



## Quarantined Doctor in Toronto Describes SARS Disease

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Residents of Hong Kong where the SARS pneumonia virus has been spreading rapidly are wearing surgical masks as a precaution.  
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"I think we might find that SARS causes quite a massive immune response on the part of the human host that the virus is able to trick the sick human host and have it over react. ...Maybe the way this SARS disease hurts the host is almost like the host turning on itself (in an auto-immune way)."

Earthfiles, news category.

- Donald Low, M. D., Chief of Microbiology, Mt. Sinai Hospital, Toronto, Canada

### April 4, 2003 Evening Update:

#### STATEMENT BY TOMMY G. THOMPSON

Secretary of Health and Human Services

Regarding Executive Order on Quarantinable Diseases

"The President today signed an executive order adding SARS to the list of quarantinable communicable diseases under the Public Health Service Act. The president signed the order after he received a detailed briefing on SARS from myself, Dr. Julie Gerberding of the Centers for Disease Control and Prevention (CDC) and Dr. Anthony Fauci of the National Institutes of Allergy and Infectious Diseases.

By amending the list, we are simply taking the pragmatic step of readying all options as we continue to tackle this disease. This authority would only be used if someone posed a threat to public health and refused to cooperate with a voluntary request. We're working to be prepared for any eventuality.

The Department of Health and Human Services, particularly the scientists at the CDC, remains pro-active in addressing SARS. We continue to monitor those coming into the United States from Asia, isolating those who are showing symptoms of SARS and providing them with medical care, informing those who may have been exposed to SARS what to do if they get symptoms, and personally following up with those who may have been exposed.

Symptoms include coughing, fever and shortness of breath. Individuals with these symptoms who have recently returned from travel to mainland China, Hong Kong, Vietnam or Singapore should see a health care provider and inform them of their travel history. Clinicians should continue to report such cases to their state health department or the CDC."

**April 4, 2003 Toronto, Ontario, Canada** - The number of SARS cases keeps rising and has now spread to four continents. Hong Kong and Guangdong Province, China are the "hottest zones" for the new virus which has provoked the World Health Organization to issue a travel alert. WHO recommends that people with plans to visit Hong Kong and Guangdong Province consider postponing all but essential travel in an effort to control the spread of the SARS pneumonia. International travelers should be aware that the main symptoms of SARS is a persistent fever of 38° Celsius, or 100.4° Fahrenheit), dry cough, shortness of breath or breathing difficulties. People with such symptoms and who have recently been in the Hong Kong region, Singapore or Vietnam are advised to see a doctor.

The specific SARS pathogen is still not known, but researchers now think it's a new strain of corona virus that is usually associated with the common cold. But China health officials have reported on April 4, that the SARS microbe seems to have hooked up with the *Chlamydia* pneumonia virus, creating a brand new virus that has jumped from animal to human. Even more dangerous, SARS can transmit itself from human-to-human, setting up the possibility for a worldwide pandemic like the 1918 swine, or Spanish, flu that infected millions of people around the world and killed 20 to 30 million. The good news is that the SARS pneumonia is killing only about 4% of its victims. But the symptoms of the SARS disease can be real agony for many patients.

In Toronto, Canada, where more than 150 cases have been reported and 7 people have died, Dr. Donald Low from Mt. Sinai Hospital is now quarantined himself after treating 25 patients with the SARS pneumonia. Dr. Low is Chief of Microbiology at the University of Toronto's Mt. Sinai Hospital and talked to me this week from his home where he must remain until Wednesday, April 9, to make certain he is not sick with the SARS disease which can take up to a week to show itself.

Dr. Low told me this week that he is impressed with the consistency of symptoms in the 25 patients he has examined.

