



SARS and MOH (Part 6)

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Editorial note:

The following article was submitted on 5 August 2003. Contents are current at the time of submission.

On 22 February 2003, in the *British Medical Journal* (*BMJ*), page 416, was a report titled: "Pneumonia causes panic in Guangdong province." It mentioned a serious pneumonia epidemic that seized people with fear and there were already eight deaths. During the first week of February, the public became aware of a mysterious respiratory illness, which apparently had a very high mortality and caused death within hours. Symptoms included cough, fever and breathing difficulty. An epidemic of rumours began as there was a notable absence of public statements and official information. The media was unable to communicate much. The timing coincided with Chinese New Year and a week-long public holiday. So people spread their fears and newfound information by telephone, mobile phone, text messages, e-mail and word-of-mouth.

What were these rumours? One, the condition had no apparent cure but vapourising white vinegar would help kill the infective agent. So there was a dramatic increase in sales of white vinegar, cold and flu preparations, and Chinese herbal tea. Prices increased by up to 12 times the original price. Two, people wore protective facemasks, avoided crowded restaurants and other crowded places. Any mask it seems would do. There was economic damage. Three, many of the victims of the illness were hospital staff and a number of them had died. As a result, outpatient departments almost emptied. Four, 100 people had been struck by the mystery illness at the World Trade Centre building in the middle of Guangzhou. The centre's management responded by disinfecting the whole building and they subsequently vapourised white vinegar through its ventilation system.

On 11 February 2003, an official statement was made by the Guangdong Department of Health. The officials announced that the first case had occurred in November 2002, but as it was common for influenza-like infections to afflict the community in the winter months, there had been no undue concern. As of 22 February, there had been 345 cases in eight cities throughout Guangdong, which has a population of 80 million.

These were the early days of SARS, as yet unnamed, and as yet an unknown disease. However, just as this report in the *BMJ* surfaced on 22 February, three Singaporeans had travelled to Hong Kong and been guests at Hotel Metropole in Kowloon on 20 and 21 February, coinciding with the stay of a doctor who had SARS (who later died in Hong Kong on 4 March), and who transmitted the disease to at least 13 guests. The three became the first Singaporean victims of SARS, travelled home and got themselves warded in hospital

(Singapore General Hospital and Tan Tock Seng Hospital) in March. On 6 March, Ministry of Health (MOH) was notified about the three persons. On 14 March, MOH was notified about another six persons, including two healthcare workers (HCWs) who were admitted to Tan Tock Seng Hospital (TTSH) for atypical pneumonia. All had close contact with the first case who had returned from Hong Kong.

On 20 March, Singapore joined the list of countries affected by SARS – China, Hong Kong, Toronto and Vietnam. On 22 March, MOH designated TTSH/CDC the hospital for the intake and solitary isolation of all suspect and probable SARS cases. On 24 March, MOH invoked the Infectious Diseases Act to quarantine all contacts who had been exposed to SARS patients. On 24 April, the Infectious Diseases Act was amended for violators of the Act to face increased penalties. This was the result of an outbreak at the Pasir Panjang Wholesale Centre on 20 April.

The World Health Organisation (WHO) on 6 March 2003 issued an alert on an outbreak of atypical pneumonia among healthcare workers in a hospital in Hanoi. On 12 March, it issued a global alert on an emerging infectious disease characterised by fever and atypical pneumonia. On 31 May, Singapore was declared free of SARS, after six people imported the disease to Singapore between 25 February and 29 April, all of whom had visited Hong Kong (including Guangdong in two cases, and Beijing in one case). Three of the cases were imported before this new disease was known, and the patients were admitted to hospital a mean of four days after the onset of symptoms, and placed in isolation six days later. One of these cases resulted in extensive secondary transmission ("super spreader") in Singapore.

With this backdrop on the early days of SARS in Singapore and its containment to hospitals, until 20 April when the market became a site of disease transmission also, and then onto 11 May when the last case was notified (thus making 31 May our SARS-free date i.e. two incubation periods totalling 20 days), let us discuss how MOH dealt with this biological attack.

