Reporting Incidence of Severe Acute Respiratory Syndrome (SARS)
Appendix A: Chronology
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References used in this section:

Severe Acute Respiratory Syndrome (SARS) Chronology

The timeline below documents the events associated with the SARS outbreak. Use the key below to quickly find information on the actions of the World Health Organization, the initial reports of cases in a new country, and the source of new infections.

1996

In reaction to outbreaks of various infectious diseases (cholera in Latin America, pneumonic plague in India, Ebola hemorrhagic fever in DR Congo) WHO initiated revisions of International Health Regulations to include more diseases and provide more rapid dissemination of information.

WHO runs initial tests of proposed Global Outbreak Alert and Response Network (GOARN).

2000

April

WHO formally establishes Global Outbreak Alert and Response System

2002

November

Seasonal influenza outbreaks in Guangdong Province, China include cases of a novel atypical pneumonia. The atypical cases were intermittently scattered throughout Guangdong with some transmission to health workers. The atypical cases would later be characterized as the first wave of SARS infections, which lasts until the beginning of February 2003.

16 November

The first case of what was later termed SARS is believed to have originated from a cook at a restaurant where wild animals were served in Foshan, Guangdong Province in November. It is now believed that animal-human transmission of SARS came from consuming and handling wild civet cats. Civet cats are not natural carriers of the disease, but were infected by bats native to southern China, before passing the disease onto humans.
27 Nov. Canadian Global Public Health Intelligence Network (GPHIN), which monitors media and internet for reports of diseases, relays media reports of novel infections in Guangdong Province to WHO Global Influenza Surveillance Network. While the GPHIN system had recently been upgraded to monitor media sources in six languages, including Chinese, the GPHIN system could not present information in languages other than English and French. Analysts only translated the titles of certain articles written in Chinese, and manually e-mailed the Chinese-language documents to users. Since only selected information was transmitted into English, officials were not aware of the severity until February 2003.

Late Nov. US Global Emerging Infections Surveillance and Response System picks up media reports about outbreaks in Guangdong Province and Beijing that identify the source of infection as an Influenza B virus.

12 Dec. Following up from WHO inquiries on 5 and 11 December about the extent of the outbreaks, Chinese Ministry of Health issues report on 23 cases of influenza, of which 22 are Influenza B infections. The Ministry adds that number and pattern of outbreaks is consistent with seasonal flu patterns.

17 Dec. First cases in Heyuan, Guangdong Province

26 Dec. First cases in Zhongshan, Guangdong Province

2003

early Jan. Reports of panic buying at drug stores in Guangdong emerge; the Chinese government continues to officially claim through press reports that rumors of an epidemic are false

20 Jan. First team of Beijing-based Health Ministry disease experts – not the WHO – arrives in Guangzhou

21 Jan. Canada’s GPHIN releases its first English language report on the Chinese outbreak of “atypical pneumonia,” two months after the Chinese-language reports were first received.

23 Jan. Guangdong Province health authorities report cases of novel atypical pneumonia to Ministry of Health in Beijing. The report, classified “Top Secret” arrives over lunar New Year holiday; no one with the proper security clearance is around to read the report for 3 days. Ministry does not repeat to other provinces.

31 Jan. First infections reported in Guangzhou, capital of Guangdong Province; Guangzhou eventually had the highest reported rate of infection in China (12.5 cases per 100,000 inhabitants)

early Feb. Local media reports on unusual outbreaks of respiratory infections in Guangdong Province reach neighboring Hong Kong. This began what was later termed the second wave of SARS.
3 Feb. Mandatory case reporting of atypical pneumonia using standard case definition and reporting form is implemented Guangdong province-wide

8 Feb. Text message sent to phones in Guangzhou states “There is a fatal flu in Guangzhou”; the message would be resent more than 125 million times in the next three days

9 Feb. Second team of Beijing-based Health Ministry experts, led by Deputy Health Minister Ma Xiaowei, arrive in Guangzhou

Guangdong province-wide hospital admission, clinical management, and infection control arrangements for patients are standardized

10 Feb. WHO Office in Beijing receives e-mail about infectious disease outbreak in Guangdong Province leading to more than 100 deaths. Requests information from Chinese Ministry of Health.