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## **Interview:**

**Donald Low, M. D., Chief of Microbiology, Mt. Sinai Hospital, University of Toronto, Toronto, Ontario, Canada:** "A typical story would be a nurse or

another health care worker that might have worked the weekend at a time when other patients were in hospital with disease. Then was at home for 3 or 4 days not working, usually about late Wednesday night or Thursday there will be a feeling of being unwell, headache, maybe some muscle aches, just a feeling like getting the flu, often followed by a temperature which can be low-grade but is very persistent and sometimes described as if you could heat the room it becomes that high. And when temperature taken, it's elevated and unlike many other respiratory viral infections these symptoms persist and often after a day or two followed by a cough, a non-productive cough (dry) and possibly with or without shortness of breath. Often that's what leads them to the hospital. So, it's much like a flu-like illness, but different in that the symptoms they describe are persistent. They just don't give up and the fever just doesn't go away.

#### WHEN YOU GET THEM IN THE HOSPITAL, WHAT ARE YOU SEEING ON X-RAYS, BLOOD TESTS AND SO FORTH?

What you see when they come in the hospital is often complaints of maybe the cough and in most patients that have the cough, it is a persistent cough. But some patients don't even complain of cough, but when you listen to their lungs there are often signs that something is going on down there, crackles in the lung field that shouldn't be there and when you get an x-ray, it can be one of two things: one is an x-ray with no evidence of infection, or an x-ray where you will see some shadows, some shading in the lungs, that suggest the patient does in fact have pneumonia.

At that stage, what we have been doing is instituting anti-viral therapy. We have been using ribovirin, which is a drug that has been used to treat hepatitis C infections, which is also an RNA virus like this (SARS) virus is thought to be.

I tell you my clinical experience is not very positive with the use of this drug by itself because in hospital in these patients, they continue to have fever and extreme anorexia, they feel miserable. Often the chest x-ray progresses and gets worse. The laboratory work is also pretty characteristic they will typically have almost a normal white count. It's not a low one. And the lymphocyte count the lymphocytes are reduced, almost uniformly. (Also, there is an) Elevation of enzymes that are found in the muscles of the body which we call CPK, and a very mild evidence of some liver inflammation not very dramatic. so subtle findings, nothing too striking other than the consistency that you see in patient after patient and almost by looking at the laboratory work, you become very suspicious (that it is) this disease.

#### Death from SARS Might Be Caused by Body's Own Massive Immune Response to New Virus

#### SO WHAT DO YOU THINK IS HAPPENING THAT IS MAKING THE SARS PATIENTS SO SICK AND KILLING THOSE THAT DIE?

I think we might find that SARS causes quite a massive immune response on the part of the human host that the virus is able to trick the sick human host and have it over react. In fact, we might see that some of the lung damage is a result of host inflammatory products such as interferon in such high quantities which can cause damage. Maybe the way this SARS disease hurts the host is almost

like the host turning on itself (in an auto-immune way). Our experience is more of a diffuse pneumonia which often involves both lung fields.

YOU ARE SEEING ALVEOLI DAMAGE?

Yes, in the few number of cases where we do have autopsy examinations, we've seen alveoli damage, but very little in the way of inflammatory cells. But they are clearly a picture of acute injury to the lung.

HOW MANY OF YOUR PATIENTS HAVE HAD TO GO ON VENTILATORS?

We must be up around 10, which would be fitting in with the findings in Hong Kong and we've had 7 people who have died.

OF THOSE WHO DIED, WAS THERE ANY COMMON DENOMINATOR ABOUT WHY THEY DIED?

With regards to risk factors, it's older age, typically patients who are older than 65 years or have underlying disease. But we recognize this can also occur in younger patients and it might be a result that those patients who are exposed to a sick person where they get exposed to a large number of virus particles that results in such an overwhelming infection in both lungs.

## Precautions Around SARS Virus Patients

YOU SAID YOU'VE HAD HANDS ON WITH AT LEAST 25 PATIENTS IF YOU DON'T GET THE SARS SYNDROME, WHY WOULDN'T YOU GET IT?

Because I was using appropriate precautions recommended here that is, when you have a recognized (SARS) patient, that you wear goggles or glasses that protect your eyes the mucous membranes, a mask, a gown and gloves and washing your hands carefully and the instruments you might use, washing them carefully and that has been proved to be in fact, I don't know of an example where those techniques are applied that they haven't been able to stop transmission. So that's very encouraging.