ACCOLADES

"And investor confidence in the capabilities of Singapore ministers in managing unexpected difficulties has increased after they watched how we handled the SARS crisis." – SM Lee Kuan Yew. (*Straits Times*, 24 July 2003, pg 17, col 1-8.)

"To contain the spread of SARS, the government in Singapore authorised comprehensive measures; real-time flow of information through a dedicated website; temperature checks twice daily at home and in the workplace; thermal screening of all travellers at terminals; triage centres outside the entrances to hospitals for temperature checks to identify and separate SARS patients; and meticulous contact tracing and home quarantine of those exposed to SARS. These measures

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worked because Singaporeans trusted their government and complied with rules to combat the spread of SARS." – SM Lee Kuan Yew. (*Straits Times*, 26 July 2003, pg 30, col 2-5.)

"Hng Kiang, you and your team have done a tremendous job under very trying circumstances. Thank you." – PM Goh Chok Tong. (*Straits Times*, 23 July 2003, pg 1, col 1-7.)

"Experts polled give Singapore healthcare top marks." This was the headline in *Straits Times* on 14 April, quoting an article from *AFP* and *NYT*. The survey was carried out by Hong Kong based Perc and followed a report that the American State Department did not, in the face of SARS, evacuate officials from its diplomatic mission in Singapore because of the quality of the country's medical care (pg 3, col 4-6). The survey said the SARS outbreak was a "stress-test" for the region's medical system. Of all the Asian countries, expatriates in Singapore expressed the greatest degree of confidence in the medical system's ability to treat major illness. A considerable distance behind Singapore were Japan and Hong Kong. Singapore was however, behind the United States, Britain and Australia.

"US businesses praise Singapore's efforts." (*Today*, 25 April 2003, pg 8.) This report stated that US businesses in Singapore endorsed the extraordinary measures taken by the government to contain the spread of the SARS virus. The American Chamber of Commerce said in a statement that it would communicate all details of Singapore's efforts to its global network as well as to US government agencies to guide corporate travel policy. The Chairman of the Chamber of Commerce said, "Singapore has taken a leadership role globally in the fight against SARS and its approach is a model to be adopted by other countries." The Chamber said Singapore should be recognised for a "robust, highly coordinated and proactive strategy" to contain the outbreak, including the closing of schools, home quarantines and prompt tracking of the transmission chain. It praised the "open and transparent approach towards release of information about SARS", efforts to reach out to the community and business sectors, and willingness to work with international healthcare authorities.

"BBC hails Singapore Government action." (*Straits Times*, 27 April 2003, pg 3.) Singapore was praised by a BBC primetime television news programme for having "the toughest measures in the world" to halt the spread of SARS. The BBC said that Singapore was "even trying to block the virus from leaving the country". The programme also carried an interview with Dr Ali Khan of the WHO, in which he praised the Republic's efforts in fighting the spread of the disease. "I think the Singapore government has done an excellent job and I really would not characterise it as draconian. I would say they have put in state of the art public health measures with complete transparency." Final words from the BBC were "Authoritarian, maybe, but it might just beat this alarming virus."

The European and British Chambers of Commerce added their praise for the Singapore government's transparent and proactive handling of the SARS outbreak, saying that if anyone could contain the virus, Singapore could. (*Straits Times*, 30 April

2003, pg 4, col 6-7.) Both Chambers believed that the way in which the Singapore authorities and the people had dealt with the crisis to date, clearly demonstrated that Singapore deserved a renewed vote of confidence from foreign investors in years to come.

On 16 May, in the *Straits Times* front page, is a headline: "Singapore's rapid response to virus boosts credit rating." It stated that Singapore's swift handling of the SARS outbreak had helped it win a triple A rating, the highest level from global financial ratings agency Fitch. It described the speed with which Singapore confronted and isolated the outbreak as "impressive." It also noted that the outbreak had hit consumer and business confidence hard, depressing tourism and forestalling continued recovery. It also cut Singapore's 2003 growth forecast from close to four per cent to around two per cent.

THE MINISTER SAID

"We will see more cases in ICU, this is a natural progression. The message for Singaporeans is, this is going to be quite a long haul. It is not something for which you can declare victory in a matter of days, or one or two weeks." (*Straits Times*, 25 March 2003, pg 2, col 3-4.) (As of 24 March, the number of SARS cases stood at 65, with 12 in critical condition.)

