Updated - SARS Pneumonia Tentatively Identified as *Paramyxoviridae* Virus

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"...The good news is that patients can be managed successfully even if we don't know what the treatment is to cure the infection. Patients can be managed and their life sustained and they can, we believe, eventually recover."

- David Heymann, M. D., Ex. Dir., Communicable Diseases, W.H.O., Geneva

Travelers from Hsiamen, China, are met by Taiwanese health official handing out leaflets warning about SARS symptoms.
Photograph © 2003 by Associated Press.

Update: ProMED, the International Society for Infectious Diseases, reports that the SARS microbe is tentatively identified as a virus in the *Paramyxoviridae* family. There are hundreds of such *Paramyxoviridae* viruses with varying degrees of danger to humans, including diseases such as measles, mumps, and croup in children. Professor John Tam of the Department of Microbiology, Chinese University, said the virus was detected by electron microscopy. There is no drug cure for this virus group and the SARS microbe could be a new variant.

Asked if the SARS virus was curable, Tam said they still needed to monitor individual patients for more knowledge about the virus, but agreed that current anti-viral treatment applied to patients has been the right choice, combined with respirators to help breathing where needed.

Updated March 19, 2003 Geneva, Switzerland - This morning I talked with David Heymann, M. D., Executive Director of the Communicable Diseases Program at his World Health Organization office in Geneva, about the mysterious SARS pneumonia that has infected at least 500 people worldwide (this number includes the 307 February cases in Guangdong Province, China) and killed fourteen as of March 19, 2003. The good news is that W.H.O. now thinks this microbe is not airborne and patients can be hospitalized for treatment in contained ways that will prevent disease spread.

SARS is an acronym for Severe Acute Respiratory Syndrome, an atypical pneumonia that rapidly attacks lung tissue and first showed up in February 2003 when 305 people became ill in Guangdong Province, China. In addition since then, at least 170 other people in Hong Kong, Vietnam, Singapore and Canada have been infected. Medical experts still do not know if the microbe is a new virus strain or bacteria and antibiotics are not killing whatever it is. Ten percent of the Hong Kong patients are still on respirators to help them breath.

Other suspicious cases are now being investigated in England, Germany, France, Israel, Slovenia, Australia and the United States, the Philippines, Thailand, and Germany.

Some airlines in China, Vietnam, Australia, Japan and New Zealand are not checking in passengers who show any signs of the SARS illness.

SARS Symptoms:

- Fever greater than 38 degrees Centigrade (100.4 Fahrenheit) that accompanies
- Dry cough (no mucus)
- Difficulty breathing, shortness of breath
- Have recently traveled to infected areas
- Have had close contact with another SARS patient or health worker

What to Do:

- Anyone with the combination of symptoms and associations above should immediately go to a hospital or emergency room for evaluation and possible isolation to contain the disease and be treated.

Interview:

David Heymann, M. D., Executive Director, Communicable Diseases, World Health Organization (W.H.O.), Geneva, Switzerland:

WHAT DO YOU ESTIMATE RIGHT NOW THE MORTALITY RATE IS AND DO YOU SEE IT INCREASING?

We don't have a good idea of the mortality. What we know is there have been 9 deaths our of 500 cases. We do know that people get very seriously ill and we also know that if hospitals have the appropriate equipment, which they now have in Vietnam and have had in Hong Kong, lives can be saved if patients are put on ventilators.

But this is very unusual for an epidemic of this type of atypical pneumonia to require respirators in many incidents. Very unusual.

Is SARS A Pandemic Like the 1918 Swine Flu?

IN THE UNITED STATES LAST NIGHT ON TELEVISION, THERE WERE NEWS BULLETINS SAYING THAT WHO WAS CONCERNED THAT THIS COULD BE THE BEGINNING OF A WORLDWIDE PANDEMIC LIKE THE 1918 SWINE FLU THAT KILLED 20 MILLION PEOPLE WORLDWIDE.

W.H.O. is always worried when there is an organism which can't be identified because we can't then predict what will happen. But based on the studies that have gone on so far among the people involved in the outbreaks, it does not in any way look like this will be a major pandemic such as influenza. This organism, this infectious agent, is transmitted much less efficiently than influenza, so casual contact walking through a room where there might be airborne infection is not what is occurring with this disease.

DO YOU PLACE THE 305 CASES IN GUANDONG PROVINCE IN CHINA IN THE SARS CATEGORY NOW?

These cases are occurring in the same geographical area and at the same time period, so they are linked. What they are not linked yet by is a common causative agent because we don't know that agent. But certainly now that we are working closely with the Chinese, we believe that the information they have on the outbreaks that have been occurring in Guandong will be of great use to us in determining what further recommendations for patient management.

IF GUANDONG IS INCLUDED, THAT BRINGS THE NUMBER OF PEOPLE INFECTED UP TO 500 AND COUNTING.

That's correct. It's approximately 500 cases we believe are occurring with the same symptoms.

Will SARS Spread in Airplane Ventilation System?

IF YOU ARE A PASSENGER IN AN AIRPLANE AND THERE IS SOMEBODY ON THAT AIRPLANE THAT HAS SARS, WILL IT SPREAD THROUGH THE AIR SYSTEM WITHIN THE AIRPLANE?

We have no evidence to believe that based on the fact that there have been three different patients who have been evacuated on airliners two on commercial airliners and one on a non-commercial airliner. None of those airplanes seem to have produced epidemics, which is good news.

