

Will the Severe Acute Respiratory Syndrome (SARS) epidemic recur?

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SARS is one of the deadly new emerging infectious diseases identified in the 21st century. Since its emergence in November 2002, SARS has created public panic and raised many issues among healthcare workers and policy makers around the world. Although health care communities together with public vigilance around the world seem to have halted the SARS outbreak, at least for the time being, the question remains to be answered is whether the infection will reappear? I believe if SARS follows the pattern of other respiratory viruses, it is likely that it will reappear next autumn during the influenza season. I have following explanations in support of my opinion: -

The causative agent of SARS is a novel coronavirus – a virus of the corona family. About one-third of all common colds are caused by viruses from the same family and these show a winter and spring seasonality¹. The emergence of SARS outbreak in China and Hong Kong during the influenza season (December – March) suggests possible common environmental factors may influence transmission. Some human pathogens such as influenza, measles and rotavirus follow a cyclical pattern, waxing in colder and drier months and waning when weather turns warmer², which may also be the case for the SARS virus. While the importance of effective quarantine and preventive measures cannot be ignored, the decline in the SARS prevalence with increasingly warmer weather supports that seasonality may be contributing factor. This may explain the limited spread of the SARS virus in the rural areas of Guangdong, which has only basic medical facilities and lower public preparedness. For instance, environmental temperature may influence the trends of SARS outbreak. Outbreaks of respiratory syncytial virus infections were associated with higher environmental temperature, lower relative humidity and higher maximum day-to-day temperature variations³. During the Amoy garden outbreak in Hong Kong, external temperature ranged between 18-22 degree Celsius, which has been proposed

as permissive temperature enabling transmission of the SARS coronavirus. It is unconvincing that Vietnam and Guangzhou controlled SARS by better medical facilities and hygienic standard. Anecdotal reports suggest that the changes in temperature might have limited the outbreak of SARS in Vietnam and Guangzhou earlier than Hong Kong. The wider use of heaters in Toronto and air-conditioning in Hong Kong and Singapore, usually to keep the room temperature within 18-22 degree Celsius, might have contributed to the long lasting outbreak in these developed cities. It would be useful to examine the relationship between temperature change and the occurrence of SARS in future.

Consistent with other infectious diseases², changes in atmospheric conditions, the prevalence of virulence of the pathogen and the behaviour of the host could also attribute to the recurrence of SARS. It is possible that the virus is being slowly transmitted among people who remain asymptomatic or the virus is surviving in the environment and will reappear when a favourable conditions return. Although source of the coronavirus remains to be confirmed, civet cats and other wild animals sold in food markets in southern China are believed to be the source. If confirmed the animals will be a reservoir in ready contact with human that could initiate a second SARS epidemic.

Finally, I warrant that whether or not SARS reappears, lessons learned from the recent outbreak such as greater vigilance on health and hygiene and open sharing of medical information should be a norm in future. In the absence of any effective vaccine or treatment, the only way to combat SARS is to limit its spread. We should also be alerted that if SARS does return in autumn its epidemiology could be different. In the recent outbreak, most of the SARS cases with the exception of Amoy Garden outbreak in Hong Kong were confined to the healthcare workers indicating limited community spread. If the rate of transmission should increase in the community, given the high case fatality rate, the consequences could be devastating.

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References

1. Chilvers MA, McKean M, Rutman A, Myint BS, Silverman M, O'Callaghan C. The effects of coronavirus on human nasal ciliated respiratory epithelium. *Eur Respir J* 2001; 18: 965-70.
2. Chew FT, Doraisingham S, Ling AE, Kumarasinghe G, Lee BW. Seasonal trends of viral respiratory tract infections in the tropics. *Epidemiol Infect* 1998; 121: 121-8.
3. Dowell SF. Seasonal variation in host susceptibility and cycles of certain infectious diseases. *Emerging Infectious Disease* 2001; 7: 369-374.