"Some are taking it a little too complacently and some are extremely concerned. Those who are taking it complacently may say, 'Look, if I'm feverish, it doesn't matter. I still go to work, I still send my children to school.' That is irresponsible and selfish. The only way we can handle this crisis is if everybody works together." (*Weekend TODAY*, 29-30 March 2003, pg 4, col 1-5.) (At this time, the fourth index case had reached Singapore and she caused a scare by taking a taxi from Changi Airport to Singapore General Hospital after arriving home from Beijing on flight CZ 355.)

"The disease is more infectious than we thought." (*The New Paper*, 31 March 2003.) (At this time, the third patient had died and the term "super infector" was revealed to the public. There were three "super infectors" who each had spread the bug to about 20 people. "A super infector is one who is a good host of the virus and hence is much more infectious than others.")

THE INCOMING ACTING MINISTER SAID

"We are leaving no stones unturned to make sure that no cases would have slipped out of the hospital into the community.... In a few weeks' time, we will begin to cross into yellow. But the important thing is, if we need to turn orange or red again, we know what to do. Of course, a true stand down situation is green but that's when the world is declared, really completely, SARS-free... A lot of scientists are worried that winter will bring an outbreak. So we cannot assume that the victory is complete. Until we go through that, we can never be sure." (*Straits Times*, 9 July 2003, pg H1, col 2-7.)

"If tomorrow we're hit by a serious virus that is airborne, I think we're not ready... We're lucky that SARS has helped us identify major areas of weaknesses: It allowed us to zero in on those areas of weaknesses. Those are the areas we will have

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to fix. (This referred to the shortage of isolation rooms and facilities.) We're tightened up for a SARS-like infection. That's not a problem."

"But it couldn't have been helped. We had no choice. It was an unpleasant decision, for the larger good of everybody. It had to be done." (He was referring to the ban on hospital visitors, as a result of which the thousands of non-SARS patients who were cooped up in their rooms were miserable.)

"The relatives may get infected, and then we have another casualty. What for?" (This referred to the very unpleasant decision to ban physical contact between SARS patients and their relatives, even in the last hours of those who died.)

(Note: Above quotes are from "We should thank our lucky Sars", *The New Paper*, 20 July 2003, pg 2-3.)

MISSION STATEMENT

As you enter the College of Medicine Building and reach the red-carpeted staircase, overhead you will see a banner proclaiming the MOH mission statement: "Developing the World's most effective healthcare system to keep Singaporeans in good health." When SARS hit Singapore, did MOH live up to this?

It is always easy to say, "too little, too late", and "fast, but not fast enough", when trying to assess the performance of MOH in its handling of the SARS crisis. Yes, its mission statement is very clear about its objectives. Were 33 deaths too many? Were 206 infected too many? Could we have done just as well with less draconian measures? I will not attempt any answers. What MOH has done is clear for us to see. If there are suggestions on how to do even better, I am sure MOH would value your insights and feedback directly to the people who matter. Their email addresses are public knowledge.

SARS DEBATE 28 MARCH 2003

In *The New Paper* front page was the headline: "Is Singapore handling outbreak well?" That was just six days after the crucial announcement that TTSH was SARS central. That meant emptying TTSH of all its patients who were deemed well enough to be discharged. This, as subsequent events showed, led to cases sprouting up in Changi General Hospital (CGH), Singapore General Hospital (SGH) and National University Hospital (NUH). In early April, there was this concern that patients moved from TTSH could have carried the disease to other hospitals even though they showed no symptoms of it. This was especially the case if they suffered other medical/surgical illness that led to atypical presentations of SARS. But on 22 March, could we have known that? No diagnostic kit or PCR for SARS was yet available. The WHO definitions of probable and suspect cases were entirely clinical.

As reported, the debate had two sides. One said MOH and the Ministry of Education (MOE) were doing a decent job keeping on top of the SARS outbreak. Just two days before, MOH and MOE announced that all schools up to Junior College level would be closed – a dramatic turn around. "So whatever date

is chosen to close the schools, someone will say it's too early, someone will say it's too late... There's no straight answer. I don't think for one moment that whoever had to decide to close schools did it lightly." – AA President Gerard Ee.

