

**MEETING OF THE STATES PARTIES TO THE  
CONVENTION ON THE PROHIBITION OF  
THE DEVELOPMENT, PRODUCTION AND  
STOCKPILING OF BACTERIOLOGICAL  
(BIOLOGICAL) AND TOXIN WEAPONS AND  
ON THEIR DESTRUCTION**

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Geneva, 19-30 July 2004  
Items 5 and 6 of the agenda

**SARS: A Canadian Perspective on Lessons Learned<sup>1</sup>**

Submitted by Canada

1. In spring 2003, Canada experienced an outbreak of SARS which severely tested the resources and preparedness of Canada's public health infrastructure. The outbreak had a major impact, both in terms of morbidity and mortality (over 250 cases and 44 deaths), as well as significant economic and social costs.
2. Canada learned many lessons from dealing with this outbreak which are relevant to the expert group's focus, such as the vulnerability of overall human security to the threat of infectious diseases, be they natural or deliberate. In addition, there were numerous lessons to be learned in the areas of public health, health care, collaboration (eg. inter-agency, intergovernmental and international), and communication. Canada is working actively to address these issues, so that it will be much better prepared should a similar situation occur in the future.
3. Attached is a summary of information taken from the Canadian presentation on SARS on July 26, 2004. The full presentation is available upon request.

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<sup>1</sup> Prepared by the Health Canada, Howard Njoo, MD, MHSc, FRCPC, Special Medical Advisor, to the Assistant Deputy Minister, Population and Public Health Branch

Annex

**Information from the SARS Presentation**

**Overview**

- Background
- Costs
- Lessons – General
- Lessons – Public Health
- Lessons – Health Care
- Lessons – Collaboration
- Lessons – Communication
- The Future

**Background**

- SARS
  - Fever, respiratory symptoms
  - Significant morbidity, lengthy admissions
  - Significant mortality
- Originated in China
  - Nov 2002 & February 2003
  - Hong Kong (with H5N1 flu) February 2003
  - Flu Watch notice across Canada– February 2003
- WHO warning March 12
- First Canadian case March 13
- As of Sept. 17
  - Total probable cases in Canada = 251
  - Prevalent (hospitalized) cases in Canada = 1
  - Deaths = 44

**First Canadian SARS Cases**

- First case in British Columbia
  - Hospitalized March 6
  - Hong Kong travel-related, respiratory symptoms – isolation in hospital
- First case in Ontario
  - Never admitted (died at home)
  - Household transmission – son admitted March 7
    - No travel history – not isolated

**SARS: What Happened and What Worked**

- **Canada's public health system weathered a major challenge, containing SARS outbreaks in two of its largest cities**
- **As the challenge became clear, the system responded with:**
  - Prevention -- Screening against entry of additional cases; national and international surveillance and travel advice
  - Control and containment – isolation and quarantine
  - Surveillance and investigation including laboratory testing
  - National Emergency Stockpile System
  - Guidelines for treatment and management
  - Issue management and risk communications
    - Intra/ inter-governmental and other sector involvement
    - International collaboration, with the US/ UK and WHO

**Costs – SARS**

- Loss of income, job security and benefits
- Fear and panic
- Loss of confidence in public health system
- Loss of confidence in acute and primary health care system due to restrictions
- Discrimination
- Airlines
  - Air Canada grounding 40 planes
  - Cathay Pacific 66% fall in traffic since last year
  - Japan Airlines cut capacity by 22%
  - World airlines have lost \$>10B
- Tourism
  - Estimates that Hong Kong, Singapore, Taiwan and Vietnam will lose more than 30% of their travel and tourism jobs
- Toronto
  - Nearly \$1B of GDP in 2003
  - Tourism - \$350M loss
  - Reduced activity at airports - \$220M
  - Non-tourism retail sales - \$380M
  - 20% businesses have or expect to lay off staff
  - 46% non contingency plans

**Lessons - General**

- Human security can be threatened by infectious disease threats
  - Threats to social integrity, economic status and the health care system
  - Risk of global infectious disease threats increasing due to globalization, travel, migration

- SARS is an ideal case study for most aspects of “bioterrorism” consequence management
  - mode of transmission
  - non-specific syndrome with high morbidity, mortality
  - lack of laboratory test
  - main bioterrorism aspect not applicable in recent SARS outbreak was interface between public health and law enforcement officials
- Factors in emergence of infectious diseases
  - Microbial adaptation and change
  - Human vulnerability
  - Climate and weather
  - Changing ecosystems
  - Economic development and land use
  - Human demographics and behaviour
  - Technology and Industry
  - International travel and commerce
  - Breakdown of public health measures
  - Poverty and social inequity
  - War and famine
  - Lack of political will
  - Intent to harm
- Clear strategic thinking / evidence based decision making
  - Local control measures
  - Border control measures
- Emergency response capacity for infectious diseases (plans, ongoing training, processes)
- Human resources
  - Expertise
  - Depth
  - Surge Capacity

