

LS 2X03 - Lecture 15 – Globalization of Infectious Diseases

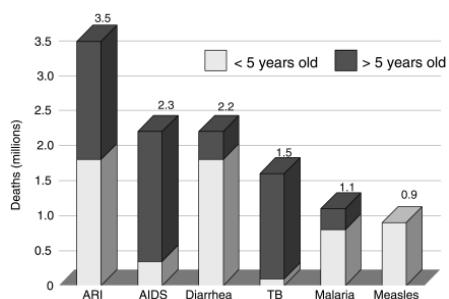
1. Global Burden of Infectious Diseases
2. World in Motion
3. Severe acute respiratory syndrome
4. Movement of Vectors
5. Global Trends

Key Concepts

- Global Burden of Infectious Diseases; distribution of emerging diseases, outbreaks
- Role of migration and travel in disease dissemination
- Severe acute respiratory syndrome; history and role of air travel
- Mechanisms through which vectors expand their range
- Role of Trade and Economic Growth

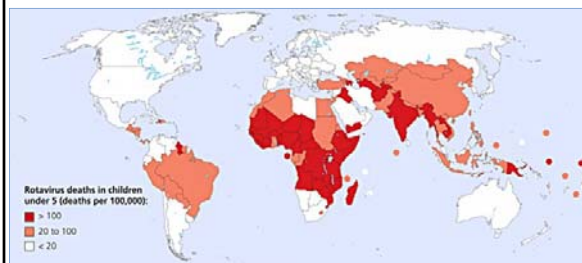
1. Global Burden of Infectious Diseases

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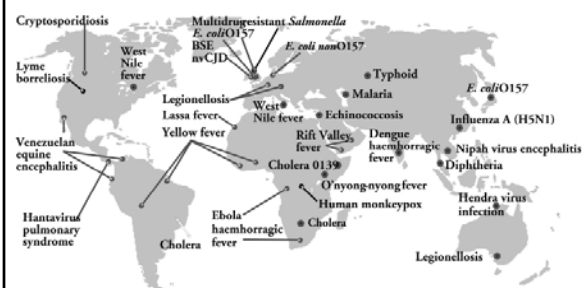


Global Burden of Infectious Diseases (2)

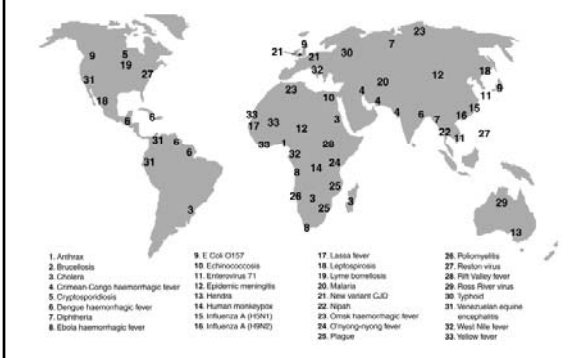
- 11% in established market economies

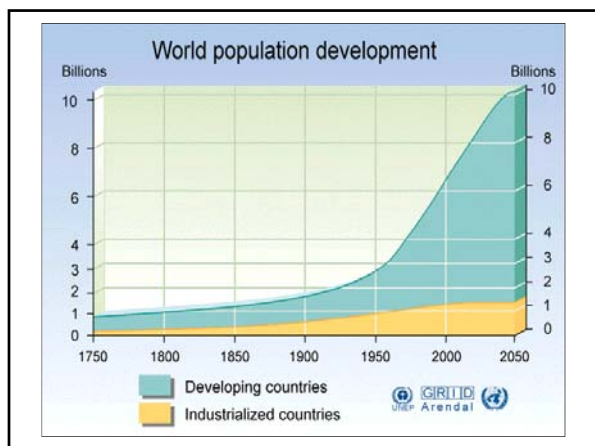


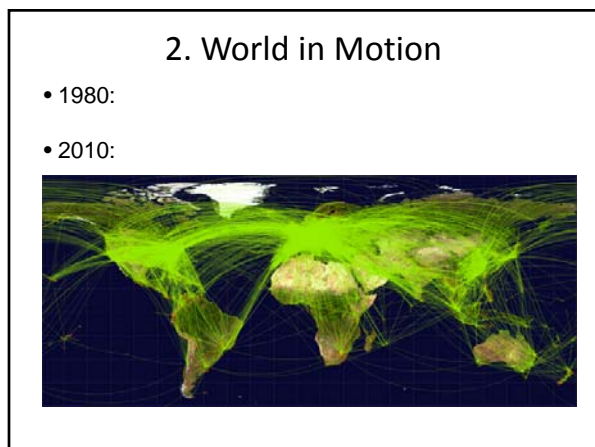
Emerging and reemerging diseases, 1996–2001

