Severe Acute Respiratory Syndrome: Response from Hong Kong

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SARS Disease Burden in Hong Kong

As at 16.06.2003,

- Total confirmed cases: 1755
- Recovered & discharged: 1386 (79.0%)
- Died: 295 (16.8%)
- In convalescent facilities: 28 (1.6%)
- In non-ICU setting: 31 (1.8%)
- In ICU setting: 15 (0.9%)
Epidemic Curve – Hong Kong
As at 16.06.2003

Date of Onset

Number of Cases
Initial Hospital Outbreak

- **Doctors**
- **Nurses**
- **Other health workers**
- **Medical students**
- **Contacts of staff & MS**
- **Hospital visitors**
- **Other staff**
- **Contacts of visitors**
- **Index case admission**

<table>
<thead>
<tr>
<th>Date of Onset</th>
<th>Number of Cases</th>
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<tbody>
<tr>
<td>05 Mar</td>
<td>1</td>
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<tr>
<td>07 Mar</td>
<td>2</td>
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<td>09 Mar</td>
<td>3</td>
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<td>11 Mar</td>
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<td>13 Mar</td>
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<td>25 Mar</td>
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<td>27 Mar</td>
<td>12</td>
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<td>29 Mar</td>
<td>13</td>
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- **Index case admission**
Community Outbreak in Amoy Gardens

Typical Floor Plan of Block E at Amoy Gardens
Epidemic Curve - Amoy Gardens

Number of Cases

Date of Onset

Others

Amoy Gardens
Amoy Gardens SARS Outbreak Block E

3-D Animation 14-27th March

Cumulative Cases per Apartment By Day of Disease Onset

14th March

Index case/apartment

Apartment Number
(Same on each floor)

- 0 cases
- 1 case
- 2 cases
- 3 cases
- 4 cases

36th floor
28th floor
16th floor
4TH floor
Amoy Gardens SARS Outbreak Block E

3-D Animation 14-27th March

Cumulative Cases per Apartment By Day of Disease Onset

21st March

Index case/apartment

Apartment Number
(Same on each floor)

- 0 cases
- 1 case
- 2 cases
- 3 cases
- 4 cases
Amoy Gardens SARS Outbreak Block E

3-D Animation 14-27th March

Cumulative Cases per Apartment By Day of Disease Onset

23rd March

Index case/apartment

Apartment Number (Same on each floor)

- 0 cases
- 1 case
- 2 cases
- 3 cases
- 4 cases
Amoy Gardens SARS Outbreak Block E

3-D Animation 14-27th March

Cumulative Cases per Apartment By Day of Disease Onset

25th March

Index case/apartment

Apartment Number
(Same on each floor)

- 0 cases
- 1 case
- 2 cases
- 3 cases
- 4 cases

36th floor
28th floor
16th floor
4TH floor

Apartment Number
(Same on each floor)
Amoy Gardens SARS Outbreak Block E

3-D Animation 14-27th March

Cumulative Cases per Apartment By Day of Disease Onset

27th March

Index case/apartment

0 cases
1 case
2 cases
3 cases
4 cases
5 cases
Government’s Strategies

- 4 prolonged strategy centred on:
  - Early detection
  - Swift contact tracing
  - Prompt isolation & quarantine
  - Effective containment

- Strategies result in:
  - Shortening the interval between onset of symptoms & admission to hospital
  - Limiting the infectious period of the SARS cases
  - Preventing further spread of the disease
Public Health Control Measures

- Comprehensive public education programme
- Enhanced surveillance system for case detection
- Application of modern technology for contact tracing
- Updated legislation for isolation of patients & quarantine of contacts
- Intensive control efforts target at areas needing greater attention:
  - Hospital settings
  - Residential care home for the elderly
  - Border control
- Environmental hygiene improvement programme
Comprehensive Public Education Programme

- Heighten awareness of SARS symptoms
- Emphasize message of
  - Prevention, and
  - Prompt action of seeking medical advice early
Enhanced Surveillance System

- Early Detection of cases
  - SARS was made statutory notifiable
  - Promulgate clear and well-defined case definition to all practitioners
  - Active case finding through medical surveillance of contacts
  - Comprehensive support from laboratory for investigation and detection of the virus

- Leads to prompt medical treatment & swift contact tracing
Swift Contact Tracing

- Extensive use of modern technology

- Prompt case investigation
- Rapid contact tracing

- Validate addresses
- Map geographical distribution
- Reveal potential sources or routes of spread
- Show connectivity between cases & contacts

Major Incident Investigation and Disaster Support System (MIIDSS)

Online web access to eSARS database for real-time information.
Major Incident Investigation and Disaster Support System (MIIDSS)

