

### The Declining Phase of the Epidemic

3.111 The SARS epidemic in Hong Kong started with the outbreak in Prince of Wales Hospital and peaked with the community outbreak in Amoy Gardens. After that, the epidemic went into a declining phase – slowly in the initial period and accelerated into terminal decline by mid-May.

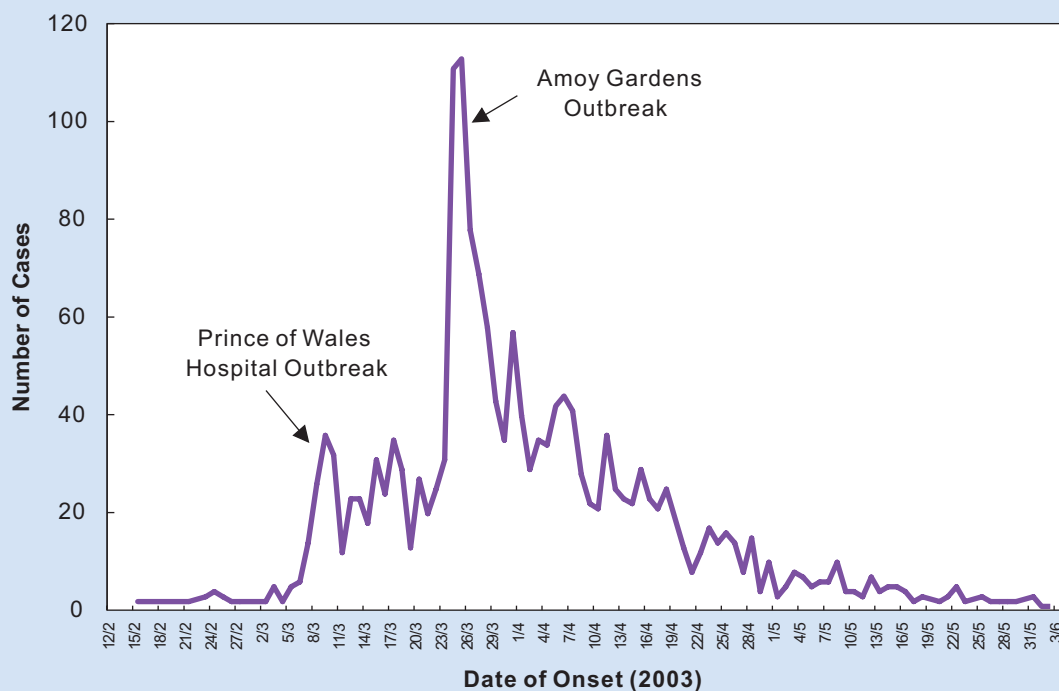
3.112 In the declining phase of the epidemic, there were a number of outbreaks affecting hospitals and housing estates or residential blocks. The scale, however, was much smaller than that of Prince of Wales Hospital or Amoy Gardens, a sign that the

series of public health control efforts were beginning to yield results. Below are brief accounts of the outbreaks in the declining phase of the SARS epidemic.

#### ***Outbreak in Alice Ho Miu Ling Nethersole Hospital***

3.113 Alice Ho Miu Ling Nethersole Hospital is a sister hospital of Prince of Wales Hospital in the New Territories East region. The closure of the accident and emergency department in Prince of Wales Hospital on 19.3.03 resulted in a large increase in workload in Alice Ho Miu Ling Nethersole Hospital. For instance, occupancy in its medical ward increased to over 120% at one stage. The outbreak in the

**Figure 3.16 SARS Cases in Hong Kong**  
Epidemic curve by date of onset



hospital occurred when some of its patients admitted with other medical problems later turned out to have SARS. The Alice Ho Miu Ling Nethersole Hospital outbreak was a large outbreak. It affected 40 staff, 75 patients, 17 visitors and 24 close contacts. Altogether, more than 900 discharged patients and visitors were put under medical surveillance by DH.

3.114 The outbreak in the hospital broke out in 5 wards. The first, involving an initial 5 healthcare workers, was identified on 31.3.03 and notified to DH on 1.4.03. Three other staff and 9 patients were soon taken ill. Outbreaks in other wards also emerged not long after, with the last reported on 15.4.03. Two of the index patients were surgical patients: one had been admitted with rectal bleeding and the other with abdominal pain and diarrhoea. The index patient with rectal bleeding was only identified after all patients in the same ward were screened using chest x-ray and lymphocyte count. He was found to have low lymphocyte count and chest x-ray haziness.