Report of "Pneumonia - China (Guangdong)" posted on ProMED-mail, an e-mail listserv for disseminating information on outbreaks of infectious diseases. The 40,000 subscribers to ProMED come from 165 countries and is predominately oriented toward members of the international infectious disease community and public health professionals.

11 Feb. Guangzhou City Bureau of Health holds press conference on illnesses in the city and reveals that there have been 305 cases, with 5 fatalities. Guangzhou medical experts call it an “atypical pneumonia” that is most likely caused by a virus after eliminating anthrax, plague, and H5N1 bird flu as causes.

Chinese Ministry of Health confirms to WHO 335 cases, including 5 deaths, from new respiratory disease in Guangdong Province. Medical workers across Guangdong Province accounted for 105 cases, while Guangzhou accounted for 220 cases.

Despite this, Guangdong health department spokesman Fung Shaoming says the disease “is not as serious as rumored,” and is under control.

WHO headquarters (Geneva) alerts participants in WHO Global Influenza Surveillance Network of Chinese outbreaks out of concern that a new influenza virus is causing the disease and may lead to epidemics.

Autopsy performed on a dead SARS victim at Nanfang Hospital (a military hospital) in Guangzhou. Tissue samples are provided to Guangdong Province CDC, Guanhzhou City CDC, and Guangzhou Number 8 People’s Hospital.

12 Feb. Chinese Ministry of Health responds to WHO queries with information that first cases arose on 16 Nov. 2002, that the virus causing the disease has not been isolated, but that outbreaks are coming under control.

Nanfang Hospital announces autopsy results; attributes patient’s death to an atypical pneumonia caused by a virus.
Leader of Guangdong province, Zhang Dejiang, orders the provincial health department to set up an emergency experts group to investigate.

Shops in Guangdong report running out white vinegar and other household products believed (falsely) to help disinfect and remedy the illness.

Traffic in public places and on public transport reported cut in half in Guangzhou.

Chinese Academy of Military Medical Sciences, an unit of the Army, sends a team to Guangdong Province to obtain patient samples. It returns to Beijing with only a few small samples.

14 Feb. Hong Kong Hospital Authority and Department of Public Health establish surveillance/reporting system for cases of patients with “severe atypical pneumonia” admitted to hospital. System identifies several pneumonia infections and 2 human cases of H5N1 avian flu. In a typical month there are about 1400 cases of “community acquired pneumonia” [cases in which the patient is infected before admission to hospital] observed among the 6.8 million inhabitants of Hong Kong.

China officially confirms to WHO an outbreak of atypical pneumonia with 305 cases and 5 deaths in Guangdong.

Official Chinese government report again states the outbreak in Guangdong is contained.

15 Feb. Fears over the outbreak causes panic buying of cleansers and remedies to spread to Hunan province.

mid Feb. Institute of Virology in Beijing receives tissue samples and begins analysis.

18 Feb. Head of Institute of Virology announces Dr. Hong Tao’s conclusion that the new disease is caused by a variant of the chlamydia virus. The Chinese government adopts this view and uses it to develop treatment recommendations. Some doctors in Guangzhou disagree. Though unable to publicly criticize Hong’s conclusions, they develop their own treatments.

20 Feb. WHO Global Influenza Surveillance Network receives reports from Hong Kong on 2 cases of humans with H5N1 avian bird flu.

Member labs of Global Influenza Surveillance Network begin analyses of patient specimens and epidemiological data and share results through the Network.

**WHO headquarters activates global pandemic preparedness plan.**

Researchers at Chinese Academy of Military Medical Sciences first suspect that a coronavirus is the source of the disease, but believe their data is too weak to challenge Hong’s chlamydia thesis.
21 Feb.  Dr. Liu Jianlun, a physician who had treated SARS patients in Guangdong Province and acquired the infection, travels to Hong Kong and stays in the four-star Metropole Hotel there. Other guests are infected and carry infection to Hanoi, Vietnam; Singapore; and Toronto, Canada.

