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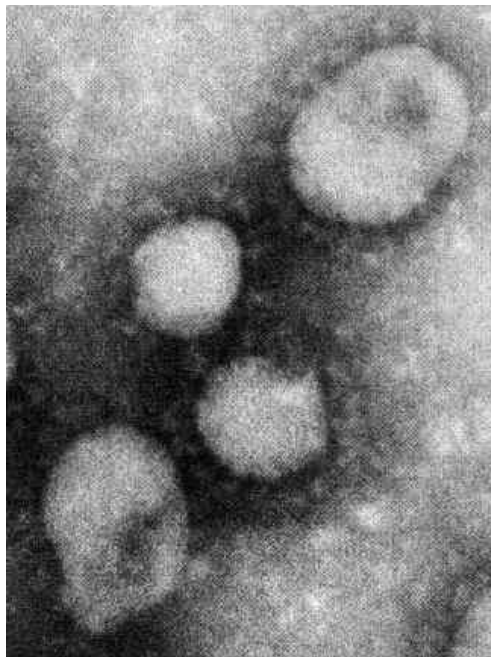
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## SARS Coronavirus Can Spread in Urine and Feces

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Actual electron microscope image of coronaviruses © 2003 by  
Department of Virology, Erasmus Medical Centre, Rotterdam, The Netherlands.

Updated April 19, 2003

**April 18, 2003** - Last weekend, the genetic code was sequenced for the virus that causes the Severe Acute Respiratory Syndrome known as SARS. The new virus is related to coronaviruses that cause colds in humans and a variety of serious diseases in mice, birds and pigs. But the gene sequence in the SARS virus is so different, it's now classified as a brand new coronavirus in its own category that has jumped from animals to people and is contagious enough to have spread to four continents since February. SARS spreads through close contact, sneeze and cough droplets, and urine and feces - but does not appear to be as easily airborne as influenza viruses.

Today, the number of suspected SARS pneumonia cases went up in China, Canada, Singapore and other parts of the world to 3473 cases and 170 deaths. But the Centers for Disease Control in Atlanta lowered its "suspected" American cases of SARS from 220 down to 36 people who "probably" have the new disease. The latest criteria for diagnosis are x-rays that show evidence of pneumonia or respiratory distress such as damaged alveoli air sacs in the lungs.

One of those probable CDC cases is in Chapel Hill, North Carolina. She is 38-years-old, married with a young baby. Until late February, she was a healthy vegetarian who ran every day. Then she got sick with what she thought was a bad flu. On February 25th, she was rushed to a hospital unable to breathe and was put on a ventilator, like 10% of the SARS patients in China have been. At first, she was also put in a negative flow room to prevent germs from spreading into the hospital because of SARS concerns, even though she had not traveled to Asia and did not know anyone who had.

By the time her sister and mother arrived from their home states to the Chapel Hill hospital, SARS was discussed as a possible explanation. But they weren't even asked to put on gowns and masks. Her sister was reading about SARS at my website, Earthfiles.com, and contacted me because she feels strongly that people need to know the disease is here in the United States and is truly life threatening. Not only did her sister nearly die, but within 5 days of their first hospital visit, their mother also contracted pneumonia. Yet there was no public alert or effort to contact and quarantine her family, friends and work colleagues.

The patient's sister, who works as a chemical and medical lab technician, hoped her sister could speak as a SARS patient tonight, but she still has trouble breathing. Instead her sister agreed to speak on the record with anonymity to protect her family's privacy.

**Sister (from Ohio) of SARS "Probable" Patient in Chapel Hill, North**

**Carolina:** "It was after getting x-rays and seeing the doctor that he finally told them that she did in fact have SARS and they knew it all along, but they would not tell the family or her or her husband or anyone else that that was the case. He told her it was because the hospital didn't appreciate that kind of publicity.