- Link analysis of:
  - Who: contact person
  - Where: location
  - When: event

- Investigation workflow
  - eSARS online (patient data)
  - Investigator team (level I)
    - “Hot Spot” alert
  - Investigator team (level II)
    - Linkage of analyses with charts
Prompt Isolation and Quarantine

- **Close contacts of SARS patients**
  - Placed under home quarantine & medical surveillance
  - Barred from leaving the territory during the 10-day incubation period
  - Where appropriate, contacts are isolated in designated isolation camps located away from the city
  - Ensure compliance of home quarantine by interdepartmental teams – police, immigration, social welfare, home affairs & health dep’ts

- **Home quarantine statistics as at 15.06.2003**
  - No. of persons served home quarantine notice  1262
  - No. of persons develop SARS  25
Monitoring of Contacts

- Established 4 designated medical centres
  - staffed with chest physicians & nurses to conduct medical checks for social contacts and hospital contacts

- Public health nurses monitor the health conditions of contacts by telephone or through surprise home visits to ensure early presentation
Identification of Exposure Source

- Experienced interviewers collect detail history 10 days before symptom onset:
  - on local movement (bus routes, shops, restaurants, etc)
  - on travel abroad
  - on contact with SARS patients

- Data entered into MIIDSS to identify probable exposure source by time, place & person

- Activate multidisciplinary response teams for actions
Effective Containment Measures

- Multi-disciplinary response teams
  - Comprise experts in public health, building management and environmental hygiene
  - Undertake dual functions:
    - Investigation
      building, drainage & other piping systems, lifts & sewage systems
    - Remedial actions
      environmental disinfection, disinfestation
Multi-disciplinary response teams

- Patient contacts
- Environment
- Building services structures
- Disinfection, cleaning & pest control
- Structural rectification
- Contact Isolation

Investigate

Control actions

eSARS — MIIDSS
Enhanced Hospital Infection Control

- **Protection of hospital staff**
  - All health care workers given advice on precautionary measure in caring for patients
  - Provide special training in infection control before deployment to high risk areas
  - Provided with appropriate set of protective gear

- **Inpatient contacts**
  - Contacts are recalled and cohort in hospitals where indicated
  - Others are required to attend designated medical centres to ensure early detection of cases

- **Visitors**
  - Not allowed in SARS wards
  - Limited and controlled to non SARS wards
Special Attention for the Elderly

- High risk of infection - vulnerable and require frequent hospitalisation
- Difficulty in early detection – may not have fever at presentation
- Potential of spread in residential care homes for the elderly (RCHE) when discharged
- High case fatality rate – frail and co-morbidity
Prevention & Control Measures in Residential Care Homes

- **Education on preventive measures**
  - Issue written guidelines on infection control
  - Training for carers on the implementation of the guidelines and step up inspections to ensure compliance
  - Advise on precautionary measures in caring for all residents

- **Reduce the risk of infection – special support**
  - Outreach medical care to reduce the requirement for hospitalisation

- **Reduce the risk of spread - discharge policy**
  - Strict isolation of all hospital discharged patients for 10 days
Health Checks at Border Points

- Mid March
  - Set up medical posts at all border points
  - All incoming passengers required to complete a health declaration
Health Checks at Border Points

- **Mid April**
  - Temperature checks for all departing, arriving & transiting passengers at airport
  - Temperature measures extended to all border points by land, rail and sea
  - 80 infra-red devices have been installed at border points

- **To-date, 320 infrared devices have been installed**
Environmental Hygiene Improvement Programme

- Step up environmental hygiene and pest control measures all over the city
  - A high level Gov’t task force established to steer implementation

- Intensive publicity to enhance public education on personal and environmental hygiene

- Impose strict penalties on people who do not observe these measures
Concluding Remarks (1)

- SARS outbreak in Hong Kong effectively controlled
  - Last SARS case admitted to hospital 02.06.2003
There remains a need to continue to maintain high vigilance

- Continue publicity to keep up public awareness
- Sustained efforts in hygienic measures
- Further enhanced IT support for better surveillance
- Timely analysis of data for early public health actions
Concluding Remarks (3)

- There is a further need to apply lessons learnt to better prepare for future outbreaks
  - Establish SARS Expert Committee to undertake review of outbreak management to identify lessons to be learnt
  - Highlight areas for system improvement
  - Apply lessons learnt
Commitment of the Government

- Allocation of HK$200mn for works of infectious disease prevention, public health education and treatment of disease
- Allocation of HK$200mn for training and welfare health care workers
- Allocation of HK$1.3bn to strengthen public health work and a range of research activities on infectious diseases including SARS
- Allocation of HK$500mn (donated by HKJCC) for establishment of a CDC like structure
Concluding Remarks (5)

- Effective control of infectious diseases requires strong international collaborative partnership
  - Mainland authorities
  - Nearby countries
  - World Health Organization
  - Other international bodies
Thank You