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SPEAKER 1: And we have a treat for you with Doctor Zhen Ding, who is presenting all the way from Wuhan, China. He is a gastroenterologist who practices in Wuhan Union Hospital, and so he will be walking us through his own personal experience with dealing with the COVID-19 crisis in China.

ZHEN DING: Hello, everybody. I am Zhen Ding from Wuhan Union Hospital, and our hospital is the more than 1.6 hundred years old. And it's one of the biggest hospital in the middle of China. And today is my pleasure to get the invitation to share my experience and some information during the outbreak COVID-19 in Wuhan.

And we all know, COVID-19 outplayed in the whole world, and these are Chinese epidemic maps. We can see in February the Chinese condition is very serious. And then after one month, our situation is getting better. However, it's unfortunate to see more and more countries are involved in this crisis.

So this outbreak can be divided into two stages. The first is the China period, and the second is pandemic period. And these world epidemic maps, we can see in this more than one month the kind of disease spread very quickly. And until now, almost all countries are involved in this crisis, and near one million person get the infection.

And this fig show the new confirmed cases per day in three countries, Italy, United States, and Canada. We can see the increased trend is very similar. The difference is Italy is 10 days ahead of America, and America is 8 days ahead of Canada. So in my opinion, the COVID-19 is a [INAUDIBLE] attack to human beings, that every person and every country have to face the crisis. Maybe the difference is just sooner or later.

Let's first try to understand the COVID-19. And this is the basically productive number, R_0 , just a million total. This means how many person can be infected by one patient. And this table summarizes the R_0 of common infectious disease. And then we see the measles has the highest R_0 . It's more than 10. And then SARS, another disease caused by coronavirus, the R_0 is range from 2 to 5. And as to COVID-19, in this publication, the R_0 is 2.2. And then in some other study, this number can be near the 4 to 5.

So I think the R_0 of the COVID-19 is very similar to that of SARS. And its doubling time is 7.4 days. This means without control, this pandemic can be doubled every week. And as to the mortality, first I think the COVID-19 cannot be considered as a big flu, because its mortality is much higher than common seasonal flu.

Till now, the global mortality of COVID-19 is 5%. And it is much different in different countries. In Italy, the mortality is the highest. It's more than 10%. And in America, it's near the 2%. The difference may be is caused by different subtype of virus infection.

However, in my opinion, I think the main reason is that a different level of the [INAUDIBLE] resource supplies and the different strategy of the management. And then we can see the Chinese mortality. This black line is Hubei province. And the gray line is other regions.

We can see from the beginning to now, the Hubei's mortality is much higher than other regions. The big difference is caused by at the points of outbreak we are ready or not.

And we can calculate the severity of the disease. For example, in this publication we can see the number of severe case 173, and the number of non-severe case 926. So we can calculate the severity of the COVID-19 is 16%. And then in this publication we can see 26% of the case are sent to intensive care unit, so in almost all publications, the severity of COVID-19 is range from the 15% to 25%. Maybe it's relate to the old age and some other organ complication.

In the incubation period of the COVID-19 it's 1 to 14 days. In most case present the symptoms in one week. However, is some special case the incubation time can be longer than three weeks. This is much-- it's very dangerous. So I think the most horror of the disease is some case can get the long incubation period without any symptoms.

So it can spread the infection to a a lot of persons. We begin with this virus is a kind of smart virus. In China we have a joke. This virus combats anyone who says it doesn't matter.

Now, how to diagnose COVID-19? First, most patients have the contact history. Possible contact history with the person contact a patient without protection, or have a traveling history in the epidemic region.

The contact way can like this-- speaking, the body surface contact, shake hands. OK, in the last picture we can see the 2% take correctly, because they keep apart from each other. Actually, if they can stay in farther, they can be safer.

And the symptoms just we can see the publication. The fever is the most common symptom of the disease. And the following is the fatigue and other respiratory symptoms. In addition, in my experience, some cases can only present diarrhea and nausea without fever and respiratory symptoms. So it should be noted by gastroenterologists.

And the number I suppose is near the 10% of all the COVID-19 case. And this is the result of a routine blood test. The left fig shows the relation between the white blood cell count and the time. And the blue line is the survivors and the orange line represents the non-survivors.

