inequity are related.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Quintile</th>
<th>LE@birth</th>
<th>Yrs/% differ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5--poorest</td>
<td>73.1</td>
<td>7.6</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>80.7</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>75.9</td>
<td>5.9</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>81.8</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>76.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>82.5</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>77.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>82.1</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1--richest</td>
<td>78.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>82.3</td>
<td></td>
</tr>
</tbody>
</table>

Canadian data 1996

Starfield 03/04
EQ 6186 n
## Hypothesized Influence on Equity in Health

<table>
<thead>
<tr>
<th>Income Inequality</th>
<th>Little Effect</th>
<th>Large Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>High “stress”</td>
<td>Smoking</td>
<td>Suicide</td>
</tr>
<tr>
<td></td>
<td>Ischemic heart disease</td>
<td>Homicide</td>
</tr>
<tr>
<td></td>
<td>Lung cancer</td>
<td>(US)</td>
</tr>
<tr>
<td></td>
<td>(Finland, Denmark)</td>
<td></td>
</tr>
<tr>
<td>Low material/social supports, including primary care</td>
<td>Other cancers</td>
<td>Infant mortality</td>
</tr>
<tr>
<td></td>
<td>Stroke</td>
<td>Low birth weight</td>
</tr>
<tr>
<td></td>
<td>Postneonatal mortality</td>
<td>Child survival</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(US)</td>
</tr>
</tbody>
</table>
Improving average health, i.e., population-wide rates of morbidity and mortality, is often associated with increasing inequities, because new and effective interventions often reach the more advantaged first, thus increasing the variability within the population. Also, influences with high relative risk of poor health are not necessarily appropriate targets for equity-focused interventions, as their frequency in the subpopulations may be low and hence not contribute much to reductions in inequity overall.

## Examples of How Average Mortality Ratios Conceal Meaningful Differences between Poor and Rich Populations

<table>
<thead>
<tr>
<th></th>
<th>Gap worse</th>
<th>Gap better</th>
</tr>
</thead>
</table>
| Better average health (lower mortality rate) | Peru Mean IMR: 49.9  
Poor: 78.3  
Rich: 19.5 | Uzbekistan Mean IMR: 43.5  
Poor: 49.5  
Rich: 46.8 |
| Worse average health (higher mortality rate) | Mozambique Mean IMR: 147.4  
Poor: 187.7  
Rich: 94.7 | Haiti Mean IMR: 87.1  
Poor: 93.7  
Rich: 74.3 |

IMR = infant mortality rate

The “determinants” of health inequity are not only “social”; they are “societal,” involving all aspects of society.
In order to develop strategies to improve equity in health, it is necessary to have a clear picture of the various influences on health and their interactions. Conventional models of “determinants of health” (even those characterized as “population health” models) are more oriented to determinants of health in individuals than populations. In reality, there need to be two models of health: one directed at understanding influences on individual health and one directed at understanding influences on population health.
Dashed lines indicate the existence of pathways through individual-level characteristics that most proximally influence health.

Shading represents degree to which characteristics are measured at the ecological level (lighter color) or at the individual level aggregated to community.

**“Health” has two aspects: occurrence (incidence) and intensity (severity).**

Starfield 01/08

IH 6891 an
Societal Influences on Population Health and Equity (continued)

Dashed lines indicate the existence of pathways through individual-level characteristics that most proximally influence health.

Shading represents degree to which characteristics are measured at the ecological level (lighter color) or at the individual level aggregated to community.

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"Health" has two aspects: occurrence (incidence) and intensity (severity).
Conceptual Framework for Globalization and Health

Driving forces, facilitating factors, and constraints

Globalization

World markets

Population level health influences

Health related sectors

National economy, politics, and society

Individual health risks

Household economy

Health care system

Health of population/distribution of health within population

Manifestations of Equity in Health Financing
(WHR 2000, Chapters 2 and 5)

- Low cost sharing at point of service
- Equal minimum benefit packages
- Pooling of resources, e.g., community rating
- Regulation to assure universal inclusion in pools
Manifestations of Equity in Health Financing (continued) (WHR 2000, Chapters 2 and 5)

- Large purchasing units
- Combination of payment mechanisms to achieve good health care practices
- Global budgets rather than line-item budgets
The World Health Report 2000 ranked countries on equity of financing. Their measure used a ratio of spending on health divided by household expenditures except for food, which assumes that all households should spend the same proportion of their non-food dollars on health services.

This measure is not consistent with WHO’s own discussion of fairness in financing.
Health System Influences on Health

- Public expenditures on health\(^1, 2, 3\)
- Method of healthcare financing, supply of physicians
- Orientation of health system\(^4, 5\)

Sources:
\(^5\) Mackenbach, Int J Health Serv 2003; 33:523-41.
Countries that have better average health status tend to have less inequality in health status.