On the other hand, Nominated Member of Parliament P Chandra Mohan Nair was reported as having said, that from day one until now, more information could have been disseminated to the public. The MOH and MOE should have been less paternalistic. He figured that the paternalism was well-meaning but said it was misplaced. "Probably the government does not want to alarm the world. So they don't disseminate as much information as some other countries would."

Of 10 Members of Parliament polled, none had anything negative to say about how MOH and MOE were handling the situation. However, it was reported that while MOH was not over-reacting, tertiary students felt that MOE was under-reacting to the situation.

SLOW INFORMATION? SLOW ACTION?

On 7 April, the *Straits Times* on page 14, ran an article by Ms B Henson, its news editor, titled: "All the right moves for SARS but info's a bit slow, no?" At that time, all SARS cases were centralised at TTSH, and on 5 and 6 April, a cluster of febrile patients in two wards at SGH were being transferred to TTSH. When Ms Henson got wind of this, she asked the appropriate question at the MOH Press Conference on 4 April and received a negative answer. Then on 5 April, came the MOH press statement that a total of 20 nurses and one doctor in SGH from Wards 57 and 58 had developed fever. They were referred and were admitted to TTSH as suspected SARS cases. "The kindest thing I can say about this sudden announcement is that the Ministry gets its information later than the media." PM Goh, at the Istana on 6 April, stressed that the government will be transparent with information on the outbreak. He also cleared the air over the surprise SARS death at NUH on 31 March, and noted that the authorities had apologised for the "miscommunication." For a good two days, the Health Minister maintained that nobody knew about the woman's contact with SARS till the eve of her death. That was because although NUH knew, "it just forgot to tell him." Ms Henson's point is quick dissemination of information – and accurate information – is almost as important as transparency in a health emergency.

PM Goh's assessment of MOH at this time was that "given the circumstances, the Health Ministry has done well." Given the unknown nature of the virus, the Ministry could not be expected to have all the answers from the start. "So on the whole, I would say there will be room for us to do better as we learn more, but, on the whole, I think they have managed to contain the problem. They work very hard. The resources are stretched."

On 22 April, *TODAY* reported on its front pages: "Why the lengthy delay...Minister asked about SARS at Pasir Panjang." With fears of a cluster of SARS infections at the Pasir Panjang wholesale vegetable market looming, questions were being asked: Had the government been somewhat slow in taking action? Should not the market have been closed earlier, and not

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at least 10 days after the vegetable wholesaler who started the infections was diagnosed with SARS? However, the Minister did not give a direct answer. He said contact tracing had been done. And he appealed thus, "This is very difficult work. Please give my men a chance. They are not detectives." His appeal underlined the extent of the spread of SARS within the community, a departure from the earlier trend when most SARS transmissions occurred within the healthcare setting, or within the patients' family network, usually within homes.

On 1 May, an analysis written by a *Straits Times* senior writer (pg 29) was titled: "Close info gap to kill those SARS rumours." Three instances were cited where the writer felt the gap was left open. The first concerned the taxi driver who ferried a case from Changi Airport to SGH. The question was: after a taxi driver did come forward, was he the one actively involved? The second was the woman from China who vanished from the CDC. The questions were: Is she still at large? If she is, how can that happen? Were the authorities shackled, or worse, did departmental bureaucracy trip them up? Was the hunt left to the police or the Health Ministry's Inspectors? Was a concerted effort mounted to locate her? And the last case was the Pasir Panjang market wholesaler. "But the health officials saw no need at first to check the market, because they were told he did not mingle very much with people there. Still, he infected the taxi driver who had ferried him and his wife from their flat to the market. But what really happened here? The information gap needs to be closed. Then, and only then, can we kill the rumours that feed people's fears."

