

Coronavirus outbreak: SITUATION IN SINGAPORE

Patients may be mildly ill for over a week before virus affects lungs

Early symptoms non-specific, so it is difficult to identify those who are infected by virus

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Several of the locally infected patients with no known links had seen a doctor two or three times before they were sent to hospital.

This is because the illness generally starts mild with non-specific symptoms such as cough, sore throat, slight fever and feeling tired, said Professor Leo Yee Sin, executive director of the National Centre for Infectious Diseases, yesterday.

These are symptoms tens of thousands of people suffer from every day in Singapore alone, she added. So it is difficult to identify those infected by the coronavirus if they have no links to China or to other patients.

She said they may be mildly sick for more than a week before the virus affects their lungs. That is why those who feel unwell are advised to stay at home, or if they need to go out, to wear a mask so they do not spread the disease to others.

Professor Tan Chorh Chuan, chief health scientist at the Ministry of Health, said: "In today's environment, be prudent. If you are feeling febrile, it's better to stay at home."

They were speaking at a press conference on how the local public health and research and development communities are working to-

gether to combat the spread of the coronavirus.

Prof Leo said much is still not known about the disease, why some people get mildly ill while others may die of it.

She added: "I will say that this is not really a mild disease, from what we can observe so far, having a few patients in the intensive care unit (ICU) at this point in time."

From global cases, she said it appears that the elderly, people with underlying health problems or those who are immuno-compromised tend to fare worse.

In Singapore, several patients have needed either high-dependency care because their condition is unstable, or even intensive care as they require intubation to ensure they get sufficient oxygen.

As of Sunday night, six patients were in intensive care. These are patients of different ages and not just the older ones, Prof Leo said.

The first six patients who recovered all had mild symptoms. Patients in intensive care, whose lungs are no longer working well, get mechanical aid in their breathing.

Patients in both ICU and high-dependency wards are continuously monitored - that is, minute by minute - for their oxygen level, heart and respiratory rates, blood pressure and temperature. Any change triggers an alert and medical staff will attend to them immediately.

Prof Tan said some patients "mount a strong immune response



Professor Leo Yee Sin (left), executive director of the National Centre for Infectious Diseases, and Professor Tan Chorh Chuan, chief health scientist at the Ministry of Health, at a press conference yesterday. ST PHOTO: KELVIN CHNG

to the virus". It is sometimes this strong response that does harm to their bodies, occasionally damaging their organs.

Prof Leo said the body "has a certain degree of redundancy, such as two kidneys, which most of the time work at 50 per cent".

When the person's immune response affects the organs, the doctors try to get the patient through the illness without too much damage to their organs.

As this virus affects primarily the lungs, that is where most damage may occur. She added that in the patients here, there has been little effect on their other organs so far.

UNDERSTANDING THE VIRUS

To fight a war, you must know your enemy. This is a new virus, you must know what you're dealing with.



MINISTRY OF HEALTH'S CHIEF HEALTH SCIENTIST TAN CHORH CHUAN

"There are very few whose kidneys or livers are affected. It's mostly the lungs," she said.

A bit of good news - one ICU patient is now feeling better and

came out of intensive care on Sunday.

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Transmission only via droplets and contact

A panel of nine of Singapore's leading infectious disease experts gathered yesterday to discuss the coronavirus outbreak and explain how researchers here are working to overcome the health problem.

The Straits Times posed several questions about the coronavirus to the panel:

Q What do we know about the transmission of the virus?

A "Following Sars, quite a bit of work has been done on the persistence of viral surfaces and most of the studies indicate that they don't persist very well in a hot, humid environment," said Prof Tan.

This refers to a temperature of over 30 deg C, and humidity of over 80 per cent. However, Prof Tan noted that this may vary slightly depending on the origins of the virus.

Quite a lot of work has also been done to ascertain which disinfectants work in disrupting viral particles, he added.

"The good news is that we have a hot, tropical environment and, therefore, in the outdoors, the likelihood of viral persistence is lower," he said.

Q How are patients here contributing to research on the virus?

A The majority of coronavirus patients here are eager to help researchers understand the outbreak, said Prof Lye.

Many had agreed to offer samples before he could explain the procedure to do so in detail as mandated for such research.

Researchers need to take samples of throat swabs, blood, urine, stools and tears from patients to study the virus as well as people's immune response.

He said: "Some of them feel guilty and want to do all they can to help. We tell them, there is no reason for you to feel guilty. It is not your fault you are sick."

So far, 19 patients in Singapore have agreed to help researchers understand the virus better by donating samples. They include the very first patient, who is from Wuhan. Only two have refused so far, he said.

Researchers have yet to approach the more recently warded patients.