## Could SARS Become A Global Pandemic?

TODAY, THE *ARIZONA DAILY STAR* IN A STORY ENTITLED, 'TUCSON HOSPITALS PREPARE FOR SARS BY CARLA MC CLANE, SHE QUOTES DR. ESKILD PETERSEN, WHO IS ONE OF THE UNIV. OF ARIZONA'S INFECTIOUS DISEASE SPECIALISTS, AND THIS IS A QUOTE, " This has the potential to be a very big global health problem, possibly a pandemic on the order of the 1918 Spanish flu."

WHAT DO YOU THINK?

I agree. I think we are already seeing evidence that it's becoming a pandemic because did you see reports today I haven't seen these verified but cases in Brazil, cases in Indonesia, possibly in Africa. You know, the amount of energy and time and resources that we're putting to control this outbreak in Toronto what would happen if this gets into Brazil and into Sao Paulo? My God! I think

we start to meet the definition of a pandemic.

## What Exactly Is the SARS Microbe?

**Editorial Note:** After this interview, China health officials reported on April 4, that the SARS microbe - at least in Hong Kong and Guangdong Province - seems to have hooked up with the *Chlamydia* pneumonia virus, creating a brand new virus that has jumped from animal to human.

THE ORIGINAL ELECTRON MICROSCOPE INFORMATION FROM DR. JOHN TAM IN HONG KONG.

Yes, I know John.

IT SUGGESTED *PARAMYXO* VIRUS WHICH CAUSES MUMPS, MEASLES AND CHILDHOOD CROUP. THEN A WEEK ALTER, CDC WAS SAYING THAT OTHER WORK BEING DONE BY OTHER PEOPLE SUGGESTED IT MIGHT BE THE *CORONA* VIRUS THAT CAUSES THE COMMON COLD. DO YOU HAVE ANY INFORMATION NOW THAT IS REINFORCING EITHER ONE OF THOSE HYPOTHESES?

I think most of the information is pointing towards the corona virus and this is a new corona virus that did not come from humans, but came from animals. It's jumped species, but not only has been able to jump species and cause disease, but is able to transmit from person-to-person. That is the worst possible combination of events because that means we have a new virus that can cause significant disease in a totally non-immune population.

WHY IS IT THAT THIS ALWAYS SEEMS TO COME OUT OF CHINA AND HONG KONG - THAT PART OF THE WORLD?

If you go and visit there, what you'll find is that there are very few backyards that don't have chickens and pigs in them. I was just in Cambodia and a floating village on one of the lakes, and right next to the home in a little float was a pig and some chickens. There is a very close approximation of animals with humans and that's what happened with the avian influenza of 1997 the disease in chickens was able in close proximity to jump into humans. Fortunately there, we never saw any transmission from humans to humans.

THAT'S WHEN THEY KILLED THOSE HUNDREDS OF THOUSANDS OF CHICKENS TRYING TO CONTROL?

Exactly.

## If New Animal-To-Human Virus, Why Low Mortality Rate So Far?

IF THIS IS A BRAND NEW CORONA VIRUS THAT HAS GONE FROM ANIMAL TO HUMAN AND THEN CAN TRANSMIT HUMAN TO HUMAN, WHY WOULD THE MORTALITY RATE BE STILL ONLY AROUND 3 TO 5 %?



Because that's the ideal way for a virus to function. This is what a virus wants to do. An ideal virus does not kill its host. It causes disease. If a virus had a very high mortality rate, such as Ebola virus, it would be very easy to contain because the host would not be able to get on a plane and go to another country to spread disease. So, viruses and all bacteria and pathogens all these things it's like a computer virus. A good computer virus comes into your computer and sits around there and maybe causes a bit of problems, but doesn't cause you to crash and that allows you to send it by e-mail to other computers and it amplifies the numbers. This is exactly what you are seeing with this virus.