System factors and health policy are very important. Primary care-oriented countries rank higher on features critical to equity.
## System Features Important to Primary Health Care

<table>
<thead>
<tr>
<th>Resource Allocation (Score)</th>
<th>Progressive Financing*</th>
<th>Cost Sharing</th>
<th>Comprehensiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>US</td>
<td>0</td>
<td>0**</td>
<td>0</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Canada</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Spain</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>UK</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*0=all regressive, 1=mixed, 2=all progressive  **except Medicaid

For-profit and Non-profit Primary Care in New Zealand: Financial and Cultural Barriers to Access

<table>
<thead>
<tr>
<th></th>
<th>For-profit</th>
<th>Non-profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient charges</td>
<td>More by up to a factor of 10</td>
<td>(p&lt;0.001)</td>
</tr>
<tr>
<td>Maori staff</td>
<td>0.4</td>
<td>4.3 (p&lt;0.001)</td>
</tr>
<tr>
<td>Pacific staff</td>
<td>0.1</td>
<td>1.2 (p&lt;0.001)</td>
</tr>
</tbody>
</table>

### Equity Effect of For-profit and Non-profit Primary Care in New Zealand: Management and Quality

<table>
<thead>
<tr>
<th></th>
<th>For-profit</th>
<th>Non-profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community needs assessment</td>
<td>12%</td>
<td>41% (p&lt;0.001)</td>
</tr>
<tr>
<td>Written policy on complaints</td>
<td>48%</td>
<td>88% (p&lt;0.001)</td>
</tr>
<tr>
<td>Written policy on quality management</td>
<td>23%</td>
<td>75% (p&lt;0.001)</td>
</tr>
</tbody>
</table>

For-profit and Non-profit Primary Care in New Zealand: Sociodemographic Characteristics

<table>
<thead>
<tr>
<th></th>
<th>For-profit</th>
<th>Non-profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maori or Pacific</td>
<td>15%</td>
<td>60%</td>
</tr>
<tr>
<td>Most deprived quintile</td>
<td>17%</td>
<td>53%</td>
</tr>
</tbody>
</table>

# Share of Public Spending on Health among Countries with Similar GNP per Capita But Very Disparate Child Survival (to Age 5) Rates, 1995

<table>
<thead>
<tr>
<th>High child survival</th>
<th>Low child survival</th>
<th>Additional children lost per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>Ivory Coast</td>
<td>150</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Brazil</td>
<td>45</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>South Africa</td>
<td>55</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Ecuador</td>
<td>25</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>India</td>
<td>50</td>
</tr>
<tr>
<td>Egypt</td>
<td>Ivory Coast</td>
<td>100</td>
</tr>
</tbody>
</table>

*Ratios of one or more signify a greater share of government expenditures to poorest segment of population.*

In 7 African countries

• The highest 1/5 of the population receives well over twice as much financial benefit from overall government health spending (30% vs 12%).

• For primary care, the poor/rich benefit ratio is much lower (23% vs 15%).

“From an equity perspective, the move toward primary care represents a clear step in the right direction.”

Horizontal Inequity Indices for Specialist Care Use in 17 Countries, 2000 or Nearest Available Year

Note: Specialist care is inequitable (in this case, favoring high income groups) if the 95% confidence limit is significantly different from zero. This is so for all countries, except the United Kingdom, the Netherlands, and Norway.


Starfield 05/09
EQ 7236 n
Primary Care Physicians and Equity: Evidence-Based Summary

In areas with low social inequity, the additional effect of primary care is small.

In areas of high social inequity, the additional effect of primary care is larger.

Reductions in Inequality in Health by Primary Care: Self-Reported Health, 60 US Communities, 1996

Percent reporting fair or poor health

- **Areas with low income inequality** (mostly homogeneous high income areas)
  - No effect of primary care resources*
- **Areas with moderate income inequality**
  - 16% increase in areas with low primary care resources*
- **Areas with high income inequality**
  - 33% increase in areas with low primary care resources

*compared with median # of primary care physicians to population ratios

Based on data in Shi et al, J Fam Pract 1999; 48:275-84.
Reductions* in Inequality in Health by Primary Care: Stroke Mortality, 50 US States, 1990

Areas with low income inequality (mostly homogeneous high income areas)

- High primary care resources: 1.3% decrease in mortality
- Low primary care resources: 2.3% increase in mortality

Areas with high income inequality

- High primary care resources: 2.3% decrease in mortality
- Low primary care resources: 1.1% increase in mortality

*compared with population mean

Based on data in Shi et al, J Fam Pract 1999; 48:275-84.
Reductions* in Inequality in Health by Primary Care: Postneonatal Mortality, 50 US States, 1990

Areas with low income inequality (mostly homogeneous high income areas)

- High primary care resources: 0.8% decrease in mortality
- Low primary care resources: 1.9% increase in mortality

Areas with high income inequality

- High primary care resources: 17.1% decrease in mortality
- Low primary care resources: 6.9% increase in mortality

*compared with population mean

Based on data in Shi et al, J Fam Pract 1999; 48:275-84.
## Equity of Access: Country Rankings

<table>
<thead>
<tr>
<th>8 items: 5 ranks*</th>
<th>&lt; average income</th>
<th>&gt; average income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within country (range 1-40)</td>
<td>UK</td>
<td>AUS</td>
</tr>
<tr>
<td>Overall rank (range 1-5)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Percentage point difference</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Lower rank number = better access.


