

## Lessons From the SARS Crisis – More Relevant Than Ever

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This issue of the *Annals* contains articles on the severe acute respiratory syndrome (SARS). One might wonder what else there is to write about SARS. There is already a glut of articles on SARS – type in the keyword “SARS” into Ovid and you will get more than 2400 references.

There are several reasons to add more articles on SARS to the literature. The most important one is that there is some local data describing the events of that difficult time still not published. The second reason is that because the epidemic is over, all analyses may be performed in a cool and detached fashion.

One might be surprised that there is still unpublished local data when we even have a book on those defining moments in Singapore!<sup>1</sup> Yet we urge you to read the articles by Leong et al<sup>2</sup> and by Chen et al.<sup>3</sup> The paper by Leong et al is late, very late indeed. The papers that first described the clinical characteristics of SARS were published in the heat of the epidemic.<sup>4-7</sup> But better late than never. And we would argue that it is a particularly useful publication, containing as it does, data from cases of SARS, the majority of which were confirmed by serology or polymerase chain reaction (PCR).

The early and much-quoted papers on the clinical features of SARS were based only on case definitions.<sup>4-7</sup> There is nothing wrong with this – epidemiologists have long relied on case definitions to investigate and control epidemics.<sup>8</sup> Many an epidemic has been described based on appropriate case definitions which permitted case ascertainment, the creation of an epidemic curve and the formulation of a hypothesis. In practical terms, documentation of outbreaks and their containment based on case definitions have allowed us to adopt and modify the disease control strategies used by the authors when we ourselves are faced with similar situations.

Yet case definitions have their limitations. Rainer et al<sup>9</sup> evaluated the World Health Organisation (WHO) case definition of SARS prospectively – their main outcome measure was the number of confirmed cases of SARS. They found that the overall accuracy of the WHO criteria was only 83%, the sensitivity was 26%, the specificity was 96%, and the negative predictive value was 86%.<sup>9</sup>

Hence there is value in a paper that bases its description of SARS on confirmed cases.

Reviewing the situation in a cool and detached manner is always valuable. This is of particular importance in the assessment of the various measures taken to control the epidemic. Singapore has been a favourite target of critics who frequently decry its social policies. In its battle against SARS, however, Singapore won much praise – this is summarised by Menon<sup>10</sup> in this issue. Interestingly, unpopular policies like the

home quarantine and a no-visitor rule for hospitals, for example, were widely implemented in SARS-affected countries.<sup>11</sup> We were not unique! To be precise, however, it was our risk communications strategies that won accolades.

Let us hence reflect on some of the more valuable lessons of the SARS epidemic. In this issue, Tan<sup>12</sup> (who was the Director of Medical Services during the SARS crisis and who chaired the Health Ministry’s SARS Taskforce) reflects on the usefulness of the various measures that were taken. The “wide-net” surveillance, isolation and quarantine policy, in retrospect, were responsible for the progressively earlier isolation of probable SARS cases as the outbreak progressed. But Tan admits that such a policy resulted in large numbers of individuals being put on surveillance or on quarantine, most of whom turned out not to have SARS. Whilst Menon speaks effusively of the thermal scanner (a Singaporean invention!), Tan notes that its yield was very low.<sup>10,12</sup> None of Singapore’s imported SARS cases were picked up by the screening. Indeed, Tan notes that the last imported SARS case was admitted to hospital on 2 April 2003, prior to the institution of temperature screening via thermal scanners at the airport.<sup>12</sup>

For those who wonder why we still had all those cases of SARS if all these effective and draconian measures were in place, the answer may be found in this issue also.

In a revealing and honest article, Chen et al describe how the patient from one of the affected wards of Tan Tock Seng Hospital (TTSH) seeded the Singapore General Hospital (SGH).<sup>3</sup> Like Gopalakrishna et al before them, these authors noted from their analyses that an early decision to stop all admissions to and discharges from TTSH would have averted the outbreak in SGH.<sup>3,13</sup> For those of us who cannot remember when that decision was taken, Chen et al reminds us that it was 22 March 2003. It might be distressing, but allow us to juxtapose the painful phrase “main missed opportunities” used by Chen et al with a few important dates mentioned by Chen et al and Tan.<sup>3,12</sup> Chen et al felt that 14 March 2003 represented a “missed” opportunity. Tan records that the requirement for passengers on inbound flights to Singapore to complete a Health Declaration Card commenced on 9 April 2003, and twice daily temperature monitoring in schools became mandatory on 30 April 2003.<sup>12</sup>

The lesson cannot be more obvious today, with our daily battles against multi-resistant organisms and our preparations for a possible influenza pandemic. Isolate early. Implement the “drastic” measure early.

