

The Hong Kong Experience
By Gunnar J. Kuepper
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The Severe Acute Respiratory Syndrome (SARS) may be caused by a virus that is more infective than was initially thought. A sudden cluster of atypical, pneumonia-like infections in Hong Kong, which accounts for nearly a third of the more than 2,100 cases worldwide, has sparked these worries.

SARS has been blamed on a newly emerged strain of coronavirus, which is the same family that causes some of the common colds. Coronaviruses form a large family of RNA viruses responsible for respiratory, enteric, and neurologic diseases in humans and domestic animals. The genomes of coronaviruses are the largest mature RNA molecules, making their genetic manipulation unapproachable by standard techniques. Another virus from the family of paramyxovirus has been found in some samples taken from patients and may also play a role.

Until now, the sketchy data suggested the pathogen is not highly contagious, unlike the flu virus, for instance, which infects people quickly and efficiently. Despite the outbreak all over the globe, hotspots in the epidemic seemed to be within an "inner circle" comprised of victims, health workers caring for them, and close relatives of the victims. Public health experts thought that SARS is most likely spread when someone sick with the disease coughs droplets into the air and someone else breathes them in. It is also possible that SARS can spread by touching objects that have become contaminated.

These assumptions may change, however.

The Amoy Gardens Apartment Experience

David Heymann, head of the WHO's communicable diseases unit, stated that the SARS outbreak may have taken a new form, referring to a cluster of cases in Block E of the 35-storey Amoy Gardens apartment complex in Hong Kong's Kowloon district. Approximately 15,000 people live in the complex, which consists of more than 5,300 apartments. Block E is one of 19 high-rise buildings; each one is 35 stories tall and has 8 units on each floor.

More than 200 residents have come down with SARS symptoms, initially prompting officials to quarantine the complex. Later in the same day, more than 240 people were transported into isolation in two government-run holiday camps. It is believed that numerous residents fled the building before being forcibly placed under quarantine.

Not only were the family members and friends of SARS victims contracting the

disease, but other residents of Amoy Gardens were becoming ill, having nothing more in common with their neighbors than living in the same apartment complex. Vertical transmission like this has sparked worries that the agent could be spread by touch; inhaled at some distance via fine airborne droplets; or possibly water-borne, carried in waste-water pipes for instance.

Antoine Danchin, a microbiologist and head of the Pasteur Institute's research unit at Hong Kong University, said the Kowloon cluster showed SARS could spread "at the same rate of a simple cold virus, the difference of course being that the symptoms are far worse." He noted that coronaviruses can survive outside the body for two or three hours.

If this is the case, the virus could linger on surfaces such as lift buttons or door handles and then be picked up on the fingers of a healthy person, Dr. Danchin said. "Most people rub their face or their eyes or touch their nose or mouth. Billions of viruses can be carried on the hands or fingers. This is how it spreads beyond the circle of health care-givers."

This illustrates the need to wash one's hands regularly. Hong Kong, because of its dense population, may run a greater risk of transmission than other less crowded locations. According to Danchin, if the virus turns out to be temperature-sensitive, its spread may be halted by the coming of warmer weather.

Study in the New England Journal of Medicine

A study by Toronto physicians who investigated the first 10 Canadian SARS cases was in the New England Journal of Medicine (NEJM). It states that "droplet secretions or direct or indirect contact" were the most likely modes of transmission.

A team of University of Hong Kong doctors highlighted one of the most baffling aspects of SARS; some people fall ill after seemingly minor contact with an infected person, while others more closely exposed remain healthy. They said, "SARS is a contagious and rapidly progressive disease that can affect otherwise healthy persons, sometimes after even trivial contacts." They cited one case in which the wife of an SARS patient did not contract the disease, although she occupied the same hotel room as her husband while he was at his most contagious.

The circumstances surrounding SARS raise questions about transmission, individual susceptibility, and treatment that researchers must answer.