Infectious Disease Challenges in China at the Beginning of the 21\textsuperscript{st} Century

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“China’s Capacity to Manage Infectious Diseases and Its Global Implications”
Overview

- Historical Perspectives
- Surveillance and Disease Reporting
- Current Data
- New and resurgent threats
  - HIV/AIDS
  - STDs
  - TB
  - SARS
  - Avian Influenza
Historical Perspectives

- Pre 1949 – High Rates of Infectious Diseases
- 1950 – 1980 Public Health Approach (preventive emphasis)
  - Barefoot Doctors and primary health care
  - Rural Cooperative Medical system (insurance)
  - Patriotic Health Campaigns
  - Vaccination coverage for vaccine preventable diseases
  - Public works projects for water and sanitation (for gastrointestinal infectious diseases)
Resulting health achievements

- **Life Expectancy at birth: 73** (WHO, 2006) (India: 63)
- **Infant Mortality rate: 20 per 1000** (WHO, 2006) (India: 57)
- **Access to Clean Water – 85.8%** (MOH, 2003)
- **Childhood vaccine coverage** (MOH, 2003)
  - Urban – 94.5%
  - Rural - 84.7%
Infectious diseases in China, 2007

- Top 5 killers: rabies, tuberculosis, AIDS, hepatitis B, hemorrhagic fever
- Total cases: 4.7 million (3% increase from 2006)
- Total deaths: 13,037 (increase of 2,311 from 2006)
- Increase in blood borne diseases (3.55%) including Hepatitis C (30% increase)
Infectious Disease Reporting Requirements

- **Law on Prevention and Control of Infectious Diseases** (issued in 1989, amended in 2004)
- **3 categories of infectious diseases**
  - Class A: Plague and Cholera
  - Class B: 25 diseases including HIV and viral hepatitis
  - Class C: 10 diseases including influenza
Mandatory Reporting of 18 Infectious Diseases (since 1970)

- **Vaccine preventable diseases**: pertussis, diphtheria, polio, measles
- **Gastrointestinal infectious diseases**: cholera, dysentery, typhoid and paratyphoid
- **Other infectious diseases**: plague, epidemic cerebrospinal meningitis, Japanese encephalitis B, malaria, leptospirosis, brucellosis, rabies, hepatitis, tetanus neonatorum, anthrax, epidemic hemorrhagic fever, scarlet fever
Reporting System for Notifiable Infectious Diseases in China

- Real time internet based reporting since SARS
- 93% county and 43% of township hospitals with direct link to computerized CDC system
- Close collaboration with WHO and US CDC

1950-1985
County-based monthly reports sent by post

1985-2003
County-based monthly reports sent by electronic means

2004-
Township-based real time reports exchanged through internet
Trends in annual death rates from 18 notifiable infectious diseases

(category A & B only) in China: 1970-2007
(deaths/100,000 population)
New Infectious Disease Threats

- HIV/AIDS
- Resurgent STDs, especially syphilis
- Tuberculosis
- SARS
- Avian Influenza
HIV/AIDS in China (source, UNAIDS, 2008)

- 700,000 HIV infections (adult prevalence - 0.1%)
- 190,000 AIDS patients requiring treatment
- 35,000 on ART Treatment (19%)
- 50,000 new infections and 20,000 deaths in 2007
- 70% infections are rural and 82% among ages 20-39
- 40.6% infected through sexual transmission, including increasing rates in MSM (*men who have sex with men*)
- Feminizing (women 27.8% in 2006, up from 19.4% in 2000)
- 45% increase in incidence from 2006-2007
AIDS in China

The growth of registered cases

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AIDS in China - geographic concentration of cases by transmission mode
Strengthened Government AIDS Response since 2003 (post SARS)

- 4 Frees and 1 Care Program – free testing and treatment to rural and urban poor
- State Council AIDS Working Group established
- Large amount of funding: Chinese government, Global Fund, bilateral donors, UN system and World Bank (e.g. Global Fund: $200 million over 4 rounds)
Resurgent STDs - Syphilis

- In 1949: 84% infection rates among sex workers in big cities
- Eradicated during 1950’s (until 1993) to less than .2 cases per 100,000
- By 1999, 6.5 cases per 100,000 - (20 fold increase in syphilis between 1990-98)
- 24% increase in syphilis cases in 2007 alone
- Increasing rates of all sexually transmitted diseases – 7% increase in 2007
- STD under-reporting is major problem
- Highest concentrations: urban, coastal, southern (Shanghai, Beijing, Zhejiang, Fujian, Zhujiang River Delta bordering Hong Kong)
Tuberculosis

- Second largest TB epidemic (after India) - 17% of global burden
- 4.5 million prevalent active cases
- 1.5 million new cases/150,000 deaths per year
- 25% of global burden of multi drug resistant TB requiring 2nd line treatment
- Case detection rate: 80% and DOTS coverage 100% (government stats)
- Surveys show less rosy picture of case identification and treatment coverage due to cost of care
New Emerging Infectious Diseases
(SARS, Avian Influenza)

- Most new viruses have come from densely populated southern China – Pearl River Delta
- Close proximity of people and animals
- Live animal markets
- Huge animal population for animal husbandry – 508 million pigs and 14 billion poultry
- 70-80% poultry raised in backyard flocks
- Origin of SARS, swine flu, H5N1 (avian flu) in pigs
SARS

- Began in Guangdong (Pearl River Delta) in November 2002 – “atypical pneumonia”
- Spread to Hong Kong and world (30 countries) in early 2003
- Failure in early reporting and containment
- High case fatality rate
- Global: 8,422 cases with 916 deaths
- China: 5,327 cases and 349 deaths (63%)
Rural SARS Hospitals constructed – available for other infectious disease emergencies

“County SARS Treatment Center”

“Pay attention to public health, prevent disease”
Political Mobilization of all citizens – revival of the “patriotic health campaign” approach

We will win the war against SARS!
SARS was the wake up call

- Raised attention to rural health system problems
- Elevated importance of CDC system
- Strengthened disease surveillance and early warning system
- Cleaning up and surveillance of live animal markets
- Recognition of need for “crisis management” body to supersede limited authorities and competition of sectoral actors
- Revival of “value” of patriotic health campaigns
Newest threat: Avian Influenza (H5N1)

- Likely origin in China – H5N1 first isolated from pigs in Southern China in 2003
- Massive die off of over 6000 wild migratory birds in Qinghai Lake nature preserve -2005
- 30 confirmed human cases, 20 deaths so far in China (global total: 387 cases with 245 deaths as of 9/08)
Factors contributing to human infections from poultry

- Live bird/animal markets continue
- Backyard duck flocks intermingle with wild fowl then backyard duck flocks and chicken flocks intermingle
- Chicken immunizations (95%) may be leading to evolution of more virulent strains
- Concealment of cases of poultry illness for fear of economic impact (by officials and individuals)
- Insufficient public education on basic hygiene in handling birds and working with domestic poultry
Summary

- Big gains in infectious disease control after 1949
- New threats from resurgent syphilis and other STDs as well as tuberculosis - associated with the HIV epidemic
- AIDS response needs greater NGO involvement
- New emerging infectious disease threats require new approaches
  - Early detection, crisis management and honesty
  - Better collaborations between health and other agencies
  - Health system strengthening and multi disease approaches
Thank You!
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