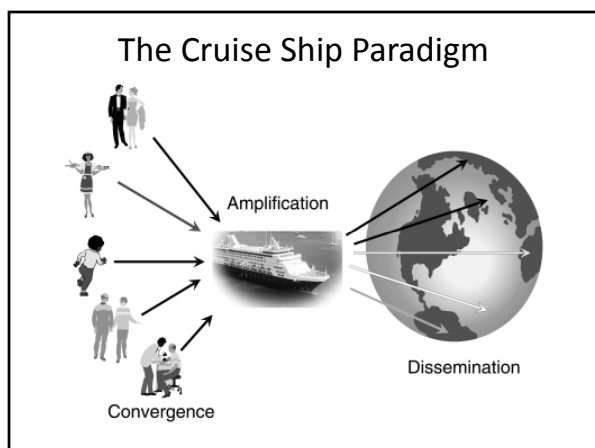


Unexpected outbreaks, 1994–1999









1999 outbreak of influenza A virus

- Large aggregates of tourist populations:



Figure 1. Investigation area and prospective surveillance sites (n = 31) for acute respiratory illness, influenza-like illness, and pneumonia—Alaska, Washington, British Columbia, and Yukon Territory, 1999.

Migration and Globalization

MAJOR ROUTES OF HIV SPREAD IN EUROPE



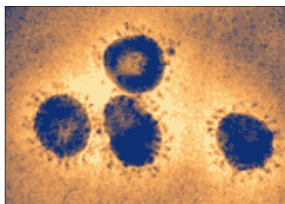
Tuberculosis and Migrants' Health



Estimated tuberculosis incidence rates, 2012

3. Severe acute respiratory syndrome

- Viral respiratory disease of zoonotic origin caused by the SARS coronavirus



The Role of Air Travel

- Index Case:
- She was staying in the same hospital as a doctor who had treated SARS patients



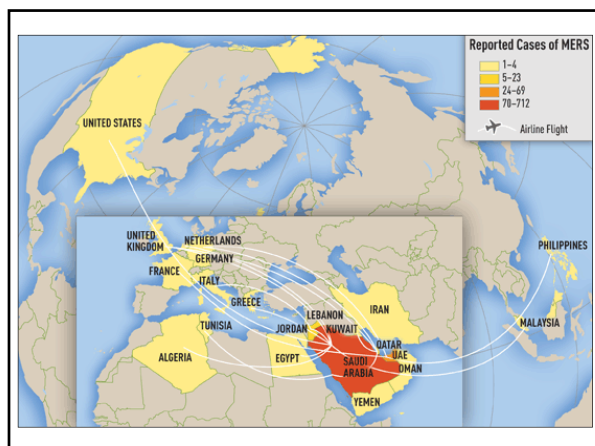
SARS, 2003

SARS Cases
19 February to 5 July 2003

Total: 8,439 cases, 812 deaths,
30 countries in 7-8 months



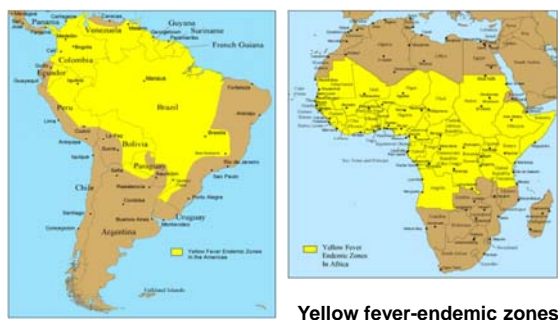
Source: www.hc.gov.sg/sars



Lessons from SARS

- An infectious disease in one country is a threat to all
- There is an important role for air travel in international spread
- Tremendous negative economic impact on trade, travel and tourism, estimated loss of \$ 30 to \$150 billion

4. Movement of Vectors



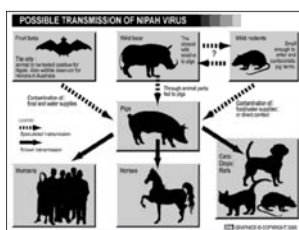
Pathogens are Hitching a Ride



Animal Zoonoses



The Movement of Livestock



5. Global Trade: Food

- Growing number of different foods are imported
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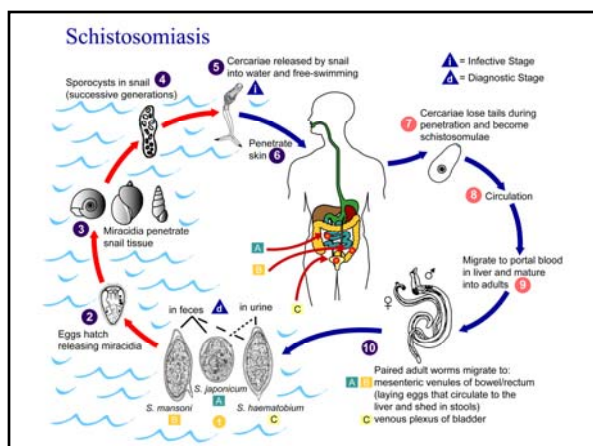
Water Projects

- Aswan Dam in Egypt:



Schistosoma worms





Conclusion

- Infectious Diseases were until recently, the most important contributor to human mortality
- What historically may have been only a small, localized outbreak can now develop in a matter of days into a large, worldwide epidemic
- The cases of SARS in 2003 illustrates the speed at which an outbreak can become global

TO DO!

1. For next Lecture: read Article 16
2. Tutorials this week: Group Presentations (Bring enough copies of the Judging Forms)
