

## SARS update

β See related articles pages 1245, 1259, 1265 and 1289

*eCMAJ* maintains an online summary (updated daily during the work week) of the SARS epidemic in Canada and worldwide ([www.cmaj.ca](http://www.cmaj.ca)). This article was published online on Apr. 17, 2003.

**Background and epidemiology:** Severe acute respiratory syndrome (SARS) continues to spread around the world. As we write, over 3200 cases have been officially reported from 23 countries. Case reports from Health Canada make a distinction between “suspect” and “probable” cases based on the progression from mild respiratory symptoms to severe respiratory illness in patients with known or possible exposure to the disease. As of Apr. 16, there were 303 suspected or probable cases reported from 6 provinces (Fig. 1, left), although most (249) were in Ontario. Hong Kong, which reports only probable cases, listed 1268 SARS cases as of Apr. 16 (Fig. 1, right). China has been slow to release total figures, and the most recent report of 1432 is likely an underestimate.

The WHO has confirmed that a coronavirus, now named SARS virus, is the cause. Coronaviruses were previ-

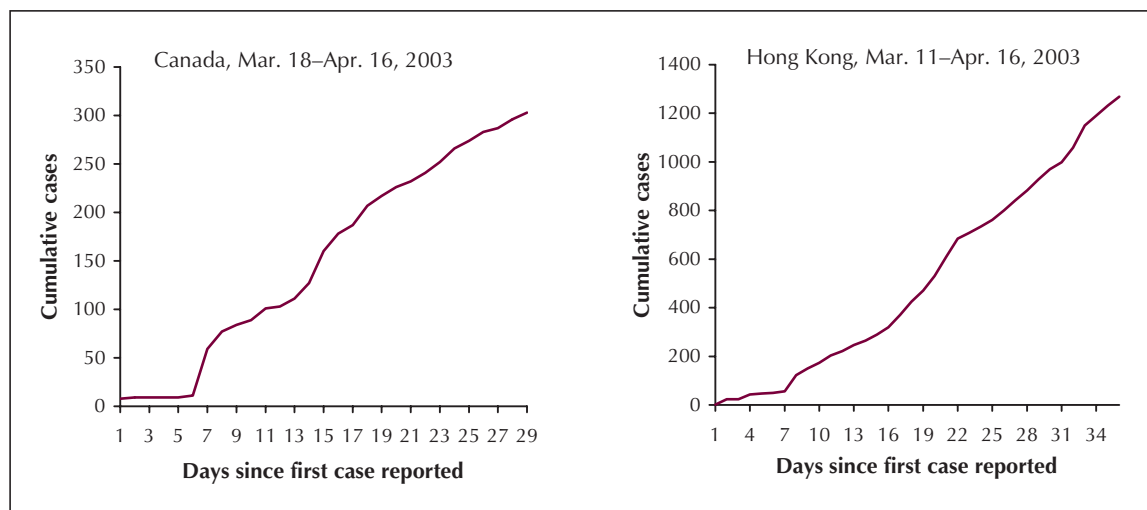
ously thought to cause only mild disease in immunocompetent people (2 members of the coronavirus family cause the common cold), although it is responsible for a variety of illnesses in animals. The most recent molecular testing suggests that the SARS virus is a new infectious agent.<sup>1</sup> A study involving 50 patients with probable SARS in Hong Kong revealed that 45 (90%) showed either antibodies to this novel virus in a serum sample, or viral RNA detection in nasopharyngeal aspirates or stools. Serum samples taken during the acute and convalescent phases of the illness were available for 32 of these 50 patients; all showed evidence of seroconversion.<sup>2</sup> When specific antibody testing was done in 280 control serum samples, obtained from blood donors and patients with respiratory and other disease, no antibody to the suspect virus was found.

As previously reported in this column,<sup>3</sup> SARS is thought to have arisen in the fall of 2002 in Guangdong Province, China, before being diagnosed for the first time in March 2003, in a nephrologist in Hong Kong. The first Canadian case occurred in a 78-

year-old woman who, before her diagnosis in Toronto, had stayed on the same floor of a hotel in Hong Kong as the nephrologist.<sup>4</sup> Before her illness was diagnosed, she had transmitted the disease to members of her household, including her 44-year-old son and his wife. Although symptomatic, these 2 people sought care from a family physician, who became infected. From these first cases, infection spread quickly.

