

Health Issues in the Developing World

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Health as a Human Right

It's clear that not everyone has equal access to health services. Language and race present barriers, even within the U.S. When we compare access to health care in different countries, i.e. U.S. and Haiti, we see even more dramatic differences. Effects of war, economy, and local environment have major impact.

What are the leading causes of death? See the 3 pages handed out in class: UN tables of leading causes of death, based on the World Health Report 1999 database.

- Table 1. Leading Causes of Death, Both Sexes, 1998. [Global table]
- Table 19. Leading Causes of Death, Africa Region, Both Sexes, 1998.
- Table 21. Leading Causes of Death, Region of the Americas – High Income Countries, Both Sexes, 1998.

Most countries do not collect this data. NGOs attempt to fill in the data but various inaccuracies will crop up, since they work with random samples and there are country to country inconsistencies. While not perfect, the UN and WHO numbers can at least indicate trends.

What are the leading causes of death? Compare between developing countries (e.g. Africa, table 19) vs. high income (Table 21). These two slides list the top causes.



Overall Goals

- Review causes of death in developing world
- Discuss cases on needs and contributing factors
- Brainstorm about engineering and health
- Summarize main points



Health as a Human Right

- Disparities within countries and between countries
- Availability of health services
- Access to services
- Contributing factors



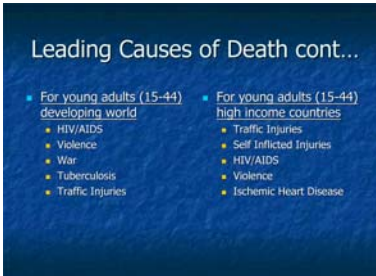
Where to start...

- Most countries do not collect data
- Certain organizations (UN, WHO) create reports based on samples
- All developing countries are not the same
- Many issues faced are similar



The Leading Causes of Death

<ul style="list-style-type: none">• For children under 5 in Developing World:<ul style="list-style-type: none">• Perinatal Diseases,• Respiratory Infections,• Diarrhea,• Malaria,• Measles• (all affected by nutritional state)	<ul style="list-style-type: none">• For children under 5 in High Income Countries:<ul style="list-style-type: none">• Perinatal conditions• Congenital diseases• Traffic Injuries• Respiratory Infections• Nutritional/Endocrine Disorders
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Leading Causes of Death cont...

<ul style="list-style-type: none">• For young adults (15-44) developing world<ul style="list-style-type: none">• HIV/AIDS• Violence• War• Tuberculosis• Traffic Injuries	<ul style="list-style-type: none">• For young adults (15-44) high income countries:<ul style="list-style-type: none">• Traffic Injuries• Self Inflicted Injuries• HIV/AIDS• Violence• Ischemic Heart Disease
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Role playing / brainstorming

When you're in the field, you'll be presented with many situations where you don't have much information or background, and will need to figure out what to do. In this set of exercises, we'll role-play our way through some typical scenarios.

Consider a physician and engineer, traveling as a team to a village on a 3-month sabbatical.

Scenario #1

Day 1, the physician does initial rounds with critical patients, while the engineer is taken to see broken facilities at the hospital (doesn't see patients).

Physician sees mostly kids that are having trouble breathing.

- Causes? Class brainstorms: poor ventilation in hospital, exposed to toxins (i.e. kerosene fuel fumes), charcoal burning at home, industries not operating with safe environmental practices, kids not vaccinated (infections).
- Who should they ask for help? Local agencies in charge of hospital facilities. NGO with sustained presence i.e. the WHO. However, *don't assume* that this is as pressing a problem as you think for the population – first step is to go back to those with ownership for the problem and discuss.
- What are the possible solutions? Try to initiate epidemiological study among patients, looking for patterns. Note you'll need to hand this off to others in-country to complete the study.

Background for cases

- Cases are based on prior experience abroad, reading of reports with no patient identifiers included.
- As framework will create a 'team' of physician and engineer partnership working in same village.

The children can't breathe...

- On first day of team's arrival to the village, the physician is brought to the hospital and asked to see a few patients.
- The engineer is brought to the same hospital and given a tour of the facilities with attention drawn to broken instruments.

The children can't breathe cont...

- At the end of the day, the physician reports being quite affected by the number of children who came to the clinic with 'bad coughs' and the number of children in the hospital with labored breathing.
- Puzzled, not by the medical etiology but by the cause, the physician has a few questions for the engineer.