3.115 Apart from the patients with atypical presentation, additional contributing factors to the Alice Ho Miu Ling Nethersole Hospital outbreak included overwhelming workload following closure of the accident and emergency department at Prince of Wales Hospital, overcrowding in its wards, and insufficient isolation rooms.

3.116 One of the infection control measures taken at the hospital was to quarantine patients in the affected wards for 7 days. Those who refused quarantine were regarded as

### Atypical SARS

The typical presentations of SARS are fever, respiratory symptoms and chest x-ray changes of pneumonia. However, a proportion are “cryptic” cases, that is, they are not readily identifiable as they have atypical presentations such as absence of fever in the initial phase of the illness.

A number of cryptic cases are elderly or immuno-compromised patients with co-morbidities. They generally do not present with fever or lung infiltrates and are usually admitted with other diagnoses. In most instances, they are only identified as SARS cases through contact tracing or by diagnostic laboratory tests.

It is probable that the symptoms of elderly and chronically ill patients with SARS have been masked or muddled by medications and co-morbidity. For example, medications for ischaemic heart disease and stroke could suppress fever; patients with chronic lung diseases and congestive heart failure generally present with respiratory symptoms, and old tuberculosis could obscure chest x-ray findings.

It has been reported that the incubation period for elderly SARS patients could be as long as 14 days. While fever is present in 90% of SARS patients aged 65 years or less, only 76% of the elderly SARS patients present with fever.

discharged against medical advice and were instructed to attend DH’s designated medical centres for medical surveillance.

3.117 When the first affected ward was vacated for cleansing, 14 of its patients not thought to be infected were transferred to Tai Po Hospital for convalescence and continued

quarantine on 3.4.03. Unfortunately, some of these exposed patients subsequently became SARS cases and triggered an outbreak in Tai Po Hospital.

### ***Outbreak in Tai Po Hospital***

3.118 Tai Po Hospital is a convalescent and rehabilitation hospital adjacent to Alice Ho Miu Ling Nethersole Hospital. On 3.4.03, it received 14 patients from its neighboring hospital for convalescence. On 23.4.03, DH was notified that 2 staff and 15 patients from different wards of Tai Po Hospital had developed SARS symptoms. A total of 37 individuals, comprising 3 staff, 29 patients, 3 visitors and 2 close contacts, were eventually found to have SARS. Altogether, 143 contacts were traced.

### ***Outbreak in United Christian Hospital***

3.119 United Christian Hospital was the first to bring to light the Amoy Gardens outbreak after its notification to DH on 26.3.03 that it had admitted 15 cases from the housing estate. Scores of Amoy Gardens residents continued to be admitted to the hospital over the next few days. By the time Princess Margaret Hospital began receiving all new cases on 29.3.03, United Christian Hospital had already admitted more than 100 suspected and confirmed cases from the community outbreak. Around the time that Princess Margaret Hospital ceased receiving new referrals from other hospitals on 7.4.03, United Christian Hospital was managing around 150 SARS cases.

**Figure 3.17 Distribution of outbreaks in hospitals during the declining phase of the epidemic**



3.120 The outbreak in United Christian Hospital was identified and reported to DH on 2.4.03. Of the 26 staff infected between 31.3.03 and 20.4.03, only 5 worked in SARS wards. The source of infection was traced to 3 patients, two of whom lived in Amoy Gardens, and were admitted with non-SARS diagnoses. One of them presented with fever and loin pain, one with mental confusion and the other was a terminal lung cancer patient with little fever. On 6.4.03, the hospital closed all medical admissions, which later resumed on 14.4.03.

#### ***Outbreak in Caritas Medical Centre***

3.121 Caritas Medical Centre notified DH on 23.4.03 that two of its healthcare workers were infected. Investigations showed that the infection had spread to the nursing quarters in the vicinity of the hospital. Altogether, 24 cases were detected, including 9 healthcare workers and 15 patients. The index case was a healthcare worker who had probably contracted the disease outside the hospital.

#### ***Outbreak in Tuen Mun Hospital***

3.122 An outbreak among healthcare workers in a medical and geriatric ward in Tuen Mun Hospital was reported to DH on 27.4.03. This infection cluster subsequently involved a total of 16 cases, including 5 staff, 10 patients and a visitor. The onset dates were between 18.4.03 and 21.5.03. The source of infection was traced to two patients with atypical presentations. The total number of contacts eventually traced amounted to 250.