22-25 Feb.  **WHO sends a team of doctors to China to investigate the illness; Chinese government prevents them from investigating.**

26 Feb.  **First case identified in Hanoi.**

Vietnamese authorities report case to WHO; request assistance in dealing with the disease.  **WHO sends epidemiological team to Hanoi.**

28 Feb.  Dr. Carlo Urbani of the WHO uses the designation “SARS” to describe the condition of a patient in Hanoi with the new disease. Urbani later contracts the disease himself and dies a month later.

1 Mar.  **First case identified in Singapore.**

5 Mar.  **First case identified in Toronto, Canada.**  Sui-chu Kwan, a 78-year-old woman who had travelled to Hong Kong in February and stayed at the Metropole Hotel, dies of SARS in Toronto.

7 medical staff at Hanoi Hospital fall ill with atypical pneumonia

8 Mar.  **First case identified in Taiwan.**

10 Mar.  China requests help from the WHO in identifying the cause of the Guangdong pneumonia outbreak.

11 Mar.  **A “large cluster” of cases of atypical pneumonia is reported in Prince of Wales Hospital, Hong Kong.**

Physician who had treated patients in Singapore feels ill on arrival in New York for flight onward to Frankfurt.  Airline alerted.  He and wife arrive Frankfurt, go to hospital there.

WHO receives reports of clusters of cases in Singapore and Toronto, Canada

12 Mar.  **WHO issues Global Alert regarding new highly infectious atypical pneumonia.**

WHO begins coordinating with Hong Kong officials.
13 Mar. Kwan's son Chi Kwai Tse, 44, dies of SARS in Toronto

U.S. CDC sends disease experts to Hanoi to help understand the illness

14 Mar. US Center for Disease Control and Prevention (CDC) activates Emergency Operations Center to deal with the new infection.

Four persons in Ontario, and three persons in Singapore, with severe atypical pneumonia reported to WHO; the cases were linked to the infection at the Hong Kong Metropole Hotel

Hong Kong secretary for health says the outbreak hasn’t spread to the community, is contained to hospitals

15 Mar. Reports of 150 cases outside China received by this date. WHO issues emergency travel advisory. This provides a case definition, recommends measures, names the infection SARS.

First case in USA

17 Mar. WHO activates network of labs to work on isolating and analyzing cause of SARS. It operates through daily teleconferencing and exchange of data over WHO-provided secure website.

Health Canada announces 11 suspected cases of SARS; 9 in Ontario, one in Alberta, one in British Columbia

18 Mar. Most labs suspect cause is a virus because of information that antibiotics are ineffective in treatment; German doctors find evidence of a paramyxovirus.

19 Mar. Health Canada suggests postponing travel to hard-hit Asian countries

21 Mar. After further study of additional patient samples, Chinese Academy of Military Medical Sciences staff confirm their coronavirus theory and report it to the Army Logistical Department, which forwards the results to the Ministry of Health. It does not announce the findings.

21-24 Mar. 3 labs in WHO network independently isolate the coronavirus causing SARS and confirm its role in causing infection, ending a period of speculation about possible causes that has been reported in international news media. Tests show that the SARS coronavirus is distantly related to other coronaviruses yet is distinct enough to be classified in a category of its own. Clear identification of the cause permits development of better treatments.

21 Mar. Chinese Ministry of Health officials request assistance in epidemiological and laboratory support; WHO sends five-person team to China to assist.

A Canadian man who shared a hospital room in Toronto with Chi Kwai Tse dies from SARS.
23 Mar. Scarborough Grace Hospital in Toronto closes temporarily because of SARS concerns

25 Mar. China bars the WHO team that was sent on 21 Mar. from Guangdong Province

Ontario Health Minister Tony Clement declares SARS a reportable, communicable and virulent disease. This gives health officials the authority to track infected people and issue orders to stop them from engaging in activities that transmit SARS.