Questions

- What could be causing these respiratory problems?
- Who should be asked?
- What are the possible solutions?

Respiratory Diseases

- Airways get irritated by foreign substances
- Most caused by Infections
- Many secondary to Pollution
 - Charcoal
 - Industry
 - Other
- Mortality is high- especially in infants

Scenario #2

Engineer and physician notice during walking around the village (~ day #3) that kids have very skinny legs, big bellies, etc.

- Why? Seems to be malnutrition.
- How can they learn more about the problem? They need to learn what's missing from the children's' diet. Explore cultural aspects: who gets to eat first in the family; take meals with families. Ask the kids and ask their mothers what's going on, what they're eating? Keep in mind, how you ask them is very important and could be tricky; food is a loaded subject. For instance, if you ask a woman to share a meal they will put themselves out and create a special banquet. Kids under 12 may not be as aware of cultural burdens, more inclined to give "honest" factual information. Overall, seek stakeholders that can give information without being so emotionally invested in their answers. Compare to nearby communities.
- What are the consequences of the problem? If you're malnourished, you're more likely to get sick. It can stunt intellectual growth.
- What are some of the solutions? Explore ways to improve agriculture and processing the materials into food – i.e. ways to increase productivity or efficiency. Include education component.

Kwashiorkor is a form of malnutrition found often in developing countries --protein malnutrition, as opposed to caloric malnutrition. Once it starts, persistent diarrhea makes the malnutrition progressively worse.

Not enough to eat

- On day 3, the engineer and the physician who had spent most of their first 2 days at the hospital seeing patients or fixing pipes, decided to go on a walk around the village
- Something drew their attention, the children had very skinny arms and legs but big bellies

Questions

- Why?
- How can they learn more about the problem?
- What are the consequences of such a problem?
- What are some of the solutions?

Kwashiorkor : a type of malnutrition

- Protein Malnutrition
- Causes
 - Protuberant belly
 - Fatigue
 - Skin problems
 - Diarrhea
 - Low Immune System
 - Death
- Preventable and Treatable

Scenario #3

Engineer is out in field, attempting to set up a windmill irrigation project and seeking (unsuccessfully) volunteers from the community. Doctor is sitting with a 16 yr old who has just given birth, is battling sustained uncontrolled diarrhea and weight loss.

- What are they suffering from? Dengue fever, typhoid, water-borne contamination, HIV, new allergies...(It turns out this was a case of HIV, and the stress of having baby brings down the immune system, presenting symptoms.)
- Why is it so hard to find available young and healthy volunteers? So many people are sick, and this ripples out into other healthy people having to be caretakers for the sick.

The leading cause of death for those 15-59

- During the second week, the physician was asked to leave the pediatric ward and spend some time in the adult section of the hospital.
- The engineer had met with some of the elders and had a few suggestions/tips that could help address some of the issues that had come up so far

Where is everybody?

- The engineer needed 3 groups of young healthy people to work on a water filtration system, and on testing the windmill.
- The physician sat by the side of a 16 year old who had given birth 3 months before and was brought in for uncontrollable diarrhea and weight loss.

Questions

- What is the 16 year old suffering from?
- Why is it so hard to find available young and healthy volunteers?
- What has happened to this community?

Focus on HIV. Global statistics: Sub-Saharan Africa has 12% of global population but 60% of global HIV cases. (Remember that counting HIV cases is hard in many countries.) Southeast Asia and India are among the highest rates of new infection.

Adults and children estimated to be living with HIV/AIDS as of end 2003

- North America: 790 000 to 1.2 mil
- Caribbean: 350 000 to 590 000
- Latin America: 1.3 to 1.9 mil
- South East Asia: 4.6 to 8.2 mil
- Sub-Saharan Africa: 25 to 28.2 mil
- TOTAL: 34 to 46 million

Estimated number of adults and children newly infected with HIV during 2003

- North America: 36 000 to 54 000
- Caribbean: 45 000 to 80 000
- Latin America: 120 000 to 180 000
- South East Asia: 610 000 to 1.1 mil
- Sub-Saharan Africa: 3.0 to 3.4 mil
- TOTAL: 4.2 to 5.8 million

Estimated adult and child deaths from HIV/AIDS during 2003

- North America: 12 000 to 18 000
- Caribbean: 30 000 to 50 000
- Latin America: 49 000 to 70 000
- South East Asia: 330 000 to 590 000
- Sub-Saharan Africa: 2.2 to 2.4 mil
- TOTAL: 2.5 to 3.5 million

Impact of HIV on Population

- Loss of youth (15-49)
- Higher proportion of children
- Elderly caring for children/orphans

What is HIV/AIDS? Virus, transmitted through bodily fluids (sexual contact or accidental blood exchange).

