TODAY’S LECTURE

Concepts & Contexts

Global Burden of Disease

Key Indicators

Our Global Health Agenda
TODAY’S LECTURE

- Concepts & Contexts
- Global Burden of Disease
- Key Indicators
- Our Global Health Agenda
GLOBAL HEALTH (GH): DEFINITIONS

An area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide (Merson, et al; Lancet 2009)
HEALTH: a state of complete physical, mental, social wellbeing, NOT just the absence of disease (WHO)

EQUITY: the elimination of health inequities (unjust differences) and health disparities (different health outcomes among groups)

ALL PEOPLE: includes everyone, with a special focus on “hot pops” & “hot spots”

WORLDWIDE: focus on domestic, international, transnational health issues, including animal and environmental health

NOTE: INEQUITY ≠ INEQUALITY
FUNCTIONS

- Link Populations to Adequate Health Workforce & Structures
- Evaluate Effectiveness, Safety, Quality, Access
- Inform, Educate, Empower
- Mobilize & Create Partnerships
- Surveil, Investigate, Diagnose
- Guide Policies, Planning, Laws, Regulations
- Research & Innovate Solutions
- Intervene: Prevent, Prepare, React
- Create, Monitor, Assess Indicators, Metrics & Goals

Adapted from APHA’s “Ten Essential Public Health Goals”
GROUP I: 
- Infectious/Communicable 
- Maternal & Perinatal 
- Nutritional Deficiencies

GROUP II: 
- Non-Communicable 
  (& Neuropsychiatric)

GROUP III: 
- Injuries (intentional & unintentional)

Specific disorders are classified according to the WHO International Classification of Disease (ICD)
WHO (http://www.who.int/about/regions/en/)

WB (World Bank) (http://data.worldbank.org/country)

**AMRO via PAHO**

**EURO**

**WPRO**

**SEARO**

**AFRO**

**EMRO**

**WB Economic Classifications:** Upper, Upper-Middle, Lower-Middle, Lower-Income Countries Gross National Income (GNI)

**Global North** = Developed = Upper Income

**Global South** = Developing = LMIC (Lower/Middle Income)

**OECD Countries:** High Income Countries of Organization of Economic Cooperation & Development (see www.oecd.org)
Establishment of WHO (1948)

Alma Alta Declaration 1978

- “The Conference strongly reaffirms that health...is a fundamental human right”

- “The existing gross inequality in the health status of the people particularly between developed and developing countries as well as within countries is politically, socially and economically unacceptable”
How’d we do? We’ll see as the semester continues!
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KEY GH INDICATORS:

The ‘What’:

• Prevalence & Incidence
• Life Expectancy
• Mortality
• Disability Adjusted Life Years (& Components)

The ‘Why’:

• Elucidate Health Status
  • Mortality (death)
  • Morbidity (disease)
  • Disability (reduced function)

• Assist with
  • Trend Analysis
  • Impact Evaluation
  • Policy Decisions
  • Intervention Design
  • Resource/Effort Allocation
Prevalence vs. Incidence

**Total number of new cases in a specified population per 100,000 people at risk within a specific period of time (usually one year)**

**Total number of cases in a specified population per 100,000 people**

**Tuberculosis in Peru & France**

- **Prevalence:**
  - Peru: 117/100,000
  - France: 11/100,000

- **Incidence:**
  - Peru: 101/100,000
  - France: 9/100,000

*Source: WHO INT, accessed 2015*
# Mortality

## Crude Mortality Rate
- Deaths per 1000 people
- Examples:
  - Global: 7.89
  - Norway: 8.10

## Neonatal Mortality Rate*
- Deaths of infants < 28 days old per 1000 live births
- Examples:
  - OECD Countries: 4
  - SSA: 31

## Infant Mortality Rate*
- Deaths of infants 1 year old per 1000 live births
- Examples:
  - Israel: 3.55
  - West Bank: 13.8

## Child Mortality Rate*
- Deaths of children under 5 years old per 1000 live births
- Examples:
  - India, Girls: 55
  - India, Boys: 51

## Maternal Mortality Ratio*
- Number of pregnancy related maternal deaths (from prenatal to 42 days post-partum) per 100,000 live births
- Examples:
  - LA / Caribbean: 85
  - South Asia: 190

*Good country health & development indicators*

Source: WB Databank, accessed 2015
LIFE EXPECTANCY: LE@Birth & HALEs

LE @ BIRTH
- M: 68.8
- F: 74.3
- GLOBAL: 71.5
- LESOTHO: 47.5
- JAPAN: 82.6

HALE (Health Adjusted Life Expectancy)
- M: 60.6
- F: 64.1
- GLOBAL: 62.2
- LESOTHO: 42
- JAPAN: 73.4

Sources: GHO & GBD, accessed 2015
DALYS: Disability-Adjusted Life Years

DALY
Disability Adjusted Life Years is a measure of overall disease burden, expressed as the cumulative number of years lost due to ill-health, disability or early death.