How can this be done? After SARS, our restructured hospitals have built “isolation” wards. The analyses of Chen et al, as well

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as that of Oh and Lim,<sup>14</sup> suggest that early use of isolation might minimise the scale of an outbreak. But early implementation of drastic measures will lead to much inconvenience, even misery, for lots of people, many of whom will be “caught by the processes of surveillance, isolation and (perhaps) quarantine”, so starkly highlighted in this issue.<sup>12</sup>

Indeed, the hospitals’ post-SARS experiences with isolation wards have not been a happy one. Patients and their relatives as well as doctors and nurses do not like the discipline of the isolation wards. The isolation ward is never the doctors’ “parent” ward – it is therefore out of their way. When admitted to an isolation room, the patient is denied the freedom of walking about in the modern hospitals’ foyers and lobbies – replete with bookshops and cafes. Donning and doffing personal protective equipment (PPE) is a hassle that retards the pace of the doctors’ (and nurses’) frenzied lives. Visitor restrictions are an anachronism in an age where hospitals welcome customers and clients.

Hence it is obvious that, if early isolation is to become a reality, and if isolation is to be acceptable, some good public relations work to “sell” its benefits must be undertaken. Perhaps this is where another of Singapore’s successes during the SARS crisis – the much-vaunted excellence in “risk communications” – may play a role.

The administrator is therefore caught in a bind. Implement a drastic measure early, inconvenience many people, and then ... find that it’s all been a false alarm. Hence beyond the need to act early is the need for society as a whole to understand the nature of emerging diseases, to accept that a degree of damage is sometimes inevitable, and most important of all, to have the graciousness not to lay blame freely.

There is one thing that we could all take more notice of, and pay more than lip service to, in our daily lives. This is one thing that could reduce the impact of an easily-transmissible emerging disease. Infection Control. Chen et al illustrate beautifully how the widespread implementation of strict Infection Control procedures cut the rate of transmission of SARS dramatically.<sup>3</sup> Why did it take a new virus to make people sit up and take note of Infection Control? The modern hospital has been a hotbed of bugs. Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE) and penicillin-resistant *Streptococcus pneumoniae* (PRSP) – these acronyms predate SARS and constitute a hot soup in which clinicians have found themselves ever so frequently in their daily work. Surely we cannot rely on an epidemic to teach us what good behaviour is.

Hence, as we re-group to confront these daily scourges and to prepare for another epidemic, we should learn the lessons from the analyses that have been painstakingly performed by our colleagues. Gopalakrishna et al, Chen et al, and Oh and Lim are, in effect, pointing out that Infection Control is not just PPE. Indeed, as has been observed by more than one group, all the PPE during SARS was not associated with lower MRSA rates!<sup>11,15</sup> Infection Control should be a lifestyle, second nature for all doctors, nurses and other healthcare workers. Washing

hands before and after each patient contact should be a habit. Administrators should put Infection Control considerations high up in their agenda when they design new hospitals, plan new services or devise new ways to increase the efficiency of their hospitals. Maximising bed use, maximising the use of space, stretching staff ... not all the concepts of efficiency applicable in many spheres of human endeavour are appropriate for the general hospital. Indeed, overcrowding and rapid patient turnover have been associated with increased rates of MRSA infection (summarised in Cunningham et al).<sup>15</sup>

The articles in this issue are being published way after the dust has settled, when there is little rush to publish. They are honestly and conscientiously written. They encapsulate for us the lessons from the SARS crisis. For doctors and administrators – put Infection Control first in all your plans, and isolate early. For the rest of society – don’t always find fault, we’ll be a better Singapore for being gracious.

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