Report of the SARS Outbreak in North District Hospital (NDH)

This report provides an account of the SARS outbreak that occurred at the end of May in the North District Hospital (NDH) of the New Territories East Cluster (NTEC).

Background

2. The SARS epidemic hit the NTEC first on 10 March with the outbreak at Ward 8A of the Prince of Wales Hospital (PWH). In April, another outbreak occurred at the Alice Ho Miu Ling Nethersole Hospital (AHNH). The PWH outbreak affected 200 persons while the AHNH outbreak affected 131. Right from the beginning of the epidemic, NTEC had been maintaining a policy of keeping NDH "SARS-free" in order to allow certain non-SARS services to go on to serve the public. All patients admitted to NDH and suspected to have SARS would firstly be put into the isolation rooms in the hospital and transferred to PWH (or AHNH towards the later stage of the epidemic) for treatment as soon as the diagnosis was made. As a result, close to 50 suspected SARS patients had been transferred out of NDH during the whole period.

3. Before SARS, NDH used to operate on a system with admission wards admitting all emergency patients for all specialties. These wards are located on 2/F of the hospital. Patients would normally stay in the admission wards for 48 hours before they were either discharged or admitted to the specialty wards for definitive treatment. During the SARS outbreak, the hospital started to separate the patients admitted for fever from those admitted for other purposes. The fever patients would be admitted to the Infection Triage wards, located on 3/F of the hospital. In May, in order to reduce the movement of patients between wards, the hospital started to admit all the non-fever medical patients directly to the general medical wards. These wards are located on 4/F of the hospital.

4. Although the hospital was not required to treat any SARS patients, it had introduced all the infection control measures according to the HAHO and NTEC infection control guidelines, including the standards in Personal Protective Equipment (PPE) provision. Prior to the end of May outbreak, the NTEC SARS Prevention Team had inspected the admission and fever wards of NDH and found their infection control practices in order. All wards admitted patients from the Accident & Emergency Department, including the admission wards, the Infection Triage wards and the general medical wards, were regarded as ultra-high risk areas for infection control.

The Outbreak

5. The sequence of events of the NDH outbreak is shown in the Appendix. A health care assistant (HCA) working in ward 4B was admitted to the fever ward in NDH on 18 May. She was later suspected to be suffering from SARS and was transferred to AHNH on 22 May. Ward 4B was closed on 23 May. The NTEC SARS Prevention Team and the hospital infection control team started the investigation into the contact history and possible cause of the infection. At that time, there was no suspected SARS patient in ward 4B. There were a few patients having fever and they were screened for corona virus with specimens taken for RT-PCR tests.

6. On 25 May, another HCA from ward 4B developed fever and was diagnosed to have abnormal CT changes in the lungs compatible with SARS. This HCA also served as phlebotomist serving the paired wards of 4A and 4B. She had also helped to take blood in ward 2B on 14-15 May and two other wards (1A and 1B) on 17 May. The Department of Health Regional Office was informed and the hospital immediately initiated actions to investigate a possible outbreak, focusing particularly on ward 4B, and introduced measures to control the further spread of the disease and infection.

7. On 26 May, the PCR results of 3 patients who had already passed away returned to show positive result. There was a 92-year old female patient who was admitted on 13 May for decrease in general condition and diarrhea. Her chest x-ray was normal on admission. On 16 May, her chest x-ray showed bilateral pneumonic changes and was diagnosed to have

hospital acquired pneumonia. She was put into the isolation room on 16 May. She developed fever on 21 May. Urgent PCR test was done on 22 May but she passed away on 24 May. She was considered to be the most probable index case in the ward.

8. All the three patients mentioned in the above paragraph were noted to have stayed in the same cubicle in ward 4B during the period of 13-17 May. As two of the patients actually passed away in wards 2B and 4C, these two wards were closed on 26 May. On 27 May, another enrolled nurse of ward 4B was admitted to AHNH for suspected SARS.

9. Subsequently, it was noted that all the other patients who had stayed in the same cubicle in ward 4B with the suspected index case during the period of 13-17 May got SARS. The total number was 7. The staying of one of the patients in ward 2B had also led to the infection of 2 other patients and 1 nurse in the ward. There were 2 other patients who were noted to have positive virology results for corona virus but did not have clinical presentations of SARS. As at 13 June, there were 4 staff being affected; 11 patients in the 2 affected wards (4B and 2B) and 3 community contacts of the patients.