SARS TASK FORCE

On 7 April, the *Straits Times* front page was headlined: "High level task force for SARS." It was a report on PM Goh's meeting with journalists at the Istana the day before, to explain Singapore's approach to tackling SARS. This happened in retrospect to be about the midpoint of the epidemic as there were 106 cases (with six dead). (The final number was 206 infected, with 33 deaths.) The ministerial task force was headed by Home Affairs Minister, with other Ministers from Health, Education, National Development and Manpower as members. Four junior members were also appointed to the Committee – two doctors, Dr Ng EH and Dr B Sadasivan, as well as two Senior Ministers of State, Mr T Shanmugaratnam and Mr Khaw BW. Their job was to find answers to "what if" questions, anticipate the worst case scenarios, and have contingency plans.

SARS COMBAT UNIT

The Ministerial SARS Combat Unit (MSCU) was formed to deal with a worsening situation and the government was pouring its resources into fighting the disease in hospitals where it had created the most trouble. It was led by Mr Khaw BW, incoming Acting Health Minister from 1 August 2003, and three other doctors, all Ministers of State. Each had hospitals under their charge as follows: Dr V Balakrishnan (SGH), Dr B Sadasivan

(KK Women's and Children's Hospital, CGH and TTSH), Dr Ng EH (private hospitals) and Mr Khaw (NUH and Alexandra Hospital.) Unfortunately, Institute of Mental Health (IMH) was left out in the cold. Mr Khaw said the priority was to bring down hospital infections and eventually eliminate them. The first task was to protect hospital workers and raise "Site Infection Control in all hospitals to as high a standard as possible." The next step was to detect SARS victims as quickly as possible and transport them to TTSH to be isolated. (*The New Paper*, 20 April 2003, pg 2.) As this was happening in Singapore, China had sacked its Health Minister. (*Straits Times*, 21 April 2003.)

And in Singapore, TTSH as SARS central was doing its job very well. There was no cross-infection in its SARS ward for the past five weeks, and none in its non-SARS wards for three weeks.

MOH POWERS

MOH too has its SARS task force comprising senior staff (doctors and administrators) of public hospitals. It is chaired by the Director of Medical Services (DMS). It started functioning in the middle of March 2003. Later, the private hospital officials were also invited to sit in. It also had various representatives from WHO and from CDC. Chief of Medical Corps, Singapore Armed Forces (SAF) was also represented. It was necessary to mount a national response to this biological attack, as the virus respects no borders, no organisation, no rank or class of people. And any breach in the chain of defence means added stress to the system, added costs to the economy, and immeasurable suffering to many.

The Infectious Diseases Act (IDA) is the sole legislation under which MOH exercises its wide ranging powers. For measures deemed necessary but are not adequately covered in the Act or its regulations, MOH can go to Parliament and have these passed (as it did this time). Through the Act, the DMS issues directives to whosoever needs them, to ensure enforcement of the measures required. For example, directive 104/03 relates to SARS and Policy on Restricting Inter-Hospital movement of Health Care Workers. It is dated 3 June (after we were declared SARS-free), and this directive superseded that dated 19 April, and was to be read in conjunction with another dated 28 May relating to postings of Medical Officers, Registrars and House Officers (whose changeover normally on 2 May was delayed by the SARS outbreak). Another directive 108/03 relates to SARS and movement of non-SARS patients between acute care hospitals and institutions. It is dated 19 June, and superseded that dated 19 April on the inter-hospital transfer of inpatients, and that dated 23 April on the readmission policy on patients from SARS-exposed hospitals.

Of course, one of the most powerful orders is the Home Quarantine Order (HQO) issued to persons who are or are suspected to be cases or contacts of those with SARS. There are six types of HQOs, and for the DMS to execute them, he delegated powers to certain officials and I happened to be one of them. So each month, I received a letter from the DMS titled: "Appointment as Health Officer and Delegation of Powers under Section 4 of the Infectious Diseases Act (Cap 137)", whereupon I had power to isolate and detain persons at

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TTSH (section 15 (1)) and to issue HQOs to TTSH patients following their discharge (section 15 (2)).

Another important order under the Infectious Diseases Act was that relating to the “Disposal of bodies of persons who died while being, or suspected of being, cases or contacts of SARS”. Here, the DMS prohibited the conduct of wakes for certain categories of deceased persons. He also mandated that the body must not be embalmed, and cremation must take place immediately after the body had been prepared. However, burial was allowed only in cases where there was strong religious objection, e.g. where the deceased was a Muslim.

