Chapter 2 The case of *AA* in the Kwong Wah Hospital

Finding of facts

Admission of *AA* to the Kwong Wah Hospital

2.1 On 22 February 2003, *AA*, a doctor from the Mainland visiting Hong Kong who had shortness of breath and fever with very low SaO_2 (level of oxygen in his blood) attended the Accident and Emergency Department (AED) in the Kwong Wah Hospital (KWH) for treatment. The Consultant of AED in KWH, Dr WU Chun-wah, decided that *AA* should be admitted to the Intensive Care Unit (ICU) because his SaO_2 level was very low initially and there was a possibility that intubation might be required.

2.2 When the Director of ICU in KWH, Dr WATT Chi-leung, learnt that *AA* was a doctor from the Mainland visiting Hong Kong, he instructed the nursing staff in ICU to prepare the isolation room for *AA* as he might be very infectious. Dr WATT also asked all colleagues in ICU to wear N95 masks, gloves and gowns when attending to *AA*. The Head Office of the Hospital Authority (HAHO) was informed of *AA*'*s* admission.

2.3 It was this instruction that contributed to the avoidance of a possible disaster at KWH.

2.4 The patient, *AA*, who was later identified as the index patient causing the SARS outbreak in Hong Kong, was a retired professor of the Second Affiliated Hospital of the Sun Yat Sen University of Medical Sciences in Zhongshan, Guangdong. He came to Hong Kong with his wife on 21 February 2003 to attend a wedding. As there were many stories told about *AA*'s seeking treatment at KWH, the Select Committee decided to ascertain the circumstances surrounding *AA*'s visit to Hong Kong and the events that followed.

2.5 According to the Hospital Chief Executive (HCE) of KWH, Dr LUK Che-chung, *AA* told the attending healthcare workers (HCWs) in

KWH that there were many people suffering from atypical pneumonia (AP) in Zhongshan and he had attended some of these patients when helping out in the out-patient clinic of the Second Affiliated Hospital of the Sun Yat Sen University of Medical Sciences. He had flu-like symptoms on 15 February 2003 and treated himself with antibiotics. His conditions improved but he was unwell again on 19 February 2003. He came to Hong Kong on 21 February 2003 and stayed at the M Hotel. He spent the afternoon of 21 February 2003 shopping but became so unwell in the morning of 22 February 2003 that he had to seek treatment at KWH. He was accompanied by two ladies.

2.6 *AA* was seen by the Triage Nurse in AED. Without knowing *AA*'s conditions, the Triage Nurse, Miss YANG Siu-fan, did not put on any personal protective equipment (PPE) when assessing him. Given *AA*'s very low SaO_2 level, the Triage Nurse transferred him to the Resuscitation Room (R Room) in AED for further assessment. In the R Room, *AA* was seen by a Medical Officer, Dr CHOW Kin-wa. Although HAHO had issued a memorandum on surveillance on Severe Community-Acquired Pneumonia (SCAP) on 12 February 2003 and a set of Frequently Asked Questions (FAQs) on the Management of SCAP on 21 February 2003, Dr CHOW was not aware of these documents. He did not put on any PPE when examining *AA*. Dr CHOW understood from the patient that he had a recent history of chest infection but had recovered before coming to Hong Kong. The patient had a fever and shortness of breath. The chest X-ray taken of him in AED showed bilateral ground glass appearance. Dr CHOW then consulted his supervisor, the Consultant of AED, Dr WU.

2.7 Dr WU was aware of the memorandum on surveillance on SCAP issued by HAHO on 12 February 2003. From media reports, he was also aware that there were many AP cases in Guangdong. Out of caution, Dr WU advised all HCWs in AED to wear masks when treating *AA*. According to the Infection Control Officer (ICO) of KWH, Dr Melissa HO, AED had started to use surgical masks by the first week of March 2003 and HCWs in AED had been provided with sufficient N95 masks by the second week. *AA* told Dr WU that he had contracted pneumonia but it was not the same kind of

disease as that reported in the media recently. From *AA*'s presentation, Dr WU suspected that he was suffering from lung infection.