## If SARS Becomes Pandemic, How Do Hospitals Cope?

ANY SPECIFIC PLANS YOU HAVE IN YOUR HOSPITAL ALREADY IN ADVANCE PLANNING ABOUT A HUGE INCREASE OF PATIENTS AND WHAT EXACTLY YOU WOULD DO?

Yes, we are looking toward the future and the possibility to establish hospitals just to look after these patients and sending patients home to be managed there instead of being brought into the hospital setting. So, we are thinking that if we continue to see increasing numbers that we'll be able to deal with them.

YOU WOULD SET UP TEMPORARY HOSPITALS IN TENTS?

There are other facilities available hospitals that have been closed that we could use for temporary SARS patients and that's always a possibility. The difficulty is staffing it and having all the equipment necessary.

HOW LONG ARE YOU IN QUARANTINE?

I'll be out on Wednesday.

NEXT WEDNESDAY.

Yes, I wish it was this Wednesday!

AND THE TIME BETWEEN NOW AND THE 9TH, IF YOU WERE GOING TO BECOME A SARS PATIENT, WOULD YOU EXPECT THAT THE FIRST THING YOU WOULD SEE IN YOURSELF WOULD BE FEVER?

Yes, no not necessarily fever. I think maybe one of the first things I would have is malaise that is, just feeling very tired, very weak, aching muscles and a headache, just like I was getting influenza. I think that would be the first tip off.

THEN THE FEVER?

Then the fever.

THEN AFTER THE FEVER?

Then the cough, the non-productive, hacking cough that just won't go away.

HAVE THE PATIENTS YOU'VE SEEN HAD TERRIBLE MUSCLE BODY ACHES?

Yes, sometimes just bone rattling, rigors, shakes and chills, as well as just severe aching in their muscles.

WHAT HAS BEEN THE TYPICAL LENGTH OF THE ILLNESS FOR THOSE WHO HAVE BEEN ABLE TO RECUPERATE AND GO HOME?

About 10 to 12 days.

AND REALLY SICK FOR THOSE 10 TO 12 DAYS?

Yes. Usually the peak of the illness is in the first 5 to 7 days, but people are sometimes sick longer than that.

THE PEOPLE WHO HAVE HAD TO GO ON VENTILATORS, IT'S BECAUSE OF BOTH THEIR DIFFICULTY BREATHING AND THEIR X-RAYS ARE SHOWING SEVERE PNEUMONIA?

Yes, getting oxygen to their blood, it's difficult, so they need ventilator support."

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## **More Information:**

Air travel into Hong Kong has dropped 20% the past few days and Singapore Airlines is now providing masks for all passengers and crew on flights departing from Hong Kong, Vietnam and Taiwan.

## SARS Cases as of April 4, 2003 Reported by CDC and W.H.O.

### United States

Suspected SARS pneumonia cases in the United States have climbed to 100 in 28 states; no deaths.

Alabama	1
California	30
Colorado	4
Connecticut	2
Florida	2
Georgia	1
Hawaii	5
Illinois	4
Kansas	1
Maine	2
Massachusetts	4
Michigan	2
Missouri	2
Mississippi	1
Minnesota	4
New Hampshire	1
New Jersey	2
New Mexico	1

North Carolina 4  
New York 17  
Ohio 2  
Pennsylvania 4  
Rhode Island 1  
Texas 4  
Utah 4  
Vermont 2  
Virginia 2  
Washington 5  
Wisconsin 1

Total Suspected U. S. Cases Under Investigation: 115. No deaths.

### Worldwide:

Australia 1 case  
Belgium 1  
Brazil 1  
Canada 69 cases, 7 deaths  
China 1220 cases, 49 deaths  
China, Hong Kong 761 cases, 17 deaths  
China, Taiwan, 15  
France, 3  
Germany 5  
Italy 3  
Ireland 1  
Romania 1  
Singapore 100 cases, 5 deaths  
Spain 1  
Switzerland, 2  
Thailand 7 cases, 2 deaths  
United Kingdom 3  
United States 100  
Viet Nam 59 cases, 4 deaths

Current World Total: 2368 Cases and 84 Deaths

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### **Websites:**

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

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

### **Credits**

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