Yet another was the “No visitor” rule, which was implemented on 29 April, to prevent visitors from being infected while in a hospital. Of the 199 probable cases (including seven imported cases), 77.9% were infected in the healthcare setting. (*Straits Times*, 24 May 2003, pg 36, col 6-7.) Hospitals therefore made available other means of visitation like videoconference within the hospital, where the visitor, in a dedicated room, could communicate with the patient in his hospital bed. On 1 June, this rule at hospitals was lifted and each patient was allowed one visitor a day, who also had to be the same one, throughout his stay. However, the ban remained for adults hospitalised for SARS. (*Straits Times*, 31 May 2003, pg H4, col 1-3.) By late July, the rule was further relaxed to four registered visitors, but at any one time, only one could visit.

OTHER IMPORTANT ROLES

Internally, MOH must show leadership to the doctors, nurses and other healthcare professionals practising in Singapore. Communications top-down was tops. Many directives were issued, many press briefings were held, and press statements issued. The media had their fill of information, data and were given access to top officials to ask questions and clarify issues. What about the health professionals? For those in public institutions and large organisations, I suppose the MOH SARS task force did fulfill this aspect partly. But for the rest out there?

MOH had to coordinate the whole process involved in the administration of public health for Singapore. Initially, what was lacking was efficient and timely contact tracing. It was impossible for the hospitals with staff focused on patient care to do public health duties, which were extremely time-sensitive. It would be pointless tracing contacts if they had already spread the disease. So, I was glad to see a huge army of men deployed from the SAF for this purpose. This happened on 25 April, more than four weeks into the battle with SARS. At this point in time, the SARS statistics were 36 in hospital wards, 17 in ICU, 120 discharged, 19 dead, and the total number with SARS was 192.

Externally, MOH had to be concerned with tourists and travellers to and from Singapore. All entry and exit points had to be manned with healthcare staff. Initially, nurses were deployed, but again, I was glad when MINDEF took over this function. On 10 April, it was reported that 50 medics from the SAF were working with the polyclinic nurses to help screen passengers at Changi Airport. (*Straits Times*, 10 April 2003,

pg 9, col 4.) We do not have so many public health nurses to do such health checks and the polyclinics themselves are in need of clinical nurses.

Talking of checkpoints, it was good that direct links with Malaysia were established over the SARS issue, with PM as well as Minister for Health discussing concerns with their counterparts across the Straits.

Yet, the media tried many a time to blame Singapore for exporting SARS to Malaysia. For example, the MOH press release of 22 May in paragraph 6 states: “*The Star*, *New Straits Times*, *The Sun*, *Berita Harian* and *Utusan Malaysia* reported on 17 May that a 29-year-old Bangladeshi businessman at KLIA had a fever and a cough on arrival from Singapore on 14 May.” And in paragraph 8: “...he has since been diagnosed with dengue fever and not SARS...” Another example is from the press release of 28 May in paragraph 3: “*The Star* and *New Straits Times* reported on 5 May 2003 that a 35-year-old lorry driver from Negeri Sembilan, who had delivered scrap metal to Singapore, was a suspect SARS case.” And in paragraph 5: “...he did not have contact with any SARS patient in Singapore.” Paragraphs 6 to 9 then tell of a 22-year-old Malaysian woman, working as a cashier in the Ang Mo Kio Light Rapid Transit (LRT) station, who became ill on return home on 1 May, and that she had been in contact with a Singaporean friend with SARS who died on 24 April. The MOH’s investigations showed that no such person visited Singapore recently and there is also no record of such an employee. There is also no LRT station in Ang Mo Kio. *The Star* and *New Straits Times* further reported about an 85-year-old Singaporean man who visited Malaysia on 27 April, fell ill on 1 May and was warded as a probable SARS patient. MOH stated that in the end, his diagnosis was chronic bronchitis. And of course, media like *The Nation* and *Bangkok Post*, as well as *The Times of India*, also tried to “blame” us for exporting SARS to their countries.