**WHAT WAS YOUR AND YOUR FAMILY'S REACTION THAT THE DOCTOR AND THE HOSPITAL WOULD BE CONCERNED ABOUT PUBLICITY IN THE FACE OF SOMETHING AS SERIOUS AS SARS?**

We were very upset that they withheld it from us. The first that we actually saw my sister was 10 minutes to midnight on a Wednesday, and by Monday my mother was so sick. She was shaking violently, she was having chills, body aches, and it was just the way SARS started. And when she got home to her home state and saw her doctor, he immediately started her on antibiotics and did a chest x-ray. She did have pneumonia.

**YOU AND YOUR MOTHER WERE NOT REQUIRED TO PUT ON GOWNS AND MASKS WHEN YOU WENT TO SEE HER?**

No. And no one around had gowns and masks on. No one was required to do anything except wash their hands upon entering and leaving the room. There was no barrier of any type to protect us from any airborne virus particles."

## How Does the SARS Coronavirus Spread?

Where did the healthy young North Carolina mother get lung-damaging SARS? Why did her mother get pneumonia, but the visiting sister remained healthy? Why did more than 200 residents in the Amoy Gardens high-rise apartments of Hong Kong contract SARS - while others in surrounding apartment buildings did not? In addition to close contact with infected patients, how else could this new corona virus be spreading?

Yesterday I asked Dr. David Heymann, M.D., Executive Director of Communicable Diseases at the World Health Organization in Geneva, Switzerland.

**David Heymann, M.D., Executive Director of Communicable Diseases at the World Health Organization in Geneva, Switzerland:** "What we understand from Hong Kong is that what has occurred in the Amoy Gardens is possibly from their studies related to their sewage system in the apartment buildings. In other words, they have found patients in Hong Kong and in fact in patients around the world that patients do excrete the virus in their feces and also in urine. So, their feeling is the sewage was contaminated and somehow contaminated patients, people who now have the disease, in the toilets or the bathrooms."

## Contagion from Close Contact with SARS-Infected Patients, Sneeze and Cough Droplets, and Urine and Feces

If the SARS virus can be on toilet seats or other surfaces where infected urine and feces are, how long is it contagious? I asked that question this morning to Albert Osterhaus, Veterinarian and Director of the Department of Virology at Erasmus Medical Centre in Rotterdam, the Netherlands. His team announced this week that monkeys exposed to the coronavirus collected from SARS patients became ill with the same SARS symptoms seen in humans.

**Albert Osterhaus, D.V.M. and Ph.D., Veterinarian and Virologist, Head of the Department of Virology, Erasmus Medical Centre, Rotterdam, The Netherlands:** "It can remain infectious for a certain period of time. We don't have all the figures yet, so all I can tell you is that we know from other coronaviruses the animal coronaviruses that they can remain infectious in material from patients, like stools, for days, and that depends on the environmental temperature. So if it is very warm, then the virus will degrade more rapidly than when it's around zero.

SO THE CORONAVIRUS SARS, IF IT'S LIKE THE OTHERS, COULD BE VIABLE AS A CONTAGIOUS AGENT FOR SEVERAL DAYS?

That's not impossible.

SO WE'RE IN THE MOST DANGEROUS TIME RIGHT NOW BECAUSE POPULATIONS EVERYWHERE DON'T CARRY ANY ANTIBODIES.

Absolutely. I think it's what we call the 'virgin soil' outbreak - such a virus introduced into a population that has no immunity. And that's the parallel with a pandemic flu, although in a pandemic flu, the mortality rates are probably much higher." (SARS mortality rate is around 4%.)

**Dr. David Heymann, W.H.O.:**

"HOW FAR DO YOU THINK THIS CAN SPREAD AND FOR HOW LONG?

That's what we don't know. Our concern is that this would continue to spread and become another human disease like tuberculosis or AIDS. What we hope is that it can be contained and stopped and not continue to spread. It's a very serious disease, especially for health workers who are the first in line to get infected because they are taking care of infected patients. When you don't have any drug to cure patients and we don't have any vaccine to prevent infection, the only thing can you do is isolate patients and keep them from infecting others.

