

# SARS coronavirus

## Background

A member of Coronaviridae. Human corona viruses were first isolated in 1965, and have a spherical enveloped virion, are 80-160 nm in diameter, and crown-like in appearance. They have single-stranded, linear, non-segmented, positive-sense RNA genomes. The etiologic agent of SARS is a coronavirus which was identified in March 2003. SARS-related CoV seems to be the first coronavirus that regularly causes severe disease in humans.

## Agent Criteria

**Infectious Dose:** Unknown

**Stability:** The virus is stable in feces and urine at room temperature for at least 1-2 days. The stability seems to be higher in stools from patients with diarrhea (the pH of which is higher than that of normal stool). After 48 hours at room temperature, the concentration of the virus is reduced by one log, indicating that the virus is more stable than the other known human coronaviruses in these conditions. However, heating to 56°C inactivates SARS-CoV relatively quickly. The agent also loses its infectivity after exposure to several commonly-used disinfectants and fixatives.

**Incubation Period:** 2-16 days, generally 6-10 days

**Mortality Rate:** 3-15% (WHO estimates that the case fatality ratio of SARS ranges from 0% to 50% depending on the age group affected: less than 1% in persons aged 24 years or younger; 6% in persons aged 25 to 44 years; 15% in persons aged 45 to 64 years; and greater than 50% in persons aged 65 years and older)

**Morbidity Rate:**

*Duration of Illness:* 3-5 weeks

*Severity of Illness:* SARS patients generally present with a high fever (> 38° C or 100.4° F), dry cough, shortness of breath or breathing difficulties, chills, malaise, myalgia, rigors, and, possibly, abdominal pain and headache. Symptoms of the disease are highly variable, some patients suffer mild symptoms while other progress to respiratory distress and death.

*Duration of Infection:* Unknown (Thus far there have been no reports of transmission after clinical recovery)

*Long term effects after infection:* Unknown

**Allergen (yes/no):** No

**Carcinogenic/mutagenic (yes/no):** Unknown

**Abortogenic (yes/no):** Unknown

**Toxin Production (yes/no):** No

**Infection Mitigation Measures:**

*For human pathogens*

*Immunization:* No

*Prophylaxis:* Questionably effective anti-virals

*Post Infection Treatment:* Ribavirin has been widely used, although its efficacy has been questioned. Convalescent plasma and normal human immunoglobulin, not containing specific anti-SARS-CoV antibodies, have also been used in SARS patients.

*Existence of Diagnostic tests:* Detected in extracts of lung and kidney tissue by virus isolation or PCR; bronchoalveolar lavage specimens by virus isolation, electron microscopy and PCR; and sputum or upper respiratory tract swab, aspirate, or wash specimens by PCR. IFA, ELISA, Neutralization test (NT).

**Routes of Infection:**

*Inhalation:* Yes, through laboratory aerosolization or infected individuals

*Ingestion:* Yes

*Percutaneous:* Potentially (no evidence)

*Contact:* Yes

*Vector-Borne:* No

**Natural Routes of Infection:**

*Inhalation:* Yes, through infected individuals

*Ingestion:* Yes

*Percutaneous:* Potentially (no evidence)

*Contact:* Yes

*Vector-Borne:* No

*Sexual Transmission:* Potentially (no evidence)

*Vertical Transmission:* Potentially (no evidence)

**Communicability:**

*Human to Human:* Yes

*Human to Animal:* No Evidence

*Animal to Animal:* No Evidence

*Animal to Human:* No Evidence

*Multiple Species:* Generally thought to be just humans, but in one study masked palm civets in China have been found to carry the virus.

**Where is it present:** China, Hanoi, Hong Kong, Singapore, Taiwan and Toronto suffered outbreaks in 2003. While many others countries had a relatively small number of cases.