It is only MOH that can set the rules for the behaviour of healthcare workers in Singapore. If one hospital tried to do so on its own, this was no guarantee the others would follow suit. Further, what is deemed the best practice for all aspects of SARS control and treatment should be applied across the board. Only MOH can tell private practitioners to stay put and practise from one location. Only MOH can direct that patients be transferred to TTSH, or from a hospital to a nursing home or to a community hospital. Only MOH can dictate that public transport not be used to ferry suspect SARS patients and those febrile in need of SARS screening, to TTSH from home, private doctors’ clinics or another hospital. And MOH did so.

LOSING THE BATTLE

On 22 March when TTSH was declared SARS central, a total of 44 people with SARS had been reported to MOH. On its website, MOH stated in paragraph 3: “Though the SARS situation in Singapore is contained, the MOH is stepping up precautionary measures to cut off secondary transmission especially among hospital staff and reduce risk of any community spread.” And a list of measures followed. Almost four weeks later on, the

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17 April MOH press release stated that there were a total of 171 cases, 15 deaths, and 61 still hospitalised. Then on 19 April, the total rose to 177, but of the five additional cases reported, one was a 45-year-old male who worked at Pasir Panjang Wholesale Centre. In the same press release, in paragraph 9 under the heading: "To prevent community spread of SARS", "The Prime Minister appealed to all Singaporeans to fully play their part in Total Defence against SARS. He said that we need to defend along three points. First, to prevent travellers from bringing the infection into Singapore. Second, to prevent infection in the hospitals. Third, to prevent community spread, for example by people under quarantine who break their quarantine."

"We have got to show in the weeks to come that we are on top of the problem...The stakes are very high. We cannot afford to fail." – PM Goh (*Sunday Times*, 20 April 2003, pg 1.)

As reported in *The New Paper* on 20 April, page 2, PM Goh had spoken with an urgency he had rarely betrayed before. If Singapore did not overcome SARS, it could become the worst crisis ever faced. The disease was taking away both lives and livelihoods. It had become a threat to Singapore's economy because of a "crisis of fear." "If we fail to contain SARS in Singapore, it may well become the worst crisis that our country has faced...but we can contain this problem...and if we succeed... life can be lived normally," said the PM. Singapore was losing up to \$1.5 billion this year because of SARS. "It is not just a crisis of SARS. It is a crisis of fear. People fear catching SARS, so the question is, how do we deal with the crisis of fear?" Tourists, investors and businessmen avoid SARS-hit countries. The feeling of safety must start from the time the tourist lands here. To achieve this aim, the region had to get its act together. Thus, the ASEAN summit on SARS was held in Bangkok on 29 April to share information and agree on cross border controls for implementation.

On 22 April, an unlikely event occurred. The Prime Minister of Singapore wrote an open letter to all Singaporeans and residents. Besides commenting on the HQO and non-cooperation by some with these orders, he also mentioned that "at the next Parliamentary sitting on 24 April, we will be putting through amendments to the Infectious Diseases Act. The amendments are to provide for composition fines so that those who break HQO can be fined without having to be charged in court. The amendments will also provide for jail terms for those who repeatedly break the Orders. Given the critical SARS situation, we will be putting through the amendments on a Certificate of Urgency which will allow all three readings of the Amendment Bill to be effected at the April 24 Parliament sitting." (*Streets*, 23 April 2003, pg 1.)

The situation was critical and it was felt that harsh measures were necessary to break the cycle of infection.

WINNING THE WAR

As I had alluded to earlier, it was not possible for MOH staff together with those in public institutions to execute the slew of

measures deemed essential. It was not a case of no power. The IDA gave MOH all the power, and if more power was required, the IDA could be amended; and it was amended on 24 April 2003. More manpower was urgently needed to deal with time-sensitive health matters. And this extra manpower did not reside in MOH. We were all fully over-stretched.

If you were to examine the organisation structure of MOH, you may be struck by the fact that its operational arm is very small. Yes, it can give orders but who will obey? Legislation without enforcement is next to useless. And to enforce compliance to the many orders and directives is a manpower intensive exercise. It cannot be automated fully nor allowed to run on autopilot.

