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*Medical Focus - Avian Flu Essentials*

April 5, 2006

**Spotlight on SARS and Lessons Learned**

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Dear Colleague:

In the nineteenth letter of the Avian Flu Essentials series, I will underscore the practices that helped contain SARS within a period of six months. Countries differed in their approach to combat this disease and the successfulness of those measures varied as described below.

The World Health Organization plays an essential role in disease surveillance and outbreak communication. During the SARS outbreak, WHO issued a global alert against this new infectious disease and travel advisory recommendations. This was important because it reduced the number of close contacts between infectious and healthy individuals. Detection of potential cases became more likely with screenings at airports and symptom monitoring, such as temperature checking, by travelers. In addition, travelers from SARS hotspots were placed under mandatory quarantine for 10 days on arrival in Taiwan. This allowed patients to be isolated if needed and facilitated contact tracing.

On the other hand, an increased involvement by the Chinese government was necessary to contain SARS due to an inadequate level of response when the outbreaks began. This came at a great cost in terms of human lives and economics. The Beijing health department paid for treatment, because some hospitals did not provide care to poor patients. In addition, incentive pay was given to retain health care workers. Schools were also closed for a few months. China and Hong Kong reported close to 7000 cases including 650 deaths. As a result of this crisis, the Chinese government realized that it needed further investment in public health and the establishment of better surveillance systems.

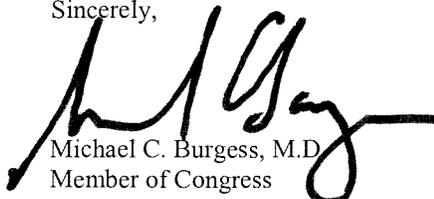
The situation in China sharply contrasted with the situation in Vietnam, where SARS was controlled quickly. This country accepted international assistance to fight this infectious disease early on and set up hospital isolation wards to treat SARS patients. Over a period of 7 weeks, Vietnam reported 63 cases including 5 deaths.

In order to encourage people to stay at home, Canada urged its citizens to take unpaid leave of absence if they exhibited SARS symptoms. In addition, here are a few components of the SARS relief package in Singapore (full list in CRS report RL32072):

- a Home Quarantine Allowance Scheme, which pays an allowance to the self-employed and to small business owners who have employees affected by home quarantine orders
- a Bridging Loan Program, which offers working capital loans to tourism-related small- and medium-sized enterprises
- rebates on aircraft landing fees and rental spaces at airports
- dollar-for-dollar matching of funds for the Courage Fund, a tripartite fund established to help the victims of SARS and affected health care workers. The fund received nearly \$10 million in just 7 weeks

In addition, an article on the reverse of this letter describes how the rapid sequencing of the SARS-associated coronavirus was beneficial to search for treatments. Our preparedness efforts have been inherently improved by our knowledge of the similarities between avian flu and SARS, which were discussed in the previous letter. However, much still needs to be uncovered about avian flu viruses to understand the factors that lead to more severe conditions and guide virus preferences for animal versus human hosts.

Sincerely,



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## **CDC Press Release, *CDC Lab Sequences Genome of New Coronavirus, April 14, 2003***

The Centers for Disease Control and Prevention (CDC) announced today that it has sequenced the genome for the coronavirus believed to be responsible for the global epidemic of severe acute respiratory syndrome or SARS. The CDC sequence is nearly identical to that determined by a Canadian laboratory late last week. The significant difference is that the CDC-determined sequence has 15 additional nucleotides, which provides the important beginning of the sequence, CDC scientists said.

The results came just 12 days after a team of 10 scientists, supported by numerous technicians, began working around the clock to grow cells taken from a throat culture taken from one of the SARS patients in Vero cells (African green monkey kidney cells) in order to reproduce the ribonucleic acid (RNA) of the disease-causing coronavirus. The new sequence has 29,727 nucleotides, which places it well within the typical RNA boundaries for coronaviruses. Members of this viral family tend to have between 29,000 and 31,000 nucleotides.

Identifying the genetic sequence of a new virus is important to efforts to treat or prevent it, said Dr. Julie Gerberding, CDC director. "Research laboratories can use this information to begin to target antiviral drugs, to form the basis for developing vaccines, and to develop diagnostic tests that can lead to early detection."

In sequencing the genome, CDC scientists worked closely with coronavirus experts at academic institutions across the United States. "This is an active, working community of scientific experts who have been contributing their knowledge and expertise throughout this investigation," said William Bellini, Ph.D., SARS laboratory team coordinator.

The nearly identical findings in the US and Canada are important because they were derived from different individuals who were infected in different countries. This suggests that the virus probably originated from a common source.

The CDC's analysis of the virus is far from finished, officials emphasized. Because coronaviruses have the ability to mutate rapidly, scientists will compare the sequences from viruses isolated in cell culture to those obtained from diseased tissues taken from SARS patients. "This is essentially a draft. Now we need to see if what we have identified in the laboratory matches what's causing disease in patients," Bellini said.

But the groundbreaking work of isolating the genomic sequence speeds the task of comparison.