SARS Is Treatable and Containable

WOULD YOU RECOMMEND TODAY ANYONE, ANYWHERE IN THE WORLD UNITED STATES, CANADA AND OTHER IF YOU HAVE A HIGH FEVER SUDDENLY THAT IS ACCOMPANIED BY HEADACHE AND GOING INTO SOMETHING LIKE A DRY COUGH, THEY SHOULD GO TO A HOSPITAL OR AN EMERGENCY ROOM?

They should do that if they have one other criteria that is met and that is have been exposed to either Vietnam or Hong Kong, or have been exposed to any of the sites where the currently known outbreaks are occurring in Canada.

HOSPITAL WORKERS THAT HAVE BEEN THE LARGEST POPULATION TO GET THE SARS SYNDROME. HAS THAT BEEN BECAUSE OF DIRECT CONTACT WITH SALIVA, BLOOD OR OTHER FLUIDS FROM PATIENTS?

That's correct. From what we understand in the studies we have been doing in the past three or four weeks, it appears that this can only be transmitted by contact with droplets coming directly from a patient, or possibly from body fluids other than droplets.

HOW DO WORKERS IN HOSPITALS PROTECT THEMSELVES WORKING WITH PATIENTS WHEN NOBODY KNOWS WHETHER THEY HAVE SARS OR NOT?

It's a very difficult job to be sure. Certainly, when a patient comes to be suspected, there must be all kinds of precautions including doctors that are wearing protective masks and goggles so that if the patient sneezes or coughs, they don't become infected themselves.

HEALTH WORKERS AND SOME PEOPLE ON THE STREETS HAVE BEEN PHOTOGRAPHED WEARING MASKS. WOULD MASKS HELP PREVENT THE SPREAD OF THIS DISEASE?

This is not warranted as far as we know for this particular infection. But it's

common place in many Asian countries to wear a mask if one has a respiratory infection, even for the common cold, in an attempt not to spread it to others. So possibly, some of the masks that are seen in those areas are just normally being worn.

Could SARS Be A Biological Weapon?

AS WE ARE ABOUT TO GO TO WAR FROM THE UNITED STATES TO IRAQ, MANY PEOPLE HAVE ASKED: COULD THIS SARS OUTBREAK COMING AT EXACTLY THIS PERIOD OF FEBRUARY TO MARCH 2003, BE ONE OF SADDAM HUSSEIN'S OR AL QUAEDA'S EXPERIMENTS WITH BIOLOGICAL WEAPONS?

We have no evidence that this is a deliberately caused epidemic. Once we find the organism, we'll be better able to determine where this outbreak might have come from. In other words, how it became established. But at present, there is no evidence that this is a deliberately caused outbreak or bioterrorism.

IS IT STRANGE TO YOU THAT AFTER A MONTH OF THIS DISEASE BREAKING OUT IN VARIOUS PLACES IN SOUTHEAST ASIA AND CANADA, THAT IT IS SO DIFFICULT TO IDENTIFY WHAT IS CAUSING THE DISEASE?

This is often the case in new diseases. If you remember back to Legionnaire's Disease in 1976 when it first occurred. It took weeks, if not months, to identify what was causing that outbreak. If it's an organism that is not recognized, it is a very difficult task to find that organism.

However, studies are going on right now under the electron microscope and hopefully they will yield at least some preliminary information about whether it might be viral or bacterial.

Animal-To-Human Virus?

THERE WAS A MAN AND A SON IN HONG KONG WHO DIED IN FEBRUARY FROM AVIAN INFLUENZA, A BIRD-TO-HUMAN TRANSMITTED DISEASE.

That's correct. But the SARS outbreaks in Vietnam and Hong Kong are, as far as we know, in no way related to those bird flu cases that also occurred in Hong Kong in February.

COULD SARS BE AN ANIMAL-TO-HUMAN NEW VIRUS?

Many times infections such as this which are extremely virulent in humans are infections that come from an animal host into humans. In other words, they are an infection that is common in animal populations and for some reason, has been able to jump the species barrier between animals and humans and infect humans. When that happens, there are several options that the organism has. It can establish a residence in humans and become a disease that's common in humans and remains in human populations and transmits through generations. Or it can transmit to a very few people and then it dies out because the human is not a good host for this infection.

So, what we are looking for in the studies that are going on now is to determine whether or not this is an agent that will transmit for many successive generations. Or if it is one that will die out in time.

WHY IS IT SO DIFFICULT TO CONFIRM WHETHER IT IS A VIRUS OR BACTERIA OR IF IT IS A VIRUS COMING FROM ANIMALS TO HUMANS?

There have been several problems. One has been getting the specimens distributed to the laboratories which can do this. Hong Kong laboratories, for

example, have been doing an extremely excellent job in looking for an infectious agent. Now, there are other labs working with them to look for an infectious agent and this requires time because sometimes it requires culturing a specimen on both bacterial culture media and cells, human cells in test tubes, looking to see if there is a virus or bacteria present. That takes up to 24 to 48 hours, or longer, to determine that.

At the same time, if you are looking in blood for evidence of infection, antibodies take 3 to 5 days to develop. So, you can't detect it until later in the infection. Then, you must make sure that this antibody was not there beforehand and that it is actually being produced by the (new) infection.

BUT WE'VE HAD A MONTH OF THESE CASES COMING FROM FEBRUARY AND WE'RE AT MARCH 18. WHY WOULD THIS STILL BE A MYSTERY?

It's a very difficult infection to identify. But once it is identified, we'll know where to go from there and the labs will be able to develop the diagnostic tests that we need."

Websites:

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

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

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