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NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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## SARS - SEVERE ACUTE RESPIRATORY SYNDROME - CONTINUED

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Three weeks ago, the World Health Organization issued a global warning relating to the pulmonary infection SARS. Through a unique international collaboration, knowledge of SARS has increased day by day. This previously unknown illness is probably caused by a coronavirus. Many questions are still unresolved, however, a pattern of a new type of atypical pneumonia is beginning to emerge. This is often characterised by rapid progression from an influenza-like prodromal stage to severe interstitial pneumonia, EPI-NEWS 13/03. The infection is associated with an unusually high risk of illness in health care workers. Among the most recent victims of SARS is Dr. Carlo Urbani, a WHO expert in infectious diseases who attended the first patients in Hanoi and alerted the international community to the disease.

**Status of the outbreak**

Between 1 November 2002 and 1 April 2003, WHO has received reports of 1,804 cases, of whom 62 have died. Most cases are from mainland China (806), Hong Kong (685), Singapore (92), the United States (69), Vietnam (58) and Canada (53). There are also reported cases from Taiwan, Germany, Thailand, Romania, Switzerland, the United Kingdom, France, Italy, Ireland, Slovenia, Belgium and Australia.

**Means of transmission**

One of the unusual circumstances of this outbreak is the detailed documentation of chains of infection with person-to-person transmission from symptomatic individuals. Currently it does not appear that subclinically infected persons - to the extent that these exist - contribute to infection. Nor does the pattern of infection suggest that transmission during the incubation period or prodromal stage contributes significantly to the spread of the disease. Most patients in these chains of infection have had close contact with identified patients. However, there are exceptions, where infection has apparently occurred following a brief or more casual contact. There are great regional differences in the speed with which the outbreak has been brought under control. In Vietnam, the infection was quickly limited, and no new cases have been reported for the last eight days. The outbreak here, has been limited to the hospital environment and persons with close face-to-face contact. In other areas, especially in Hong Kong, the spread has continued despite the isolation of patients and the use of hygienic precautions. Also in Canada, there have been cases of infection on contact of shorter duration.

**High risk of illness among doctors and other health care workers**

The CDC reported on 28 March 2003 that 46% of cases in Hong Kong and 37% of cases in Vietnam were employees in the health service. According to the health authorities in Singapore, 49% of 86 contacts with SARS were health care workers (reported 30 March). This is consistent with the fact that the risk of infection is greatest during serious illness. At the same time, it illustrates that the admission of patients to hospitals is associated with a high risk to health care workers and other patients, unless hygiene rules are carefully observed, EPI-NEWS 12/03. All referring and treating doctors should be aware of this risk in order to protect themselves, other health care workers and other patients. It should be particularly emphasized that:

- Referral ought to bypass waiting rooms and accident and emergency departments.
- During transport, the patient should wear a surgical mask.
- Patients should be admitted to an isolation ward with negative-pressure ventilation.
- Standard precautions, good hand hygiene and precautions against contact- and airborne infection: gloves, gown, protective eyewear and mask. Masks should be with a filter against both bacteria and viruses.

**Unusual chain of infection in Hong Kong**

It is known that a group of 13 patients stayed at hotel M in Hong Kong during the same period. The index patient in this chain of infection had initial symptoms on 15 February, during a stay in the province of Guangdong in China. Afterwards, he travelled to Hong Kong, where he stayed at the hotel on 21 February. He was admitted on 22 February and died the next day. Four hospital staff members and two family members subsequently became ill. Of the other 12 patients who are associated with hotel M, 10 were at the hotel during the same period as the index patient, and the other two patients stayed at the hotel while the secondary cases were symptomatic. The chain of infection at hotel M was crucial for the rapid spread of the disease, since:

- Infection was spread to four hospitals in Hong Kong, where more than 100 employees and contacts became infected.
- A secondary case was the source of infection for the outbreak in Hanoi, which was later linked to a case in Thailand.
- Three patients travelled to Singapore during the incubation period and were the source of the outbreak that later gave rose to cases in Germany.
- Two patients travelled to Canada during the incubation period, where they were the main source of cases in Toronto. This outbreak starting at a single hotel clearly illustrates how new diseases may spread through international travel. The chain of infection leading to this outbreak was the basis for the international propagation of SARS. The nature of contact between patients in this chain of infection has not yet been fully established. Since this outbreak emerged, another one has occurred in an apartment block in Hong Kong.