2.8 In ICU, following Dr WATT's instructions, HCWs there placed *AA* in the isolation room where there were negative air pressure and ventilators. N95 masks, gowns and gloves were placed in the ante-room of the isolation room. All HCWs there were informed that the patient in the isolation room was suspected to be suffering from AP. They were reminded to take "airborne" and "standard" precautions when attending to the patient. Dr LUK, Dr HO, and an Infection Control Nurse (ICN) were notified of *AA*'s admission by telephone.

2.9 In accordance with the instructions contained in the memorandum issued by HAHO on 12 February 2003, ICU faxed the completed Report Form for SCAP in respect of *AA*'s case to HAHO at 12:12 pm on 22 February 2003. ICN of KWH faxed the completed clinical record form to the Secretariat of the Task Force on Infection Control (TFIC) of HAHO and to the Subject Officer of the Working Group on SCAP at 6:40 pm on the same day. TFIC was renamed the Central Committee on Infection Control on 4 March 2003. The Department of Health (DH) was notified of the case by HAHO on 24 February 2003.

2.10 At about 10:00 am on 24 February 2003, the Chief of Service of the Department of Surgery in KWH, Dr Andrew YIP Wai-chun, received a telephone call from the Secretary of the Medical Superintendent's Office of the First Affiliated Hospital of the Sun Yat Sen University of Medical Sciences asking him to consider whether *AA*, who was a professor in the Second Affiliated Hospital of the same University before his retirement, required expert care. Dr YIP told the Select Committee that the First Affiliated Hospital of the Sun Yat Sen University of Medical Sciences and KWH had been sister hospitals since 1996. Over the years, he had organized exchange programmes for the two Hospitals.

2.11 With the agreement of Dr WATT, Dr YIP invited the Chair Professor of Infectious Diseases and Head of the Department of Microbiology of the University of Hong Kong, Professor YUEN Kwok-yung, to give medical

advice on *AA*. As Professor YUEN was sick that day, he arranged for his colleague, the Associate Professor of the Department of Microbiology, Professor HO Pak-leung, to examine *AA* at KWH in the same morning. Professor HO invited another colleague, the Associate Professor in Respiratory Medicine, Professor Kenneth TSANG Wah-tak, to join him. The two Professors reviewed *AA*'s clinical records and test results and diagnosed him as suffering from severe atypical pneumonia. They advised, among other things, that there was need for extreme caution in infection control measures. They also collected some specimens for analysis in the Queen Mary Hospital. Professor HO reported the consultation and their findings to Professor YUEN afterwards.

2.12 Dr YIP received another call from the First Affiliated Hospital of the Sun Yat Sen University of Medical Sciences in the afternoon on the same day informing him that its Medical Superintendent would visit *AA* at KWH in the afternoon. On the arrival of the Medical Superintendent and his two colleagues from the Second Affiliated Hospital of the same University at KWH at about 6:00 pm, Dr YIP showed them to ICU. Dr YIP did not ask these three visitors whether there was an outbreak of AP in Guangdong.

2.13 The visitors were briefed by the Senior Medical Officer on duty in ICU, Dr TSANG Hin-hung, on *AA*'s conditions and stayed there for about 10 minutes. On their request, the visitors were provided with a copy of the test results of specimens obtained from *AA* before they left. According to Dr TSANG, the three visitors from the Sun Yat Sen University of Medical Sciences did not share with him any information about the AP situation in Guangdong when he raised the issue with them.

2.14 Professor YUEN went to KWH to examine *AA* on 28 February 2003 and made some suggestions on his treatment in ICU.

2.15 On 1 March 2003, a lady visited *AA* in ICU. The nurse on duty noticed that she was wearing clothing issued for patients by the Hospital. The nurse told the Deputy Ward Manager (Nurse Specialist) of ICU, Ms KWOK Lai-yin, about this incident on the following day. On enquiries made by Ms KWOK, it was found out that she was *AA*'s sister (*CC*). She was

admitted to a medical ward in KWH on 1 March 2003 and her husband was admitted on 28 February 2003. The Select Committee noted that *CC*'s husband was admitted to an isolation room in another medical ward. After establishing the relationship between *AA* and *CC*, Ms KWOK suggested to the Nursing Officer of the ward in which *CC* was staying to put her in an isolation ward. Ms KWOK reminded her colleagues to strictly comply with infection control measures, and also informed ICN of KWH of the two cases. Dr Melissa HO interviewed *CC* to obtain information on her as well as on *AA* on 2 March 2003.