<table>
<thead>
<tr>
<th>Poorest quintile (1)</th>
<th>44</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2)</td>
<td>41</td>
</tr>
<tr>
<td>(3)</td>
<td>22</td>
</tr>
<tr>
<td>(4)</td>
<td>23</td>
</tr>
<tr>
<td>Richest quintile (5)</td>
<td>13</td>
</tr>
<tr>
<td>Rate ratio (Q1/Q5)</td>
<td>55</td>
</tr>
<tr>
<td>Absolute difference</td>
<td>61</td>
</tr>
<tr>
<td>(Q1-Q5)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy changes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989 At least one primary care health center for each rural village</td>
</tr>
<tr>
<td>1993 Government medical welfare scheme: all children less than 12, elderly, disabled</td>
</tr>
<tr>
<td>2001 Entire adult population insured</td>
</tr>
<tr>
<td>Activities of Rural Doctors’ Society</td>
</tr>
</tbody>
</table>

Inappropriate Investigations Prescribed for Simulated Patients Presenting with a Minor Stomach Complaint, Thailand^{a,b}

Observation made in 2000, before introduction of Thailand's universal coverage scheme.

Cost to the patient, including doctor's fees, drugs, laboratory and technical investigations.

Adapted by CTLT from Pongsupap & Van Lerberghe, Trop Med Int Health;11:81-9.
A comparison of age-adjusted survival from breast cancer showed that

- Low SES is strongly associated with decreased survival in US, but not Canada.
- The survival advantage in Canada is present in low income areas only.
- The survival advantage in Canada is much larger at ages under 65.
- The Canadian survival advantage is larger for later stage diagnosis. That is, there is almost certainly a medical care benefit to equity in the Canadian context.

Studies in other developing and middle income countries also show benefit from primary care reform.

• In Bolivia, reform in deprived areas lowered under-5 mortality rates compared with comparison areas.
• In Costa Rica, primary care reforms in the 1990s decreased infant mortality and increased life expectancy to rates comparable to those in industrialized countries.
• In Mexico, improvements in primary care practices reduced child mortality in socially deprived areas.

Perinatal Indicators

• Low rates of:
  – undesired pregnancies
  – perinatal complications
  – pregnancy-related complications
  – postneonatal mortality
  – neonatal death from tetanus
  – maternal mortality
Infancy Indicators

• Low birth weight (specialty care)
• Postneonatal mortality (primary care)
• Breastfeeding*
• Tetanus toxoid*
• HIV/AIDS

*especially developing countries

Childhood Indicators

- Immunizations (primary care)
- Child survival to age 5
  - From external causes (public health)
  - From “medical” causes (primary and specialty care)
- Malaria protection and treatment*
- Management of gastroenteritis*
- HIV/AIDS*
- Treatment of respiratory infection*

*especially developing countries

Teenage Period Indicators (all primary care)

- Preventive and health-promoting behaviors, especially those not related to specific diseases
- Adverse effects of medications
- Rates of attempted suicide
- Emergency visits for asthma
- Hospitalizations for ambulatory care sensitive conditions
Early and Middle Adulthood Indicators (all primary care)

• Low birth weight of offspring
• Breastfeeding, seat belts, physical activity
• Low smoking rates
• Asthma death rates
• Hypertension and cerebrovascular disease: premature mortality and age-adjusted death rates
• Hospitalizations for ambulatory care sensitive conditions
• Suicide rates
• Symptoms of peptic ulcers
• Adverse effects of medications
Elucidation of pathways is necessary to devise appropriate interventions.¹

Knowing about the pathways to poor health and inequity in health is important. Yet, most “models” of influences on health do not consider pathways and interactions within the pathways that may operate differently in different populations. Even newer conceptualizations² that focus specifically on societal influences do not explicitly recognize pathways and interactions.

Specific disease-oriented interventions will not change inequities in health because the socially disadvantaged are more vulnerable to almost all diseases.

Universal social programs are critical to reducing inequities in health, although they may have to be tailored to the special needs of particular disadvantaged groups. A health system oriented around a strong primary care base is one example of such a strategy.