SINCE NO ONE HAS SEEN THIS CORONAVIRUS BEFORE, COULD IT HAVE BEEN SOME BIOTERRORIST CREATION?

Our laboratory group that met yesterday here in Geneva felt that this is in no way an engineered virus. This is a naturally occurring virus. Now the question is: where did it come from?"

In other words, which animals in Guangdong Province, China were the first hosts for the new SARS corona virus? Where are they now? What is their health? And how did the new virus get from those animals into humans and then keep spreading?

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## More Information:

### SARS Virus Detection Tests

The next major step will be to produce a test which can detect the presence of the SARS virus in a patient's blood so doctors and hospital emergency rooms

can more quickly identify who needs to be quarantined and who does not. In two weeks, a new sensitive PCR test is expected to be developed which detects the SARS virus in a person's blood and will hopefully reduce the number of false negative tests that have been a problem. Further, the antibody tests are constantly being refined, but they are still tests that must be done later in the illness.

## Other Serious Infectious Diseases in History

SARS is the first major new infectious disease to emerge in the 21st century but:

- a) AIDS entered the human population in the early 1980s and spread worldwide.
- b) The Asian flu of the 1950s and the Hong Kong flu of the 1960s caused global pandemics as well as high levels of death.

## What Are SARS Symptoms and What Should You Do?

David Heymann, Executive Director of Communicable Diseases at the World Health Organization (W.H.O.) in Geneva, Switzerland, recommends that any person who has:

- a sudden fever above 100 degrees Fahrenheit that persists,
- accompanied by a dry cough,
- aching bones,
- and difficulty breathing,
- should go immediately to an emergency room.

Patients who have received good hospital support care, including ventilators, have survived. In fact, the mortality rate of the SARS pneumonia is running only about 3 to 5 %, but the potential severe lung damage in some of the cases demands expert medical treatment and x-rays.

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### SARS Suspected Cases as of April 19, 2003 Reported by CDC and W.H.O.

#### United States

Suspected SARS pneumonia cases in the United States have climbed to 220 in 35 states; no deaths.

Alabama	1
Arizona	1
California	42
Colorado	8
Connecticut	4
Florida	14
Georgia	3
Hawaii	5
Illinois	12
Indiana	1
Kansas	1
Kentucky	1
Maine	2
Massachusetts	11
Michigan	3

Minnesota 7  
Mississippi 2  
Missouri 2  
Nevada 2  
New Hampshire 1  
New Jersey 3  
New Mexico 1  
New York 25  
North Carolina 6  
Ohio 10  
Oregon 1  
Pennsylvania 6  
Rhode Island 1  
South Carolina 2  
Texas 7  
Utah 5  
Vermont 2  
Virginia 6  
Washington 21  
Wisconsin 1

### Worldwide:

April 19, 2003 - Current World Total: 3,547 Suspected Cases, 27 Countries,  
and 182 Deaths

Australia 3  
Brazil 2  
Canada 132 cases, 12 deaths  
China 1512 cases, 65 deaths  
China, Hong Kong 1358 cases, 81 deaths  
China, Taiwan, 29  
France, 5  
Germany 6  
India 1  
Indonesia 1  
Italy 3  
Japan 4  
Kuwait 1  
Malaysia 5 cases, 1 death  
Mongolia 3  
Philippines 1  
Ireland 1  
Romania 1  
Singapore 177 cases, 16 deaths  
South Africa 1  
Spain 1  
Sweden 3  
Switzerland, 1  
Thailand 7 cases, 2 deaths  
United Kingdom 6  
United States 220  
Viet Nam 63 cases, 5 deaths

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### **Websites:**

<http://www.who.int/en/> (World Health Organization)

<http://www.cdc.gov/> (Centers for Disease Control)

<http://www.bcgsc.ca/bioinfo/SARS/> (BCGenome Sciences Centre)

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