

# *Our Dance with SARS*

Dr. Jianlun coughed. The Chinese physician, sweating, coughing, wheezing, stood in a Hong Kong hotel elevator with two Canadians. In a few days all three travelers would be dead and, like a pit bull with a bone, a deadly new viral disease known as SARS would grab hold of the Canadian public health system.

## **Evolution**

Viruses evolve. Viral diseases, previously known to affect only animals, will periodically shift their genetic structure to broaden their host base – like a company taking on a new product to broaden its customer base. This genetic mutation is known as “antigen shift”, and in Guangzhou, Southern China, a city of 6.6 million people, a virus had shifted. It was initially thought that a new “Bird Flu” had emerged, caused by an avian influenza virus that had shifted to cause disease in humans. That was in November. By March the disease had traveled internationally, was no longer thought to be a bird flu, and had been renamed Severe Acute Respiratory Syndrome. In May the virus that causes SARS was positively identified as a new type of Coronavirus.

## **Questions, Questions**

Even before the disease came to Toronto from Hong Kong with the two Canadian travelers, the WHO was aware that SARS was a respiratory disease caused by an enveloped virus. But was it an airborne virus or droplet borne? How else could it be transmitted? How long did it survive on skin or on environmental surfaces? How many of these viruses would be necessary to cause infection (the infectious dose)? And the most immediate question for housekeepers and infection control practitioners, “How the heck do we stop it?”. In the early days, fighting SARS was like boxing with fog.

Dr. Syed Sattar, University of Ottawa Faculty of Medicine: *“Our understanding of the ability of the SARS agent to survive in the environment is still very rudimentary. The summary reports published by the World Health Organization, for example, are based on studies with fundamental differences in test methodologies, thus making their data difficult to interpret. Statements based on these studies can also be quite misleading. For instance, the virus may survive on an environmental surface for perhaps 24 hours, but this does not necessarily translate into a health risk for those touching such a surface or object. A better way to measure the risk is to determine: 1) how much infectivity the virus has lost during that period; 2) the amount of virus that can be acquired upon hand contact; 3) the likelihood of inoculating oneself or others with the minimum infectious dose of the virus.”*

## **Outbreak Management by Crisis**

As Marines were preparing their assault on Baghdad, the war was displaced from front pages of Canadian newspapers by Severe Acute Respiratory Syndrome. This was big news!! A tornado of e-mails and faxes whirled around in Canadian hospitals giving advice and direction – often contradictory direction. Every hospital in Ontario was

ordered to bar visitors. Gowned, gloved and masked healthcare workers, indistinguishable from one another, scurried about their work. Eventually some badly affected Toronto hospitals ordered full-face respirators for caregivers. Everyone who entered a hospital door, sometimes even workers who had just stepped outside for a smoke, were questioned to catch those who might have been exposed to SARS or who might have exposed others. Housekeepers in many Ontario and BC hospitals (the only 2 provinces to have active SARS cases to date), particularly in Toronto, cleaned as massively and intricately as they had in previous years to fight back Norwalk virus or VRE. Coronaviruses are known to be more resistant to germicides than many other enveloped viruses although they are still much more vulnerable than non-enveloped viruses like Norwalk, and can be killed by most low-level disinfectants.

### **Winners, Losers and Heroes**

Out every disaster emerge heroes, and winners, and losers. The SARS outbreak was no different. The list of losers could be very long, including those who became ill, the devastated travel and tourism industry and those poor sods who make their livelihood from it. But there are just as many winners - one businessman was heard to claim, “pestilence is profitable”. Some of the notable SARS winners, losers, and heroes . . .

Hero: The medical resident in Vancouver General Hospital who rapidly recognized the signs and symptoms of the disease and ordered the isolation of a symptomatic and infectious patient. No-one died from SARS in BC.

Loser: Hewlett Packard when they had to shut down a Toronto plant and send 300 workers into isolation for 10 days after a SARS-infected employee went to work despite a quarantine order.

Heroes: Frontline healthcare workers, particularly the doctors and nurses who put themselves in harm’s way, and worked around the clock to battle SARS.

Losers: Friends and family of front-line healthcare workers who shunned them during the SARS outbreak for fear of contracting the disease, permanently damaging many relationships.

Winners: Companies that manufacture or distribute N95 masks, alcohol hand sanitizer and other personal protective equipment. Hospital purchasers snapped up all the inventory they could get their hands on. Health Canada had to release their emergency reserve of tens of thousands of masks for use in Toronto.

Losers: Companies that unnecessarily increased the price of masks, to take advantage of desperate hospitals, companies that are now facing an angry backlash.

Winner: Virox Technologies Inc. that suddenly became very busy when the Ontario Ministry of Health recommended, that all EMS departments and fire departments use Virox-5 disinfectant to clean vehicles and equipment rather than bleach. Sales soared.

Losers: Influenza pandemics and bioterrorists – they will surely have a more limited impact now that Canadian healthcare facilities have a better idea of what a coordinated outbreak response actually looks like.

Losers: Politicians who remained absolutely silent and motionless during the worst of the SARS crisis except to take opportunistic snipes at each other. Much momentum was lost for federal Liberal leadership candidates and for a provincial government about to face an election in Ontario. After the SARS crisis, the Ontario Conservative government

announced that they intended to re-open a provincial microbiology lab that was closed just months earlier even in the not-so-distant wake of the Walkerton water tragedy.

*Hero:* Dr. Don Low, the public face and voice of the battle against SARS. Ironically, Dr. Low was in Hong Kong at the same time as Dr. Jianlun, although at a different hotel, and returned home the very same day as the Canadian travelers who brought SARS to Toronto.

*Winner:* Hand hygiene was widely and aggressively promoted during the outbreak and became a societal expectation.

### **What We Learned**

From the SARS experience we can take some clear learnings. 1. Infection control is not just a local issue - new or deadly diseases are just a few hours away from anywhere on earth. Global surveillance, including local surveillance, is more important than ever. 2. Hospital housekeeping, the favorite whipping boy of budget cutters, is an integral part of hospital infection control, second only to hand hygiene, and must be adequately supported. 3. The open-door policy of Canadian hospitals needs some tightening, if only to keep the visitor capacity to a reasonable level. 4. Lastly, more work needs to be done to improve readiness for the next microbial attack. Canada has some of the most talented and dedicated healthcare professionals in the world, and with a bit of effort and expense up front, we can be global leaders in our mental, financial, and organizational preparedness, and save ourselves the pain and expense of another SARS – or worse.