Disease Control Measures

10. As soon as the first HCA was admitted, the hospital started to investigate the possible cause of the infection. With the second HCA being admitted, the hospital joined hands with HAHO, the NTEC SARS Prevention Team and the Department of Health in controlling the spread of disease and infection. The following measures were being taken immediately on 25 May:

(a) All wards of hospital which had admitted suspected/confirmed SARS cases before were identified and put under medical surveillance for 10 days. These wards were all closed during the surveillance period in order to prevent spreading of the disease. Movement of patients of these affected wards was all stopped. Cleansing and disinfections of these wards were conducted.

(b) Staff of the affected wards was monitored for symptoms. Those who had symptoms would be asked to refrain from work and required to report to the infection control nurse. They also had to attend the staff screening clinic.

(c) Improvement measures had been implemented in the hospital including the opening of more wards to improve segregation, the reduction in number of beds in each ward, segregation of each bed with plastic curtain, strengthening of infection control measures as well as increase in audit to ensure compliance of infection control measures.

(d) In order to reduce the number of patients in wards 4B and 2B and to prevent further cross-infection among the patients, the less medically dependent patients were transferred to the chalets of the Shatin Cheshire Home and Wong Tai Sin Hospital for single room or cubicle isolation.

(e) Close contacts of the suspected/confirmed cases were traced and put under home confinement. Medical surveillance was upgraded to include all social and hospital contacts. All discharged patients and visitors were also traced and put under medical surveillance. The total number of contacts for medical surveillance included 341 discharged patients and 233 visitors/ community contacts. All of them were noted to be healthy on completion of surveillance.

Conclusion

11. With the rapid response of the hospital, the NDH outbreak was being put under control within a relatively short time. All the wards have completed the quarantine period and are re-opened as this report is being written.

Appendix

Outbreak of SARS in NDH

Sequence of Events

Date	Event
18 May	• 1 health care assistant (HCA) from ward 4B admitted to fever ward in NDH.
22 May	• HCA transferred to AHNH for suspected SARS.
23 May	• 4B closed to admissions and discharges. • Patients in ward 4B screened for corona virus infection. • Staff monitored for fever and possible symptoms of SARS.
24 May	• Consultant in Microbiology from PWH and 2 executives from the Head Office Infection Control Task Force conducted surprise audit on ward 4B separately for infection control practices; high vigilance among staff was noted.
25 May	• 1 HCA serving as phlebotomist in wards 4AB admitted with CT showing pneumonic changes. • Ward 4A closed to admissions and discharges. • Patients exposed to the phlebotomist in wards 1A, 1B and 2B also quarantined for surveillance. • DH Regional Office informed in the morning for contact tracing of discharged patients and social contacts.
26 May	• RT-PCR result of 1 ward 4B patient returned to be positive. The patient was noted to have passed away on 24 May. The patient was identified as the possible index case in ward 4B. • RT-PCR results from 1 ward 4C and 1 ward 2B patient returned to be positive. Both patients noted to have passed away on 25 and 26 May. All 3 patients were noted to have stayed in the same cubicle in ward 4B on 13-14 May. • Serology result of 1 ward 4B discharged patient returned to be positive. Patient called back and admitted AHNH for observation. • Wards 2B and 4C closed to admissions and discharges.
27 May	• 1 enrolled nurse from 4B admitted AHNH for suspected SARS. • Patients in wards 1A and 1B completed surveillance.

28 May	• RT-PCR result from 1 ward 4A discharged patient returned to be positive. Patient called back and admitted AHNH for observation.
29 May	• 1 nursing officer from ward 2B admitted AHNH for suspected SARS
31 May	• Ward 4A completed surveillance.
3 June	• 2 ward 2B patients transferred to AHNH for suspected SARS.
4 June	• Ward 4C completed surveillance.
5 June	• Selected patients from ward 2B transferred to the Chalets of Shatin Cheshire Home for single-room quarantine.
7 June	• Selected patients from ward 4B transferred to the Chalets of Shatin Cheshire Home and Wong Tai Sin Hospital for single-room or single-cubicle quarantine.
13 June	• Ward 2B completed surveillance.
16 June	• Ward 4B completed surveillance.