The Toronto school board closes David Lewis public school temporarily after three students come down with unexplainable fevers.

26 Mar. The Chinese Ministry of Health updates their figures to 792 cases of SARS, 31 deaths in Guangdong, 3 in Beijing since November 2002

Ontario Premier Ernie Eves declares a provincial state of emergency and orders thousands into quarantine; 27 probable cases of SARS in Ontario.

Most of Toronto paramedics from the city's northeast quadrant sent home because of possible exposure at a hospital

First global “grand round” on treatment of SARS is conducted electronically by WHO; 80 practitioners from 13 countries participate

27 Mar. WHO recommends screening of passengers on flights departing areas with known SARS outbreaks for symptoms; WHO reports 1400 cases worldwide with 53 deaths.

Chinese Ministry of Health reports that SARS has spread from Guangdong Province to Shanxi Province and Beijing.

Guangdong issues guidelines on community prevention and control, including mandatory home quarantine of contacts; commences public service announcements about personal protection and seeking prompt medical attention

Toronto hospitals ordered closed to visitors.

Hong Kong closes its schools

First cases in Romania

28 Mar. China agrees to become a full partner in the WHO collaborative effort in containing SARS

China concludes that SARS outbreaks elsewhere in Asia are ultimately traceable to the initial outbreak in Guangdong

29 Mar. Massive outbreak of SARS at Amoy Gardens in Hong Kong; 213 suspected cases attributed to leaky sewage system
United States CDC extends its SARS travel advisory to include all of mainland China as well as Hanoi, Vietnam and Singapore

Ontario estimates of SARS cases exceeds 100; vast majority are in the Toronto area

Provincial Transfer Authorization Centre established in Toronto as part of emergency response to SARS; all interfacility transfers between hospitals and nursing homes are placed under control of Toronto EMS to coordinate movements.

30 Mar. Ontario health officials tell a news conference that another person has died of SARS on March 28. The latest victim had a direct connection with the first person who died from the virus at Scarborough Grace Hospital.

31 Mar. Toronto hospital visitor restrictions extended to the rest of Ontario

Toronto's Hospital for Sick Children says it is treating two probable and three suspected cases of SARS in children.

In Beijing Dr. Hong notes the possibility that the coronavirus and chlamydia might be causing the disease jointly but reaffirms his belief that chlamydia is the primary cause in a press interview

2 Apr. WHO issues travel advisory warning against travel to Guangdong Province and Hong Kong

3 Apr. WHO epidemiological team arrives in Guangdong Province.

Chinese government disputes the travel warning on Guangdong; asserts the government was not slow in releasing information on the disease

China admits 1,190 cases, with 47 deaths; asserts the spread is under control

Hong Kong begins the forced isolation of SARS patients into camps and resorts in an attempt to contain the spread

Facing domestic and international criticism, China announces fighting SARS is a top priority; extends cooperation with WHO

4 Apr. Chairman of Chinese Center for Disease Control apologizes for lack of information openness on SARS issues, and reaffirms the government’s belief that SARS is caused by a new variant of the chlamydia virus.

U.S. President Bush signs Executive Order adding SARS to the list of diseases for which U.S. citizens can be involuntarily quarantined
9 Apr. Dr. Jiang Yanyong, a retired chief of surgery for a Beijing military hospital, publicly accuses his government of covering up the extent of SARS infections in Beijing. Following Jiang’s statement, reports of hospitals with entire wards of suspected SARS patients emerge on Chinese internet sites; this information eventually makes it into a *Time* magazine article on the Chinese government’s mishandling of SARS.

Health officials place 197 employees at a Hewlett-Packard plant in Markham, Ont. under quarantine after a worker defied his quarantine and showed up for work showing SARS symptoms.

10 Apr. Canadian Prime Minister Jean Chretien publicly eats at a Toronto Chinese restaurant to dampen fears about SARS

11 Apr. **Beijing added to WHO list of SARS-affected areas**

Canadian Blood Services says it will not take blood from people who have recently traveled to certain countries in Southeast Asia, even though there is no scientific evidence that SARS can enter the bloodstream.