#### ***Outbreak in Baptist Hospital***

3.123 After sustaining an outbreak in March, the private Baptist Hospital had a second outbreak in mid-April. The second outbreak was notified to DH on 2.5.03. A total of 13 cases were involved, comprising 2 nurses, 6 patients and 5 family contacts. The source of infection was traced to two patients with no exposure history. The hospital board subsequently commissioned an independent inquiry on the management's handling of the outbreak.

#### ***Outbreak in North District Hospital***

3.124 North District Hospital is located in the New Territories East Cluster, together with Prince of Wales Hospital and Alice Ho Miu Ling Nethersole Hospital. The policy of the New Territories East Cluster was to keep North District Hospital SARS-free. The hospital had a clear cohorting policy. All patients suspected to have SARS were placed in isolation rooms, and were then transferred to Prince of Wales Hospital or Alice Ho Miu Ling Nethersole Hospital as soon as a diagnosis of SARS diagnosis was made. Fever patients were admitted to the infection triage wards while non-fever medical patients were admitted directly to the general medical wards.

3.125 Notwithstanding these efforts, SARS infections involving 3 ward staff were reported to DH on 24.5.03. The outbreak eventually affected a total of 18 persons, comprising 4 staff, 11 patients and 3 close contacts. The source of infection was traced to two ward patients with atypical presentations. Altogether 780 contacts were traced.

### ***Outbreak in Koway Court***

3.126 Koway Court is a private housing estate located in the Eastern District on the Hong Kong Island. One of its residents was diagnosed with SARS on 5.4.03. On 9.4.03, DH was notified by Pamela Youde Nethersole Eastern Hospital that 3 other residents of the housing estate had been admitted with suspected SARS.

3.127 Upon receiving the notification, DH visited Koway Court and interviewed all the residents of the affected building. With experience gained from the Amoy Gardens outbreak, the residents were advised to fill up the U-traps and to disinfect their flats. The building management was also advised to step up cleansing and disinfection of common areas, including the shopping arcade below the podium. Environmental swabs and water samples were collected from both the affected and non-affected units as well as common areas. All were tested negative for coronavirus.

3.128 The source of infection was subsequently traced to a resident who had probably contracted the disease from the Ngau Tau Kok Lower Estate next to Amoy Gardens. A total of 12 cases were tallied at the end of the Koway Court outbreak, with onset dates between 25.3.03 and 12.4.03.

### ***Outbreak in Hing Tung House***

3.129 Hing Tung House is a housing block of the Tung Tau Estate, a public housing estate situated in the Wong Tai Sin District of Kowloon. On 20.4.03, DH identified a cluster of 6 cases

in the building, with onset dates between 2.4.03 and 12.4.03. Four of the cases had come from a single family.

3.130 Both affected and non-affected households were closely monitored by door-to-door interviews and daily telephone follow-up. The Multi-disciplinary Response Team led by DH conducted environmental investigations, paying special attention to U-traps and soil stacks. Disinfestations were also carried out by the Team. No further SARS cases were detected from the Hing Tung House outbreak.

### ***Outbreak in Wing Shui House***

3.131 Between 22.4.03 and 28.4.03, DH became aware that 3 cases had come from two units in Wing Shui House of the public Lek Yuen Estate in the Shatin District. The date of symptom onset of the index case was 17.4.03. A total of 12 residents were eventually found to be infected.

3.132 Field investigations by the Multi-disciplinary Response Team had found no evidence of environmental factors being involved in the spread of the outbreak. As a precautionary measure, common areas in the housing estate and all units in Wing Shui House were thoroughly disinfected and disinfested by the Team. The importance of personal hygiene was also emphasised.

## End of the Epidemic

3.133 After the implementation of a series of public health control measures and precautionary measures taken at all levels of society, focusing on personal and environmental hygiene, the number of new cases showed steep reduction by late April. On 4.5.03, the daily number of new cases fell below 10 for the first time. From 16.5.03 onwards, the daily number further fell to below 5.

3.134 WHO lifted the travel advisory against Hong Kong on 23.5.03 after its imposition for nearly two months since 2.4.03. Hong Kong was eventually taken off the SARS list on 23.6.03, a month after the lifting of WHO's travel advisory. At the conclusion of the epidemic in Hong Kong, there were 1,755 cases of SARS, with 300 deaths. Among those who had passed away were 8 healthcare workers, 6 of whom from public hospitals and 2 were private doctors.