Communication with the Head Office of the Hospital Authority

2.16 As both *CC* and her husband were not initially diagnosed to be SCAP cases, their admission was not reported to HAHO in accordance with the procedure promulgated in HAHO's memorandum dated 12 February 2003. However, KWH notified HAHO of the two cases on 3 March 2003 after their relationship with *AA* was established, even though *CC* was not diagnosed to be a SCAP case at that time[4]. Dr LUK also informed the Director (Professional Services and Public Affairs) of HA, Dr KO Wing-man, of the two cases on the same day.

2.17 Dr LUK held a meeting with the senior staff of KWH on 3 March 2003 to discuss the cases of *AA*, *CC* and her husband. A new alert and admission system was decided at the meeting under which patients admitted from AED would be placed in isolation facilities if they met the following criteria -

(a) SCAP cases requiring ventilation (i.e. intubation) or Community-Acquired Pneumonia cases under ICU care;

(b) SCAP cases with a history of travel to the Mainland, or a history of exposure to persons with severe pneumonia who had been in the Mainland; or

(c) SCAP cases with exposure to poultry.

[4] *CC* was, in fact, never diagnosed as a SARS case.

2.18 Dr LUK consulted the Convenor of TFIC and the Working Group on SCAP of HAHO, Dr LIU Shao-haei, by telephone on 4 March and 5 March 2003 on the arrangements of the new alert and admission system adopted in KWH. Dr LUK said that KWH would like to have more information about the practices in other hospitals and expert advice on the possible arrangement if all the isolation wards were full.

Contact tracing

2.19 On receipt of the report on 24 February 2003 on *AA*'s admission to KWH, DH sent a nurse, Ms BUT, to investigate the case. She was unable to interview *AA* because he had already been intubated by the time she turned up at KWH. The nurse rang *CC* who was a Hong Kong resident and enquired about *AA*'s contacts before his admission to KWH. In the course of contact tracing, the nurse identified five close contacts, namely, *AA*'s wife, *AA*'s daughter, *AA*'s son, *CC* and her husband. *AA*'s son returned to the Mainland on 23 February 2003 and *AA*'s wife and daughter returned on the following day. DH continued medical surveillance on *CC*, and contacted her by telephone every day, checking her conditions and giving her advice on precautionary measures. This, however, was discontinued from 28 February 2003 onwards when she refused to answer telephone calls from DH possibly because of disclosure of her personal data in media reports.

2.20 DH was notified on 3 March 2003 by HAHO of the admission of *CC* and her husband to KWH on 1 March and 28 February 2003 respectively. Ms BUT went to KWH immediately to interview both patients as part of the contact tracing work for which DH was responsible.

2.21 When recounting what actually happened in ICU on the day when *AA* was admitted, some witnesses considered it sheer luck that it was Dr WATT instead of the other medical officers who was on duty and gave instructions on how to handle *AA*. Dr WATT happened to walk past the nursing station in ICU when AED's request for transferring *AA* to ICU was received.

Analysis

Guidelines issued by the Head Office of the Hospital Authority to frontline healthcare workers

2.22 The Select Committee notes that while Dr CHOW was not aware of the memorandum on surveillance on SCAP issued by HAHO on 12 February 2003 or the FAQs on the Management of SCAP, Dr WU was aware of the memorandum.

2.23 The Select Committee observes that although HCWs were advised to wear surgical masks when they were within one metre of a patient in the memorandum on surveillance on SCAP issued on 12 February 2003, HCWs were only advised to wear a mask when working within three feet of patients in the FAQs on the Management of SCAP issued by the Working Group on SCAP between 21 February and 12 March 2003.

2.24 The Select Committee notes that Dr WU and the HCWs concerned wore paper masks when examining *AA*. When asked about her interpretation of the phrase "wear a mask" in the FAQs on the Management of SCAP, Dr HO, being an ICO, told the Select Committee that a mask used for droplet precautions could mean "N95 mask, surgical mask, or paper mask unless it is very thin", notwithstanding that the memorandum on surveillance on SCAP issued by HAHO on 12 February 2003 advised that surgical masks should be worn for droplet precautions. The Select Committee also notes that in one entry dated 24 February 2003 in the occurrence book of Ward 12A in the United Christian Hospital, HCWs were also advised to wear a paper mask or surgical mask.