Be aware of the possible interventions, both medical and non-medical. Back to the case study example:

- What should be done? Prevention through education and improved access to care. Address lack of resources for care. Reduce stigma attached to having HIV.

Education campaigns are challenging, consider Claire's experience in a rural Haitian community. There have been so many education campaigns promoting condoms that people wound up being confused about their role in HIV. Some thought condoms could actually cause HIV. Others felt that using condoms was an admission that you had HIV already.

Summary

Remember to ask the basic questions in the right order when confronted with a situation. Why? How can I learn more? Who are the stakeholders, and what are their interests? What are some possible solutions?

It should be a source of hope that the top 5 leading causes of death are either preventable or treatable.

Collaboration with partners and the local community are very important. Solutions to address these problems and improve quality of life involve both medical interventions (medications, psychological support) and non-medical interventions (wheelchairs, water filtration systems to reduce diarrhea...)

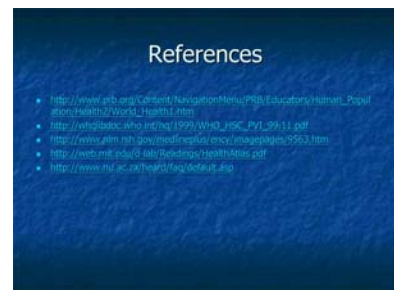
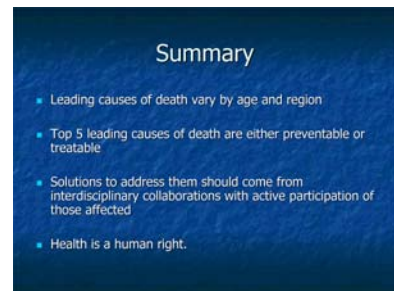
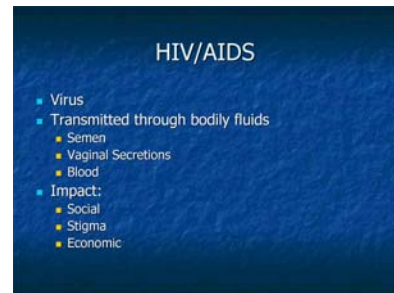
Q&A

Q: What's the status of distributing cutting edge HIV meds (i.e. anti retrovirals) to developing countries?

A: Big push by NGOs and non-profits about 3 years ago against the for-profit pharma companies, requesting they lower their costs for developing countries. After much negotiation, a few countries (South Africa, Uganda and Brazil) have cut their costs from ~\$3,000/year to ~\$300/year, with an ongoing goal to reach \$150/year (source: UNAIDS.org).

Q: New vaccine technologies are being developed that don't require the vaccine to be refrigerated. How would this impact the world?

A: Assuming that new technology isn't controlled by for-profits, it could have dramatic benefits. While we hope for disease eradication, we can accept at least improved control of some diseases. Also, keep in mind that simply



having the vaccine is not the whole story; there's a conceptual leap required for people to accept vaccinations ("why should I take this medicine if I'm feeling well?").

Q: Why couldn't gov't subsidies make up the difference between pharma companies' target prices and what the target country can pay?

A: Target country governments are usually too poor. What about the home country of the pharma company? Nice idea...we have trouble getting the U.S. gov't to pay for health of its citizens too, there's always a question of priorities.

Q: What's the role of UN, WHO, etc. in vaccinations and HIV?

A: UN role is to bring different countries together to discuss problems and negotiate solutions. Problem is they don't have the political/economic clout to initiate global change. They do have positive impact though; i.e. improved vaccination rates.

Discussion about the Energy Planning Homework

(Kurt Kornbluth)

The biggest problem is that people tend to make the system bigger than it needs to be. Other problems: not planning for "rainy day," not planning for growth.

How much does it cost to purchase a kilowatt-hour of electricity? Some people pulled the cost off the Internet as ~\$1/hour, but in most countries it's in the range of \$0.05-\$0.10.