Although direct contact or close droplet infection is by far the most common means of transmission, the two events described above, give rise to a hypothesis that infection under some circumstances may also be airborne or environmental.

**Recommendations to travellers**

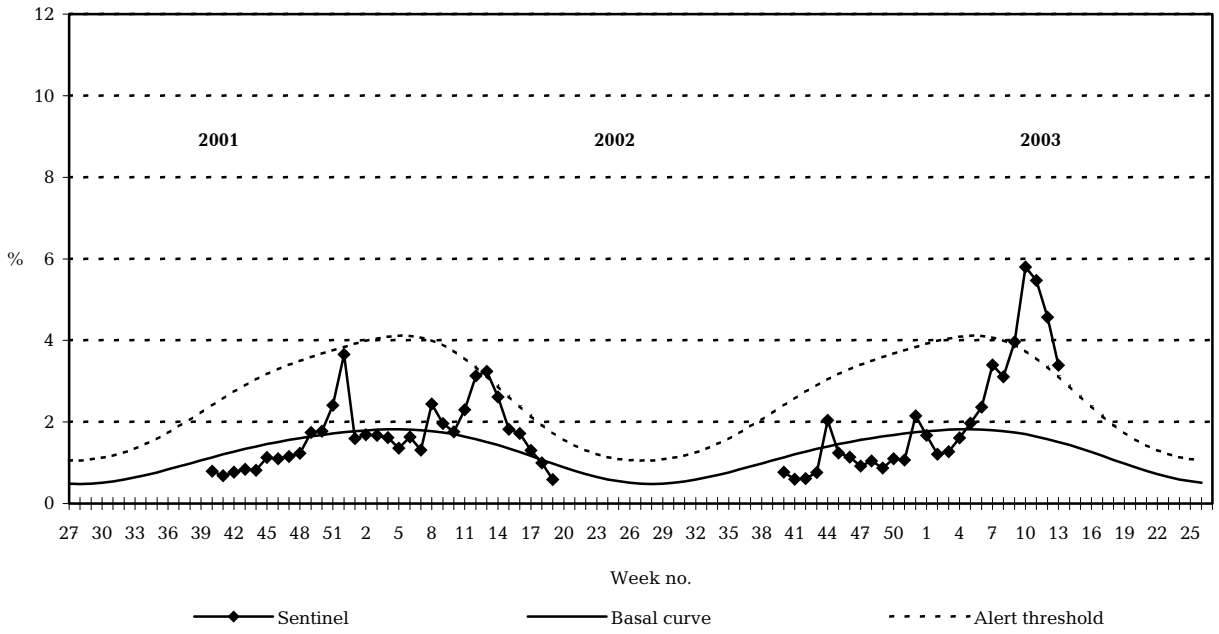
The greatest increase in number of cases has been recorded in Hong Kong, where the situation is described as serious. The infection is now spreading rapidly and partially uncontrolled, and the health service is severely strained. As it is assumed that the epidemic originated in mainland China, it is therefore highly probable that the dissemination of SARS may be more extensive in parts of the country than as suggested by WHO's most recent figures from 28 February. On this basis, the National Board of Health and the SSI have as of 1 April 2003 advised against unnecessary travel to Hong Kong and China. As of 2 April, WHO has advised against unnecessary travel to Hong Kong and the province of Guangdong in China. Danes staying in Hong Kong or China are encouraged to pay close attention to developments and should individually assess the necessity of remaining in the area.

(K. Mølbak, S. Samuelsson, Department of Epidemiology)

2 April 2003

## Sentinel surveillance of influenza activity

Weekly percentage of consultations, 2001/2002/2003




**Sentinel:** Influenza consultations as percentage of total consultations

**Basal curve:** Expected frequency of influenza consultations under non-epidemic conditions

**Alert threshold:** Possible incipient epidemic

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