We can see in the milder case or in early stage of the infection, almost the white blood cell should be normal. In some situation it can increase. This increase often indicates the co-infection with bacteria or fungus. And the right figure show the change of lymphocytes. We can see in almost all case, the lymphocyte count decrease. And the nest of the lymphocyte, the more severity of the disease. So this is a remarkable feature of this kind of infection.

And we have see the CT scan. The traditional imaging of COVID-19 is ground glass opacity. At the beginning, it started locate located in the outer margin and the [INAUDIBLE]. And then with the developing of the disease, it can extend to the whole lung like this. We call it the white lung.

The last of the proof is the biological examination. It includes nucleic acid detection and antibody detection. Because of false negative results, so the positive result can confirm the diagnosis. However, the negative result cannot exclude the diagnosis.

So the COVID-19 can be diagnosed in two steps. First is [INAUDIBLE] diagnosis. If the patient have a contact of history, they have the two of the three items-- the symptoms, the decrease in lymphocytes, and the changes on CT scan. They can get the diagnosis of COVID-19.

If the patient have not a contact history, all these three items are needed. And the confirmed diagnosis is a suspected diagnoses plus virological evidence. So after diagnose the COVID-19, I think everyone will concern how to protect ourselves. Before I answer this question, first we have to know the transmission way.

We will note the COVID-19 can spread by the droplet and the close contact. And just a [INAUDIBLE] the close contact is much more than contacting a patient, because the virus can survive in the smooth surface for several days.

So if you touch a contaminated surface, for example the stair [INAUDIBLE], the doorknob, or elevator buttons, you might be infected by the virus. So I have to remind again the hand hygiene is very important.

And besides this, there are other possible transmission way. First the Chinese researchers have isolated the living virus from the patient's stool. And this figures showed ACE2, the receptor of the virus, and other words protein can express in the GI tract from the esophagus to rectum.

So the fecal oral transmission is possible. And this is another publication. The reporter get the nucleic acid from the tear samples and the conjunctival secretion from the patient. So conjunctival transmission is also possible.

So we can conclude the endoscopy unit staff are at high risk of transmission because in the procedure, we might be infected by the inhalation of the virus and touch the contaminations or other splashes. And how to minimize the risk?

I try answer this question from four aspect. The patient screen, staff protection, [INAUDIBLE] disinfection, and the material management. First, as to the patient screen, in the epidemic region, there are no essential endoscopic procedure should be posed. So the procedure can only be performed in emergency case, including the GI bleeding, the foreign body in GI tract, obstructive jaundice with infection, biliary acute pancreatitis, and feeding tube placement.

So someone asked me the question, is there [INAUDIBLE] gastroenterologists get the infection in the procedure? Actually, I can say-- I didn't say. We have some GI staffs get the infection. But we believe they catch the infection not in the procedure endoscopy room, because we don't have enough chance to catch the infection. we certainly do the procedure in this pandemic.

And before the procedure, all patients should get at the temperature and ask the contact history and the respiratory symptoms. This is a standard form for the contact history. However, in Wuhan we know, Wuhan is epidemical region and the condition is very serious.

So most people have the potential contact history. So before the procedure all patient should get the temperature, routine blood test, a CT scan, and a nucleic acid detection. If everything is OK, they can go to endoscopic room for this procedure.

Otherwise, they have to be sent negative pressure room for the procedure. And as to the staff protection, before the procedure we have to check ourselves, just like patient, the symptoms and the suspected contact history. If everything OK, we can go to work. Otherwise we have to get into isolation and some time get the treatment.

In the procedure, the PPE is very important. If the patient have low inflammation, the lab 2 PPE is necessary, is enough. But if the patient have infection, the lab 3 protection is recommended. And this is a different level of PPE. Level 1 means the staff have the medical cap, mask, gloves, and working clothes. And level 2 means the level 1 plus the mask, gowns, eye shield, and a shoe cover. And the mask can barely hold the virus. So the [INAUDIBLE] is better. And lastly is level 2 plus the mask respirator and the double gloves should be need.

