

## **For information**

### **SARS Expert Committee**

#### **Public Health Control Measures**

#### **PURPOSE**

This paper provides an overview of the public health control measures launched by the Hong Kong Special Administrative Region Government to contain the SARS outbreak.

#### **BACKGROUND**

2. In accordance with the International Health Regulations, Hong Kong has an obligation to ensure the maximum security against cross-border spread of diseases with minimum interference with world traffic. At the local level, the Quarantine and Prevention of Disease Ordinance (Cap 141) provides the basis for statutory notification and powers of prevention and control of infectious diseases included in its First Schedule. SARS, being a new entity, was added to the First Schedule on 27 March 2003.

3. In response to media reports on 11 February 2003 of an outbreak of atypical pneumonia in Guangdong, the Department of Health (DH) adopted a proactive approach in the formulation, coordination, implementation and monitoring of public health control measures. A spectrum of graduated enhanced control measures in keeping with scientific knowledge, public aspirations and community acceptance was launched as the 'atypical pneumonia' outbreak quickly unfolded.

4. The Permanent Secretary for Health, Welfare and Food provided high-level steer to drive coordinated actions by government departments and agencies.

#### **AIMS**

5. Public health control measures were implemented to effectively and efficiently interrupt transmission of the infective agent and to identify

the source or cases so that early treatment and isolation could be instituted. These actions included -

- (a) enhanced surveillance
- (b) enhanced laboratory diagnosis
- (c) contact tracing
- (d) designated medical centers for contact surveillance
- (e) home confinement for household contacts
- (f) multidisciplinary response team
- (g) border control
- (h) community and public education
- (i) infection control guidance and advice
- (j) collaboration with Mainland, World Health Organization (WHO) and others.

6. Items (a) to (c) have been described in the relevant Expert Committee papers for discussion at separate sessions. Hence, they will not be elaborated here. Instead, an account of other important public health control measures will be provided below.

### **I. Designated Medical Centres (DMC)**

7. Four DMCs, one in each region, started operation on 31 March. They were originally established to conduct medical monitoring for close contacts and symptomatic social contacts of SARS patients with the aim of early detection and treatment, and hence reduced risk of secondary spread. Close contacts of SARS patients were required to attend DMCs on a daily basis for ten days after last contact with a SARS patient in accordance regulation 9 of the Prevention of the Spread of Infectious Diseases Regulation. Contacts were reminded to stay home. Attendance at work was discouraged and medical certificates were issued to cover work absences.

8. Clients visiting the DMCs were screened using a structured checklist and offered a temperature check. Depending on the presence of significant symptoms (fever, cough, shortness of breath), chest x-ray would be performed on the spot. Persons with abnormal x-ray findings were referred for hospital management.

9. With implementation of home confinement on 10 April, the target clientele of DMCs changed significantly to cater mainly for close contacts (other than household contacts) of confirmed and suspected SARS patients. A significant proportion of them were discharged non-SARS patients exposed to SARS cases during hospitalisation. Between 31 March and 30 June, the DMCs recorded 15 813 attendances and picked up 39 SARS cases. Early referral for treatment and isolation for these patients was thus possible.

## **II. Home Confinement Scheme**

10. As local and international data accumulated, household contacts of SARS patients were found to have a higher chance of developing the disease. With effect from 10 April, household contacts of confirmed SARS patients were required to undergo home confinement in accordance with regulation 11 of the Prevention of the Spread of Infectious Diseases Regulation. There was initial concern that mandatory home confinement would drive infected people underground and fuel the spread of disease. Fortunately, society was willing to accept personal inconveniences, and compliance with the requirements of the scheme was good. As clinical experience showed a sizeable portion of patients turned into probable cases, home confinement was extended proactively to household contacts of suspected SARS patients from 25 April.

11. Home confinees were required to stay at home or in a holiday camp for a maximum of ten days from last contact with the SARS patient. Visiting health teams comprising nurses paid regular home visits for medical monitoring of contacts. The Police conducted spot checks to ensure compliance. Non-compliant confinees were removed to holiday camps after repeated warning.

12. Confinees who developed symptoms were either referred to DMCs for screening or to hospitals for further management. The last confinee completed the confinement requirement on 12 June, by which time 1262 persons from 493 households had undergone confinement. A total of 34 confinees were picked up and subsequently confirmed SARS.

### **III. Multi-disciplinary Response Team**

13. The Amoy Gardens incident highlighted the risks of structural and environmental factors in fuelling the spread of the disease and the importance of multi-disciplinary expertise in the investigation and control of SARS outbreaks. A Multi-disciplinary Response Team (MDRT) was thus mobilised for this task. Led by DH, the MDRT comprised professional staff from Housing Department (HD), Buildings Department (BD), Food and Environmental Hygiene Department (FEHD), Hong Kong Police Force, Environmental Protection Department, and Electrical and Mechanical Services Department. The MDRT tapped expertise in epidemiology, engineering, building structures, plumbing and sewage systems, ventilation and air circulation, disinfection, pest control, etc. Besides conducting investigations, the MDRT also supervised control measures such as disinfection of buildings and affected household units. Information about “SARS affected buildings” was disseminated for public knowledge at the SARS website.