YLD
Years Lived with Disability

YLL
Years of Life Lost

Example -- Global Diabetes: 22 Million YLD + 37 Million YLL + 59 Million DALYS
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Globally, about 2.5 billion total DALYs

Source: IHME GBD, Accessed 2015
**GBD: Top 10 Mortality (COD)**

<table>
<thead>
<tr>
<th>GLOBAL</th>
<th>GLOBAL NORTH</th>
<th>GLOBAL SOUTH</th>
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<tbody>
<tr>
<td>• HEART DISEASE</td>
<td>• HEART DISEASE</td>
<td>• HEART DISEASE</td>
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<tr>
<td>• STROKE</td>
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<td>• COPD</td>
<td>• LUNG CA</td>
<td>• LUNG CANCER (CA)</td>
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<td>• LRI</td>
<td>• DEMENTIA</td>
<td>• DIARRHEA</td>
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<td>• HYPTERTENSION</td>
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<td>• DIARRHEA</td>
<td>• COLORECTAL CA</td>
<td>• ROAD INJURY</td>
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<td>• ROAD INJURY</td>
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<td>• DIABETES</td>
<td>• HYPTERTENSION</td>
<td>• TUBERCULOSIS</td>
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<tr>
<td>• TUBERCULOSIS</td>
<td>• BREAST CA</td>
<td>• PREMATURITY/LBW</td>
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Sources: GHO & GBD, accessed 2015
GBD: Top 10 DALYs

GLOBAL
- Heart Disease
- Stroke
- LRI
- LB & Cervical Pain
- COPD
- Diarrhea
- Road Injury
- Preterm Birth
- HIV/AIDS
- Malaria

GLOBAL NORTH
- Heart Disease
- Stroke
- Low Back Pain
- Depression
- Lung CA
- COPD
- Musculoskeletal
- Road Injury
- Diabetes
- Falls

GLOBAL SOUTH
- LRI
- Diarrhea
- Heart Disease
- Malaria
- Stroke
- HIV/AIDS
- Preterm Birth
- Road Injury
- COPD
- Low Back Pain

Source: GBD, accessed 2015
What Inferences Can You Draw From These Differences?

**Global South MORTALITY**
- Heart Disease
- Stroke
- LRI
- COPD
- Diarrhea
- HIV/AIDS
- Tuberculosis
- Road Injury
- Diabetes
- Preterm birth & LBW

**Global South DALYS**
- LRI
- Diarrhea
- Heart Disease
- Malaria
- Stroke
- HIV/AIDS
- Preterm Birth
- Road Injury
- COPD
- Low Back Pain
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OUR GH AGENDA: AVERT DALYS Cost Effectively

Population prevention* & treatment

Individual-clinical care

Collaboration & research

*Prevention:
1°: prevent
2°: screen/detect/treat
3°: recovery/rehab

Cost Effectiveness:
Avert 1 DALY @ ≤ 3 units of a country’s GDP/capita

Improved Health Outcomes & Health Inequity
OUR AGENDA: SDG GOAL 3: Well Being

3.1 Reduce global maternal mortality ratio to < 70 per 100,000 live births

3.2 End preventable deaths of newborns & under-five children

3.3 End AIDS, tuberculosis, malaria, neglected tropical diseases; combat hepatitis, water-borne diseases & other communicable diseases

3.4 Reduce by 1/3 premature mortality from NCDs

3.5 Strengthen prevention and treatment of substance abuse, including narcotics & alcohol

3.6 Halve global deaths and injuries from road traffic accidents

3.7 Ensure universal access to sexual and reproductive health care services

3.8 Universal health coverage and access to services, medicines, and vaccines for all

3.9 Substantially reduce number of deaths and illnesses from chemicals & environmental contamination
**OUR AGENDA: THE “BEST BUYS”:** The Copenhagen Consensus

**Smart Development Goals**

**Nineteen** of the 169 Sustainable Development Targets are so effective...

**PEOPLE**
1. Lower chronic child malnutrition by 40%
2. Halve malaria infection
3. Reduce tuberculosis deaths by 90%
4. Avoid 1.1 million HIV infections through circumcision
5. Cut early death from chronic disease by 1/3
6. Reduce newborn mortality by 70%
7. Increase immunization to reduce child deaths by 25%
8. Make family planning available to everyone
9. Eliminate violence against women and girls

**PLANET**
10. Phase out fossil fuel subsidies
11. Halve coral reef loss
12. Tax pollution damage from energy
13. Cut indoor air pollution by 20%

**PROSPERITY**
14. Reduce trade restrictions (full Doha)
15. Improve gender equality in ownership, business and politics
16. Boost agricultural yield growth by 40%
17. Increase girls’ education by two years
18. Achieve universal primary education in sub-Saharan Africa
19. Triple preschool in sub-Saharan Africa

...that focusing on them first would effectively quadruple the aid budget without any extra spending...

**BENEFITS OF PRIORITIZING 19 SDG TARGETS**

Trying to achieve all 169 good, average, and poor targets spreads resources thinly and dilutes benefits to about $2 trillion,

Focusing on the most effective 19 Targets has benefits equivalent to $10 trillion of social good.

...providing phenomenal social, environmental and economic benefits at a cost of **$140bn+** per year

**COSTS AND BENEFITS OF TOP TARGETS**

Total benefits $10+ trillion p.a.
LET’S WRAP IT UP!

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NEXT UP:

• W/F Discussion Sections:
  • Review Slideset and Your Notes
  • Read Case Studies Carefully:
    – Eradicating Smallpox
    – The 2009-2010 Influenza Pandemic

• Lecture Topic Monday 7 September:
  • Determinants of Health & GH Information Sources