Two researchers at Institute of Virology mention the coronavirus theory in a press interview. Ministry of Health reprimands them and prohibits further circulation of their comments.

13 Apr. **Canadian research team at Michael Smith Genome Sciences Centre posts SARS genome sequence online**

Chinese Premier Wen Jiabao admits that the SARS outbreak in China is “grave” and that the government will “speak the truth” in its disclosures.

14 Apr. Beijing mayor admits that SARS was present in the city as early as March 1st, several weeks before the city government admitted its presence.

Toronto health officials order all 500 members of a Toronto Catholic sect, Bukas-Loob Sa Diyos, into quarantine after their group was linked to cases of SARS.

15 Apr. Ontario Premier Ernie Eves says people forced to take time off work or whose businesses are affected by SARS will not be getting any money from the government.

16 Apr. **WHO press release officially names the disease Severe Acute Respiratory Syndrome; declares a coronavirus to be the cause of the outbreak**

**WHO officials visit military hospitals and say China has been excluding patients in military hospitals from its official reports on cases**

18 Apr. Chinese central party officials order all officials to fully disclose the extent of the disease’s spread, partly reversing its earlier half-hearted approach; statement comes after *Time*
magazine article discloses that China shifted SARS patients from hospital to hospital during WHO visits to cover up the scale of the illness

20 Apr. Chinese Health Minister Zhang Wenkang and Beijing Mayor Meng Xuenong fired for their mishandling of the SARS epidemic

President Hu visits the AMMS lab and praises their work

China cancels the weeklong May 1 International Workers’ Day holiday because of SARS fears

Canada's largest trauma unit, Sunnybrook Hospital in Toronto, stops accepting new patients after at least four health-care workers show signs of SARS.

23 Apr. WHO extends travel warnings to Beijing, Shanxi province and Toronto, Canada. Warnings are intended to last a minimum of three weeks – double the incubation time of SARS.

Toronto medical officer of health Sheela Basrur says linking Toronto and China is a "gross misrepresentation of the facts" because the disease is not spreading through the community.

Some Toronto officials, including Toronto Deputy Mayor Case Ootes, suggest to the press that the travel advisory covered Toronto only to appease China by including a non-Asian city

China establishes the SARS Control and Prevention Headquarters of the State Council to coordinate national efforts

Beijing schools closed for two weeks

24 Apr. Health Canada sends a formal letter of protest to the World Health Organization demanding the UN health agency take back its Toronto travel advisory, saying it is based on outdated information.

Canada’s senior diplomat in Geneva attempts to have the WHO travel advisory to Toronto lifted immediately

The United States CDC says it doesn't believe a travel advisory is warranted for Toronto

Ontario Premier Ernie Eves promises people who can’t go to work because they're under a SARS quarantine will be reimbursed for all lost wages. The province also pledges to help businesses that are losing money because of SARS, but says it is too early to offer grants, loans or other financial assistance.

Beijing seals off People's Hospital of Beijing University and People's Armed Police General Hospital, putting thousands of patients and medical workers under observation.
25 Apr. Ontario’s chief medical officer of health says there have been no new probable cases of SARS in the Toronto area since April 9, with the exception of a few health-care workers at hospitals.

Ontario Premier commits $25 million to Toronto hospitals to counter the surgical backlog created by hospital quarantines

WHO rejects Canada’s claims that the travel advisory was based on politics, asserts the scientific necessity of the advisory.

26 Apr. WHO says it may lift Toronto travel advisory in a few days.

27 Apr. Beijing closes public places such as libraries and cinemas and suspends marriages in attempts to contain SARS

28 Apr. Sheila Copps, a Liberal leadership contender, criticizes fellow Liberal Party member Canadian Health Minister Anne McLellan for the delayed federal response to the SARS outbreak.

