EPIDEMIOLOGY FOR DEVELOPING COUNTRIES
Development and Health

I. Introduction to the Course

A. Instructors
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B. Course content
   1. Uses of epidemiology for policy, planning and administrative decision-making in regions of the world where disease is common and resources are scarce
   2. Use of spreadsheet models to aid the decision-making process

C. Course website
   2. Material is distributed free as PDF files, but needs to be printed
      a. To save funds, have one person make copies for others

D. Grading
E. Class photograph
F. Software Training Manual (posted on web)

II. Introduction Remarks

A. Life expectancy
   1. Map of global experience
      a. Females
      b. Males
   2. Change over past decade in the United States
      a. Relation to change in age-specific death rates
      b. Relation to change in cause-specific death rates

B. Epidemiological transition
   1. Shift from infectious diseases to chronic diseases
   2. Developing countries vs. USA similar to early USA vs. current USA

C. Global public goods
   1. Investment in health needs of economically developing countries
      a. Humanitarian action
      b. Self-beneficial action
         (1) protect population health in economically-developed countries
   2. Services global health interests
a. Research and development  
b. Communicable disease control  
3. Challenge of generating funds and support for global health  

III. Development and Health  

A. Definitions  
1. Disease  
a. Inability to physically or mentally function in the usual manner  
b. Tropical medicine  
   (1) The science and art of diagnosing, treating, curing and preventing disease of warm climate countries  
2. Health  
a. State of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (WHO)  
b. Tropical Health  
   (1) The promotion of health in warm climate countries  
3. Services  
   (1) Medical  
      (a) Types of services  
         i) Mainly curative and surgical, but some preventive  
      (b) Both government and private  
   (2) Public health  
      (a) Types of services  
         i) Organization and management of curative and surgical services  
         ii) Preventive services  
         iii) Monitoring and surveillance  
         iv) Nutritional  
         v) Environmental sanitation  
      (b) Mainly government, international agencies, or non-profit domestic agencies  

B. Etiologic agents or processes in tropical societies  
1. External to the host  
a. Microbial agents  
b. Inadequate nutrition  
c. Physical injuries  
2. Internal to the host  
a. Degenerative changes  
b. Metabolic or structural changes  
c. Neoplastic changes  

C. Effects of disease  
1. Functional disability  
a. Reduced physical productivity  
   (1) Work capacity  
b. Reduced mental productivity  
   (1) Work capacity
(2) Learning capacity

2. Shortened lifespan
   a. Reduced return on social or family investment

3. Mental and emotional suffering
   a. Reduced cognitive skills
      (1) Reduced learning
   b. Lack of motivation
      (1) Reduced work output
      (2) Reduced learning

D. Survival and Investments
1. Survival through replication of the species
   a. Biological agents of disease
      (1) Humans are part of the transmission cycle
      (2) Need offsprings
      (3) Need opportunities to complete generational cycle
   b. Humans
      (1) Need offsprings
      (2) Need opportunities to complete generational cycle
         (a) Favorable physical environment
            i) Immediate environment (sanitation, housing, etc.)
            ii) Climate (both natural and controlled)
            iii) Natural disasters (earthquakes, volcanic eruptions, etc.)
         (b) Favorable social environment
            i) Social disruptions (wars, riots, etc.)
            ii) Social organizations (family, political groups, etc.)
         (c) Favorable biological environment
            i) Biological agents (bacteria, viruses, etc.)
            ii) Chemical agents (poisons, pesticides, etc.)
            iii) Traumatic agents (automobiles, etc.)
         (d) Adequate nutrition
      (3) Need insights and knowledge to complete generational cycle
         (a) Understanding of beliefs and practices in the community
         (b) Ability to read and learn from others both past and present
         (c) Acceptance of new concepts

E. Why some societies fail to thrive
1. Household level
   a. Lack of savings
   b. Lack of trade
   c. Decline in technical knowledge
   d. Decline in available resources
   e. Population growth
2. Country level
   a. Poverty and economic stagnation
   b. Physical geography
   c. Poverty trap
      (1) Impoverished population results in low taxation
      (2) Inept or corrupt government does not adequately collect taxes
(3) Interest on high debt burden from past loans
d. Governance failure
e. Cultural and/or religious barriers
f. Geopolitics
g. Lack of innovation
F. Wants and needs
1. Family
   a. Need adequate numbers of children to survive to adulthood
      (1) Fertility
   b. Need to promote physical and mental growth of children
      (1) Genetic endowment
      (2) Environment
   c. Need to develop productive capacity of next generation
      (1) Training
      (2) Education
2. Society
   a. Need to promote orderly continuation of society
   b. Need to maintain or increase standard of living of society
G. Deterrents in public health domain to future investment
1. Poor environment for future development
   a. Overcrowding
   b. Lack of hygiene
   c. Inadequate water and sanitation
   d. Contaminated food
   e. Vermin and pests
2. Many children dependent on limited resources
   a. Lag in demographic transition
      (1) high birth rate with low life expectancy (developing societies)
      (2) low birth rate with high life expectancy (industrialized societies)
3. Diseases that affect productivity and longevity
   a. Reduced work capacity
   b. Reduced intellectual productivity
4. Inefficiency in the allocation of health resources
   a. Programs are funded with no consideration for feasible or cost-effective
   b. Major problem for societies undergoing the epidemiological transition
      (1) Primary causes of death and disease are...
         (a) Infectious diseases (developing societies)
            i) Less costly to prevent and treat
         (b) Chronic, degenerative or malignant diseases (industrialized societies)
            i) More expensive to prevent and treat
IV. Slide Journey in the Developing World
A. Potpourri
   1. Myanmar
   2. Bangladesh
3. Vietnam
4. Bolivia
5. Kenya
6. Egypt
7. Costa Rica