14. By means of the eSARS-MIIDSS interface, suspicious patterns of clustering within the same building block would be flagged up for consideration of multidisciplinary action. The team would be mobilized with two cases coming from different households from the same building block within a period of 10 days. To increase the yield of monitoring, the period of observation was lengthened to 14 days from 9 May onwards. To ensure proactive control over structural/environmental factors, multidisciplinary action was stepped up on 13 May to respond to reports of one confirmed case, and later even for any report of a suspected case. Where structural or environmental causes had been excluded, the affected household units and common building parts including sewage systems would be thoroughly cleansed and disinfected under the supervision of FEHD, BD and HD, as appropriate.

15. To further promote effective inter-departmental communication and coordination, a web-based reporting system was launched on 15 May.

### **IV. Border control**

16. On 12 March 2003, the WHO issued a global alert on an atypical pneumonia, now known as SARS. On 27 March 2003, WHO

recommended screening of air passengers departing from affected areas. WHO further issued, on 2 April 2003, advice to international travellers to consider postponing all but essential travel to Hong Kong.

17. To prevent the spread of the disease through international travel, the Hong Kong Government implemented a package of measures at border control points. These included requiring all incoming passengers to complete a health declaration form, and all arriving passengers at the airport, ports and land border points to have their body temperature checked. Temperature screening was applied to departing and transit passengers at the airport, as well as passengers departing from Hung Hom, China Ferry Terminal and Macau Ferry Terminal. Commencing 14 June, outbound passengers at the airport were also required to complete a health declaration form when they checked in at the counters.

18. High level discussions between Hong Kong and Shenzhen authorities were held in April 2003 to address the need for health monitoring of travelers at both sides of the border in the face of massive people flow across these border points. An agreement was reached to conduct synchronized temperature screening for arriving passengers at border control points at the Hong Kong – Shenzhen boundary, namely Lo Wu, Lok Ma Chau, Man Kam To and Sha Tau Kok.

19. To strengthen preventive efforts to stop the export of SARS infected persons outside Hong Kong, with effect from 14 April, household contacts of SARS cases during the home confinement period and people suspected of suffering from SARS upon screening at the airport, ports and all land border control points were refused exit at border control points.

20. Public education was another powerful tool in promoting safe and healthy travelling. People with a fever, or who do not feel well, were urged not to travel. Educational means including health alert cards, website for travellers and publicity programmes were used. Support from travel agencies and the trade was enlisted to enhance vigilance while travelling. Travellers with concern about their health could call DH's 24-hour hotline. WHO's travel advisory against Hong Kong was lifted on 23 May and Hong Kong was removed from the list of SARS affected areas on 23 June. Taken together, border control measures have shown to local and international communities Hong Kong Government's

commitment to prevent the spread of SARS through travel.

## **V. Communication and public education**

21. Open, frank and transparent communication was a prominent feature in the overall SARS control strategy. It was particularly useful in dispelling rumour, calming anxiety and building trust among the local community. Target audiences were broadly categorised into members of the public, specific sectors e.g. food trade and schools, the media and the international community. DH resorted to a whole range of communication tools appropriate to circumstances and needs of the audience.

22. As a proactive action, DH issued an early health alert on 11 February in response to reports of a pneumonia outbreak in Guangdong and again, on 19 February, in connection with the avian flu case confirmed in Hong Kong. When the PWH epidemic came to light, the first public announcement by a senior health official was conducted on 12 March. Following this, DH issued a series of health alert/advice to doctors and health care personnel, as and when new information became available, urging them to increase vigilance, adopt appropriate infection control measures and to report cases. On the same day, DH reported the PWH outbreak to WHO and has maintained close liaison since.

23. Creating heightened public awareness of personal and environmental hygiene measures and encouraging good practices were top priorities for public education. In the ensuing three months, DH produced over 110 items of health educational materials that ranged from pamphlets, posters, guidelines, presentation slides, fact sheets to display boards. These were given out freely and widely. Over 550 sessions of health talks, exhibitions, media interviews and press briefings were held. A total of 48 issues of SARS Bulletin were published. More than 10 million hits were made at the designated SARS website. An archive of most items mentioned above could be accessed through DH's website [www.info.gov.hk/dh](http://www.info.gov.hk/dh). Public education campaigns made immediate impact as disinfecting and cleansing products went rapidly out of stock at retail outlets and water consumption by the local community increased greatly over usual consumption patterns.

24. To answer calls both locally and from overseas, a telephone hotline manned by health nurses was set up on 18 March. Topics covered travel information, health advice on personal and environmental hygiene, handling of close or social contacts of SARS patients, information about affected buildings, etc. Over 89,000 calls were answered in three months.