29 Apr. WHO announces that SARS appears to have peaked in Hong Kong, Canada and Singapore; however cases are still rising in mainland China and Taiwan

WHO declares SARS contained in Vietnam

30 Apr. WHO ends travel warning to Toronto; Canada agrees to implement infrared temperature-taking devices at airports to screen for patients with fevers

Estimates emerge of close to $519 million economic cost to Canadian tourist industries via cancelled flights, hotel rooms, and lessened demand for service industries, according to a report by the Canadian Tourism Commission.

Guangdong institutes free hospital treatment for patients with SARS

1 May Guénaël Rodier, the WHO’s director of communicable-disease surveillance and response, writes an opinion article – not representing an official WHO position - saying that the travel advisory imposed on Toronto could ultimately harm the fight against SARS and other infectious diseases because less-transparent countries will be afraid to report outbreaks, because of the demonstrated economic costs

3 May China announces it will allow WHO investigators into Taiwan, a change from earlier policies. Taiwan’s lack of UN-recognized status required mainland Chinese approval before WHO officials could enter Taiwan.

5 May Violent protest of 1,000 demonstrators against a local government office regarding quarantined SARS patients in Zhejiang province; protestors demand that the quarantined persons be moved away
6 May Chinese officials in Nanjing order 10,000 into quarantine
8 May WHO extends travel warning to Taipei, Taiwan, and Tianjin and Inner Mongolia in China
11 May Ontario's former medical officer of health, Dr. Richard Schabas, says Ontario officials mishandled the SARS outbreak in that province, stoking unnecessary fears in citizens.
12 May Chinese central government allocates 2 billion yuan ($240 million); local budgets allocate 5 billion yuan ($602 million); these funds were put toward future public health emergencies
   Suspected case of SARS in Finland is allegedly from a visitor to Toronto in late April
13 May CNN International special on SARS that criticized the Chinese government's response to the illness is censored in China
14 May Canada removed from WHO list of SARS-affected countries.
17 May WHO extends travel warning to China's Hebei province
21 May Travel warning extended to all of Taiwan; previously it had only been in Taipei
22 May Beijing students return to class
23 May Hong Kong and Guangdong removed from travel advisory list
24 May Reports of new cases of SARS causes officials to again declare provincial state of emergency in Ontario, one week after lifting the initial warning
   More than 500 people ordered into quarantine in Toronto because of fears of new outbreak
26 May WHO returns Toronto to list of countries where there is local transmission of SARS; however, no travel advisory is posted
28 May First case reported in Russia
13 June WHO drops travel advisories for the Chinese city of Tianjin and the provinces of Shanxi, Inner Mongolia and Hebei in northern China.
17 June WHO lifts Taiwan travel advisory
23 June Hong Kong declared SARS-free
24 June WHO declares China to be SARS-free; last travel restriction in the world, to Beijing, lifted
2 July WHO removes Toronto from list of SARS affected areas
Second Ontario provincial state of emergency is lifted. Since the first case was reported in March, 224 people in the Toronto area were officially diagnosed with SARS; 38 of them died of the disease.

4 July  
Taiwan ends mandatory home quarantine from mainland Chinese visitors

5 July  
WHO removes Taiwan from list of places with active virus; declares that all lines of cross-border contagion of SARS have been broken and danger of epidemics has passed

30 July  
Estimated 450,000 people attend open-air Toronto concert headlined by Rolling Stones to help raise money for area businesses hard hit by the SARS outbreak

10 Sept.  
Isolated case in Singapore

16 Dec.  
Isolated case in Guangdong

17 Dec.  
Isolated case in Taiwan

2004

5 Jan.  
Isolated case in Guangdong

Overall, it is estimated the main SARS epidemic from November 2002-June 2003 cost the world economy over US $40 billion including lost trade and tourism; this includes an estimated 2.6% GDP loss to Hong Kong, 1.05% GDP loss to mainland China, and around .15% GDP loss to Canada.

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Reported SARS Cases and Fatalities, Nov 2002-July 2003


![Table showing SARS cases and fatalities by region and country](image-url)