### **What is Public Health?**

- Public health is organized efforts by society to protect, promote and restore the health of the entire population
- Main functions: Disease and Injury Prevention and Control, Health Protection, Health Promotion
- Enabling Functions: Health Surveillance; Research, Evaluation and Knowledge Translation; Policy, Legislation, Regulation and Planning; and HR Planning, Development and Training

### **Lessons – Public Health**

- Public health infrastructure
  - Human resources e.g. epidemiologists
  - Information technology/ data management capacity
  - Surveillance and outbreak control capacity
  - Policies, procedures and legislation to support public health action at all levels

- Surveillance
  - Case definitions
    - Early establishment with documentation, consistency, recording of changes with explanations
  - Data
    - Use of established database software
    - Establishment of minimum dataset
    - Data ownership and data sharing issues (competing priorities, academic vs. public health)
    - Integration of data systems for surveillance, outbreak management, including linkage of epi (public health), lab and clinical (hospital) data
  - Information generation (real time epidemiology and rapid implementation of applied research)
  - Human resources
    - Lack of trained surveillance personnel
- Outbreak control
  - Human resources
    - Manpower, logistical support
    - Limited ability to mobilize resources across jurisdictions
    - Training needs
  - Evidence-based decision making
    - For disease control measures, including travel-related interventions
  - Blood safety and border issues
  - Quarantine/isolation/contact tracing
    - Publicly acceptable methods of controlling SARS although not clear how extensive needs to be in community
    - Balanced public health response – primarily a nosocomial infection in Canada
    - Despite uncertainties, appear to have been largely effective disease control measures
    - Cancellation of public gatherings will happen regardless of public health recommendations
    - Involve partners in implementation of public health measures (education, information dissemination)

### **Lessons – Health Care**

- Vulnerability of health care institutions and health care workers
- Complex health care system
  - Multiple specialized institutions
  - Transfers of patients, staff working in multiple institutions
  - Emergency room pressures
  - Pressures for long-term care beds
- Infection Control
  - Defining and supporting the “New way of doing business” (the “New Normal”)...
  - Evaluating measures to control an outbreak versus to prevent an outbreak of SARS (Which recommendations should stay, which should be modified and which should go)

- Evaluating “collateral effects” of the measures
- Identifying critical control points
  - Settings (e.g. emergency rooms vs hospital wards vs doctors’ offices vs airports)
- Optimizing efficiency (maximize use of resources in high risk/yield setting)
- Changing approaches to infection control
  - Environmental modifications (e.g. structure/flow of emergency departments) versus modifying personal behaviours
- Changing attitudes and behaviours
  - Health Care System – networking across sectors, recognition that infectious disease issues must be managed in a collaborative manner
  - Provider level - Epidemiological data (e.g. travel history) collected with medical history upon presentation versus reliance on a screen tool
  - Individual level – personal hygiene measures are important
- Strengthening nosocomial and syndromic surveillance systems

### **Lessons - Collaboration**

- Cross governmental response to health issues
  - Federal: workplace health, drug approval, transport, missions abroad, income support for individuals and business, customs and immigration, national defence
  - Federal, provincial / territorial
- New partnerships in disease control
  - Clinical medicine and public health
    - Relating treatment modalities to public health imperatives of disease control, elimination and eradication
      - Impact of how/where patient is cared for
      - Public health implications
      - Impact on communicable period
      - Implications for management in institutions and in the community (eg, duration of isolation)
  - Public Health and Law Enforcement
    - Understanding and appreciating respective roles and responsibilities, perspectives in dealing with potential bioterrorist event
      - Joint orientation/training sessions
      - First meeting/introductions between public health and law enforcement officials should not be at the scene of the event
- Research
  - Laboratory, epidemiology, vaccine development, etc.
- International Cooperation
  - Recognition of consequences in other countries as a result of individual country/organization actions
    - Information exchange, travel advisories
  - laboratory networks (etiologic and genomic work and diagnostic test development)

**Lessons - Communication**

- Risk perception important consideration in risk communication
  - Vulnerability to travel advisories, public health recommendations
  - public and state fear
  - Clear communication of epidemiologic situation and control measures essential to show control over situation
    - Within individual countries and internationally
    - Consistency of messages important
- “Community transmission”
  - Implies high risk of transmission anywhere
    - Global economic and psychosocial impact of SARS has probably exceeded 9/11
  - Describe epidemiology, including where and how transmission has occurred in *settings outside of hospitals or households*
- Critical role of communications in consequence management
  - Pre-established internal and national networks, international networks strengthened
  - Integration into program activities on an ongoing basis
    - Human resources to create media lines, public information materials and to translate the science (particularly epidemiology) into public information
  - Target audiences and their needs
  - Real-time, pro-active evidence-based messages
- **Perception IS Reality**

**The Future**

- National action in Canada resulting from recognition of need to strengthen public health capacity and infrastructure – creation of a national public health agency
  - International collaboration critical
    - Roles and responsibilities
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