## **VI. Infection control guidance and advice**

25. Apart from health alert/advice given to health care professionals on 12 March, DH assisted government departments and their respective sectors to develop sector-specific guidelines to prevent and respond to SARS infection in their settings. Guidelines were developed specially for public transport operators, hotels and boarding houses, food businesses, public places, and so on. Copies of the guidelines were distributed to relevant parties and uploaded on the SARS website.

26. Special support was also given to institutions such as child care centres, aged homes and schools where large numbers of people congregated. In the face of increasing numbers of infected persons, classes in primary/secondary schools and child care centres were suspended with effect from 29 March to resume in phases in April and May with introduction of special precautionary measures. No spread within the school community and child care sector was reported throughout the SARS outbreak.

27. As with all non-SARS patients discharged from hospitals, elderly persons could have been exposed to SARS cases during their hospital stay. To contain the infection within the hospital and prevent spillage into the community, DH worked closely with hospitals, the Social Welfare Department and aged home operators. For instance, DH strongly advocated “step down” isolation of hospital contacts of SARS patients for ten days before discharge. Elderly homes were advised to put recently discharged elders in isolation for another ten days to further minimise the chance of spread, should they already harbour the infective agent. For homes with difficulty implementing isolation, assistance from medical social workers was sought to arrange alternative placements.

28. In the event of a hospital outbreak, DH provided epidemiological support and assessment aiming to identify the source and extent of spread, and advised the hospital on infection control practices and cohorting requirements. By enforcing strict medical surveillance of discharged non-SARS patients and hospital visitors, the risk of having an infected person 'slipping through the net' and spreading the disease could be reduced to a minimum. Full accounts of public health management of hospital outbreaks would be available from the relevant Expert Committee papers.

## **VI. Collaboration with the Mainland, WHO and others**

29. In March 2003, the DH solicited the assistance of WHO consultants to give advice and conduct epidemiological studies. An environmental health team helped in April-May to conduct joint investigations into the Amoy Gardens outbreak. DH shared data with WHO and other countries to better understand epidemiological parameters of SARS.

30. The DH also fostered closer ties with the Guangdong and Mainland authorities in the control of SARS. On April 17, a delegation of medical professionals held meetings with Guangdong counterparts in Guangzhou to exchange views and information on clinical treatment as well as measures on prevention and control. To enhance closer collaboration, a regular tripartite meeting of Guangdong-Hong Kong-Macao Expert Group on Prevention and Treatment of Infectious Disease was set up. The first meeting held on May 29 and 30 in Hong Kong agreed on the following areas of collaboration:

- £ »to provide early warning on outbreaks of communicable diseases
- £ »to expand the list of notifiable infectious diseases including AIDS, dengue fever, influenza, tuberculosis, cholera and malaria in the exchange of statistics
- £ »to further enhance co-operation on scientific research and set up mutual visit.

31. Further meetings between DH and Guangdong were held with the aim of strengthening and formalizing the disease notification system.



32. In the meantime, DH took part in international conferences, video/teleconferences, studies and laboratory collaborative networks with a view to acquiring the latest scientific and public health knowledge for application in the fight against SARS.

## **EFFECTIVENESS**

33. Analysis of local data by Steven Riley et al<sup>1</sup> showed that the coronavirus was only moderately transmissible, with about 2.7 secondary cases generated by one primary case in a susceptible population. The analysis further showed that transmission of the infective agent decreased during the recent outbreak as a result of (1) reduction in population contact rates and (2) early hospital admission and isolation. These findings, at the same time, highlighted the important need for effective infection control measures in the hospital setting. Collectively, public health control measures implemented by the Hong Kong Government were effective in containing the SARS outbreak by achieving both (1) and (2).

34. Separately, the WHO<sup>2</sup> commended Hong Kong for its open and transparent reporting of H5N1 outbreak on 19 February and the PWH outbreak on 12 March, which led to immediate heightening of awareness among the international community. Prompt response including effective case identification, contact tracing, surveillance and quarantine, among others, enabled the outbreak to be rapidly contained.

## **CONCLUSION**

35. SARS was a particularly serious threat to global health because it had no vaccine/treatment and respected no borders with international travel. The government was forced to resort to 'old-fashioned' yet effective tools such as isolation and quarantine. Fortunately, Hong Kong saw political will, intersectoral and multidisciplinary collaboration, professionalism as well as community ownership as all sectors joined hands to fight the common foe.

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<sup>1</sup> Transmission Dynamics of the Etiological Agent of SARS in Hong Kong: Impact of Public Health Interventions. Steven Riley et al. Science. Vol 300; 20 June 2003.

<sup>2</sup> World Health Organization. 15 June 2003.

36. Hong Kong must remain in a state of preparedness. While we do so, we look towards the WHO for the coordination of global efforts on SARS epidemiology, laboratory diagnosis, clinical management, research, capacity building and strengthening of the International Health Regulations in preventing the comeback of this terrible disease.

Department of Health  
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