On 25 April (over a month later from 22 March), that manpower arrived. It occupied the ground floor of the MOH. The operations room was set up in 48 hours and 160 soldiers were added to the team of 80 from the National Environment Agency and MOH. What was this 200 percent increase in work force for? Contact tracing. This was essential so that HQOs could be served in a timely and appropriate manner. It is difficult enough to remember what you did today, who you saw, where you went, and so on. How reliable could contact tracing be if you were asked three or four days later to recollect your activities and contacts over the last four days?

So Colonel Neo Kian Hong (he has since been promoted to Brigadier General), Commander of the 9th Division brought his merry men to form the "quarantine army", running the new centre of the country's operations, to get hold of every single person who had been in touch with a SARS patient. They worked in shifts from 7 am to 11 pm, and their sole objective was to trace within 24 hours (and this is vitally important) of receiving the name of a SARS patient, everyone who had been in close contact with him. This meant every name (and address – in order to serve the HQO) of every person that the SARS patient (be he highly suspect or probable) could remember having met from the time he took ill (and maybe even while he was incubating the illness the previous 10 days, unless we can be very sure when the infectious period started in each case).

The army came to the rescue when MOH realised its battle against time to trace the 2,000 people affected by the Pasir Panjang Wholesale Centre closure could not be won without reinforcements. For once SARS spreads through the community, we risk losing control of it, and will not be able to isolate and contain it. Despite help from the army, not everyone was found. Some illegal workers who were at the centre the night it closed (19 April) were identified. Others had just disappeared.

Said the MSCU chief, Mr Khaw, "We are on high alert at all borders, airport and so on but a few may slip through. The moment they slip through, we have to quickly be able to detect them, then immediately trace their contacts so that we can isolate them for observation in case a small percentage ... become patients. We are going to exploit the full capabilities of our network databases. We have school data banks

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and establishment data banks. We will be making use of that to help us speed up this business.” (*Sunday Times*, 4 May 2003, pg 19.)

Cisco, a private security firm, was given the list of names and addresses of those to be served HQOs. It sent guards to serve the orders and fixed the cameras for the twice-daily checks to make sure the affected people stayed at home.

At a meeting in Kuala Lumpur on 26 April, chaired by Malaysia, the regional Health Ministers from ASEAN, Japan, China and South Korea agreed to an unprecedented regional effort to halt SARS. Proposals included travel restrictions, screening for departing passengers at airports, seaports and river ports, health declarations, and so on. Further, they had even exchanged telephone numbers so that they could be instantly in touch. (*Straits Times*, 27 April 2003, pg 1.) These proposals met with approval by the national leaders at the regional summit in Bangkok on 29 April.

It was important that for victory to be achieved, both the home front and the whole region be SARS-free. All countries had to ensure that it was neither an exporter nor an importer of the SARS virus.

CONCLUSION

With all these measures and more, Singapore’s last SARS patient was diagnosed on 11 May 2003, and hence, after an incubation period of 20 days without new cases, we

were taken off the WHO list of SARS-affected countries on 31 May. Before that, came the SARS scare at IMH (it turned out to be an influenza, not SARS outbreak). We were not the first country WHO took off the SARS list. Hanoi, Vietnam was the first, on 28 April. Then came Toronto, Canada, only to suffer a relapse of SARS. It was off the list only on 2 July. Hong Kong on 23 June, and China on 24 June, became SARS-free. Taiwan came off the list last on 5 July. Does it matter? Are comparisons valid or worthwhile? Could we have spent less, or caused less misery, suffering and pain? Our SARS mortality of 32/206 (15.5%) compares with Toronto and Hong Kong, but far exceeds that of China (6.5%), Vietnam (7.9%) and Taiwan (12.4%.)

It would seem that I have mixed up MOH with the government in this article. All national health matters under government control are executed through the Ministry of Health. And so, whatever challenges faced by MOH are also brought to the attention of government for solutions, strategies and success stories. If anything, this crisis showed how MOH cannot stand alone.

All said and done, I would like to end by quoting DMS in his letter to all doctors, dated 18 July 2003. He wrote: “This time I am writing to thank you for your kind understanding and strong support and cooperation with the various measures that had to be instituted in our fight against SARS. I would also like to acknowledge the very important role which you have played in helping to contain SARS in Singapore.” ■