2.25 Dr LIU, who was responsible for issuing such documents, explained to the Select Committee that any reference to a mask as a tool for infection control should be understood to mean surgical mask. It was not clearly specified in the FAQs on the Management of SCAP probably because no special attention was given to such details at that time. He admitted that, on reflection, the Working Group on SCAP could have done better with these details.

2.26 The Select Committee considers that the Working Group on SCAP which was responsible for giving guidance on infection control to all HCWs in HA should have specified clearly the types of PPE to be used in any guidelines issued to HCWs.

Implementation of infection control measures at the Kwong Wah Hospital

2.27 The Select Committee notes that guidelines on precautions when attending to patients in AED were not included in the FAQs on the Management of SCAP until 7 March 2003, and that it was only from 13 March 2003 onwards that all HCWs in AEDs were required to wear masks. Hence, the Triage Nurse did not put on any PPE when assessing *AA* and HCWs in AED wore paper masks when examining *AA* in the R Room. The Select Committee, however, notes that it was due to the alertness and professionalism of Dr WATT that *AA* was placed in the isolation room in ICU and all HCWs in ICU were instructed to take "airborne" and "standard" precautions when attending to *AA*. The Select Committee also notes that *CC* was placed in an isolation ward after her relationship with *AA* was established by Ms KWOK.

2.28 The Select Committee understands that it was said that KWH had been given prior warning of *AA*'s intention to seek treatment in the Hospital; hence precautionary measures had already been taken against possible infection on the arrival of *AA*. Given that HCWs in AED wore paper masks only and an isolation room had not been prepared for *AA*'s admission to ICU, the Select Committee has found no evidence to suggest that KWH had been given prior warning. The Select Committee believes that if *AA*'s purpose of coming to Hong Kong was to seek treatment here, he would have gone to a hospital as soon as he arrived instead of spending the first day of his arrival shopping and having dinner with his relatives.

2.29 It was also rumoured that the Sun Yat Sen University of Medical Sciences had tried to obtain information about the infecting agents of the then unknown disease from the healthcare sector in Hong Kong through *AA*'s admission to KWH. From the evidence obtained, the Select Committee's understanding is that the purpose of the visit made by the Medical Superintendent of the First Affiliated Hospital of the Sun Yat Sen University of

Medical Sciences and his two colleagues to Hong Kong was none other than paying their respect to an "old professor" belonging to the same university who was very ill. As a matter of fact, the three visitors did not make any follow-up enquiry after having obtained the results of the microbiological tests in respect of *AA*.

Monitoring system over contacts under medical surveillance

2.30 The Select Committee notes that the relationship between *AA* and *CC* was found out by chance and owed much to the initiative and alertness of Ms KWOK. Subsequently, precautionary measures were taken against possible infection among HCWs and other patients in KWH. This reflects that DH's medical surveillance system was not capable of alerting hospitals to the admission of contacts under medical surveillance and, as a result, timely precautionary measures could not have been taken.

2.31 The Select Committee notes that after establishing the linkage of *CC* and her husband with *AA*, *CC* was put in an isolation room, and Dr HO interviewed *CC* to obtain information on her and on *AA*. Furthermore, Dr LUK took the initiative to hold a meeting with his senior staff on 3 March 2003 to discuss the cases of *AA*, *CC* and her husband. A new alert and admission system was decided at the meeting under which patients admitted from AED who met certain criteria would be placed in isolation facilities. The Select Committee is of the view that these actions taken by KWH are commendable, having regard to the fact that nothing much about the disease was known at that time.

Performance and accountability

2.32 The Select Committee wishes to compliment Dr LUK Che-chung for taking prompt actions as HCE of KWH after the linkage of *CC* and her husband with *AA* was established, as discussed in paragraphs 2.16 to 2.18 above.

2.33 The Select Committee also commends Dr WATT Chi-leung for his alertness. The Select Committee considers that Dr WATT's vigilance had contributed to the prevention of HCWs in ICU in KWH from being infected.