**Clinical management:** The case definition previously reported<sup>3</sup> is still in effect. There are no serologic tests or other methods of laboratory diagnosis, although RNA primers are available for gene amplification testing ([www.who.int/csr/sars/primers/en](http://www.who.int/csr/sars/primers/en)), and a team at British Columbia's Genome Sciences Centre has published the genetic sequence of the SARS virus ([www.bcgsc.ca/bioinfo/SARS](http://www.bcgsc.ca/bioinfo/SARS)), which will pave the way to the development of a sensitive and specific test.

Clinical data have been published on 208 cases of SARS<sup>3,4,6</sup> (Table 1). Of the reported cases, 20 (9.6%) died by the time of publication. This mortality rate is higher than that reported in Hong



**Fig. 1:** Cumulative reported cases of severe acute respiratory syndrome (SARS). Canadian data (left) include both suspect and probable cases (defined using WHO case definitions). Hong Kong data (right) include probable cases only. [Source: [www.sars.ca](http://www.sars.ca).]

Kong as of Apr. 16 (4.8% of declared cases), and about the same as the rate reported in Canada as of that date

**Table 1: Clinical and laboratory features of reported SARS cases at presentation**<sup>2,4-6</sup>

| Feature                                  | % of cases*    |
|--|----------------|
| <b>Clinical</b>                          |                |
| Fever                                    | 99.0 (206/208) |
| Chill/rigor                              | 78.2 (147/188) |
| Dyspnea                                  | 30.0 (18/60)   |
| Nonproductive cough                      | 60.6 (120/198) |
| Malaise                                  | 55.7 (39/70)   |
| Diarrhea                                 | 18.7 (37/198)  |
| Chest pain                               | 30.0 (3/10)    |
| Headache                                 | 46.6 (97/208)  |
| Sore throat                              | 22.7 (45/198)  |
| Myalgia                                  | 57.2 (119/208) |
| Vomiting                                 | 18.9 (28/148)  |
| Dizziness                                | 34.0 (64/188)  |
| Rhinorrhea                               | 10.0 (1/10)    |
| <b>Laboratory</b>                        |                |
| Oxygen saturation < 95%                  | 10             |
| Anemia                                   | 78             |
| Leukopenia                               | 26             |
| Lymphopenia                              | 68             |
| Thrombocytopenia                         | 33-44          |
| Increased lactic dehydrogenase level     | 40-70          |
| Increased alanine aminotransferase level | 20-34          |
| Increased creatine kinase                | 26-50          |

\*For the section on clinical features, the denominators differ by symptom because not all studies reported data for all symptoms. For the section on laboratory findings, not all studies reported on all values nor were numbers of study subjects included in all reports; thus, ranges are given for some values.

(9.5% of probable cases). [These figures are fluctuating daily, as the numbers given in our Editorial,<sup>7</sup> posted Apr. 16, illustrate (see page 1229).]

To date, treatment has consisted mainly of broad-spectrum antibiotics, corticosteroids and intravenous ribavirin.<sup>8</sup> As yet, no SARS treatment protocols have been evaluated in clinical trials.

**Prevention and control:** Patients who meet the case definition of suspect or probable SARS should be monitored closely and isolated either in hospital or at home. (This decision should be made in conjunction with local public health officials.) Caregivers of probable and suspect cases should use standard isolation and infection-control techniques (masks, gowns and gloves).

Hospitals in Ontario and elsewhere where cases have been reported have implemented tight controls on the entry of patients, staff and visitors. In Ontario, this has meant asking all staff, volunteers and visitors to be screened using a standard questionnaire and, when indicated, a measure of body temperature.

Travel advisories are being updated frequently and are available at [www.sars.gc.ca](http://www.sars.gc.ca) and [www.cdc.gov/ncidod/sars](http://www.cdc.gov/ncidod/sars). The US Centers for Disease Control and Prevention (CDC) advises that people planning elective or nonessential travel to mainland China, Hong Kong, Singapore, and Hanoi,

Vietnam, consider postponing their trips until further notice. Because there is no evidence of widespread community transmission in this country, to date the CDC has not advised against travel to or from Canada.

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