Q Can the virus be transmitted via aerosol?

A Prof Tan said that based on what is currently known, the method of transmission remains through large respiratory droplets and contact.

He added that this question was addressed at a news conference by China's National Health Commission on Sunday, where it was said that there is no evidence that the new coronavirus is transmitted through aerosols.

"Aerosols may be formed in special situations such as intubation procedures in hospitals," he said.

The expert panel included Professor Tan Chorh Chuan, chief health scientist at the Ministry of Health; Professor Leo Yee Sin, executive director at the National Centre for Infectious Diseases (NCID); Professor Lisa Ng, senior principal investigator at the Agency for Science, Technology and Research's (A*Star) Singapore Immunology Network; and Professor Wang Linfa, director of the Programme in Emerging Infectious Diseases at Duke-NUS Medical School.

The other members were Associate Professor Hsu Li Yang, programme leader for infectious diseases at the National University of Singapore's Saw Swee Hock School; Dr Sebastian Maurer-Stroh, deputy executive director of A*Star's Bioinformatics Institute; Associate Professor Raymond Lin, director of the National Public Health Laboratory at NCID; Dr Sidney Yee, chief executive officer at the Diagnostics Development Hub; and Associate Professor David Lye, director of NCID's Infectious Disease Research and Training Office.

Salma Khalik, Joyce Teo and Audrey Tan

Laboratory technicians working on a diagnostic kit to test whether patients have the coronavirus at the Agency for Science, Technology and Research's Diagnostics Development Hub yesterday. ST PHOTO: KELVIN CHNG



Scientists working on vaccine, aim to begin trial in four months

Timothy Goh and Audrey Tan

Singapore scientists are working with international partners to develop a trial for a vaccine for the coronavirus, with plans to begin testing it in as soon as four months.

The Health Ministry's (MOH) chief health scientist, Professor Tan Chorh Chuan, said that Duke-NUS Medical School is working with the Coalition for Epidemic Preparedness Innovations (Cepi) to roll out a vaccine trial here.

The Straits Times understands that this could happen in as soon as four months.

Time is needed to develop the vaccine and test its safety and suitability for use on patients, Prof Tan said during a news

conference yesterday.

The meeting saw nine of Singapore's infectious disease experts gathering to detail what is being done to fight the virus, on both the science and health fronts.

The trial will involve giving the vaccine to healthy volunteers, who will be monitored for side effects.

They will also be observed to see the effects that the vaccine has on their immune system.

Cepi, headquartered in Norway, is a public-private alliance that aims to derail epidemics by speeding up the development of vaccines.

Globally, scientists are racing to develop a vaccine against the virus. The process typically takes years and involves a lengthy process of testing on animals, clinical trials on humans and regulatory approvals.

Professor Wang Linfa, director of Duke-NUS' Programme in Emerging Infectious Diseases, said that, however, Cepi already has several processes prepared, including methods of production, which can be quickly used when a new virus emerges.

"So, when the virus comes, it is just plug-and-play," he said.

TREATMENT

Research is also under way to develop anti-viral drugs, which can benefit patients in the nearer term.

Prof Tan said that the National Centre for Infectious Diseases (NCID) is working with various parties to repurpose currently available drugs for patients who are severely ill.

Associate Professor David Lye, di-

rector of NCID's Infectious Disease Research and Training Office, explained: "Repurposed drugs are drugs which have been shown to work in the lab on animal models. They have a safety profile which allows them to be tested on humans."

However, he noted that there is a need for further trials to test the efficacy of such drugs.

China has been testing how effective such drugs are in combating the coronavirus, and Thailand's Health Ministry said previously that Thai doctors who gave the drugs to coronavirus patients had reported promising initial results.

So, NCID has been in discussion with global experts, including those from the World Health Organisation, to develop a randomised controlled trial protocol.

"We hope to bring to our Singapore patients a proper randomised trial very, very soon," said Prof Lye.

WHO WILL BE WORST HIT?

NCID's executive director, Professor Leo Yee Sin, said that 19 patients with the virus have been recruited into a study to better under-

stand the virus and identify who would be most at risk.

To do so, biological samples from the patients, including blood and stool samples, are collected for analysis.

They will be compared against the clinical progression of the patients as their conditions develop, to study how their immune systems change with the progression of the infection. This may pave the way for researchers to determine key periods for treatment and intervention.

Known as Protect, the prospective study is the result of a protocol which was developed in 2012.

It aims to detect new pathogens and characterise their clinical features, as well as determine their transmission risk, and how they interact with their hosts, among other things.

Prof Tan said: "To fight a war, you must know your enemy. This is a new virus, we need to know what we are dealing with."

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