So in summary, in work, we have to cover ourselves as much as possible. So this is in the outpatient center. And this is [INAUDIBLE] and this is the level 2 protection.

OK. I got these two figure from online. And the left figures shows the Chinese doctor is working with the level 2 protection. Actually, after February, when after getting the full protection, Chinese medical staff are seldom getting the infection.

And these pictures show the doctors working on the right front line. We can see from the neckline and the shoes. We can see the protection is not enough. So if we continue work in this situation, I believe the infection is unavoidable.

This is show how to put on and removing the PPE. I give two [INAUDIBLE]. I have two points to address. First, we have to set a separate area or room between the procedure room and the cleaning area to finish this the step 5 to step 10 of the removing PPE. And the second is these two progress are a little complex.

So we often make a mistake at the beginning, but this mistake is very dangerous, especially in removing the PPE. So our experience is in this situation, we can have a training the person to watch, so if anyone make a mistake, this person can point out right now, so it can avoid some danger.

And after the procedure, we should disinfect all body surface, especially the hand hygiene is important. I just, I told. OK, I have to make a supplement. In the procedure, do not move the hand towards your face, because sometimes we may-- in the procedure we have the [INAUDIBLE] is not clean, is not clear. And we can feel some discomfort or some danger in the face.

But do not move your hands towards your face. Before you moving, you have to take off your outer gloves. So the hands should be considered as the contaminated part of the body. And because COVID-19 virus, the SARS-CoV-2 is sensitive to alcohol, hydrogen and peroxide and the hydrochloride. So the disinfectant can contain one of these active ingredients.

And because of long time incubation period, so after the procedure, the patient should get the following for two weeks. If in this period, the patient is diagnosed of COVID-19, all close contact staff should get the isolation for two weeks.

As to endoscopic room, a single isolated operation room is used in the procedure, because we don't have many procedure in this time. So one or two room is enough for the procedure. And if the patient have the infection, the [INAUDIBLE] room is recommended. Sometime in some hospital we don't have the [INAUDIBLE] room. I think a single isolated zone with a good ventilation is at least.

And after the procedure, we should disinfect all surface in the room with the disinfectant. And the UV irradiation and ozone treatments are recommended for air cleaning.

As to the material management. First, we should keep all material in good order, because it's easy to get clean. And all waste should be placed in the bags, and these bags should be sealed and labeled clearly, and have someone to deal with it.

So this is our experience in the outbreak of COVID-19. And I think in the crisis, the medicals from all of the world have show their braveness. And in these months I was touched many, many times by Chinese medical staff's spirit and power. And today, I am touched again.

I know in the United States a lot of retired staff, medic staff, and medic student, apply to go to the front front line. So I was touched again by the sentence, I will come. I think all of them are our heroes.

Beside this, today I would not say, in this crisis what we need is much more than doctors and nurses. Because even all medical staff are supermen is not enough. In the beginning of the outbreak, we have the same feeling-- the more patient you treated, the more new patient you have to face. So the treatment is very important. However, I think the breaking transmission is more important. How to cut off the transmission wave.

Unto staff, the first is find all infectious patients. The second is isolate them. It's easy to say but it's hard to do. It needed the powerful, powerful government management and the effort from everyone. Actually, in this war against COVID-19, everyone are fighters. The doctor treats the patient for fighting against the COVID-19, and the patient gets the isolation and treatment, also fighting against the COVID-19. And someone deliver the supplies for fighting. Someone clean the city, also for fighting. Someone work day and night, for fighting. Someone only stay at home, also for fighting. So we all fighting against the COVID-19.

Because of our union and the creation, we can stage success. We can see this curve. This is new confirmed case per day of Chinese in China. And I remember very clear, in the February 12th, is a peak time. In Wuhan, this number is beyond 13,000. So I have to admit, at that time we have a little worried and need to panic, because we did not believe we can take only one month to decrease the number from the more than 10,000 to less than 10.

So I know the COVID-19 outbreak in the United States, but no matter how big of this number if we can isolate all infections, this number can decrease at unbelievable speed. So because the virus can spread very very quickly, and no one can sustain safety alone. And no country can make safety alone. Because we in the same planet.

Even now, we still have to face the risk of the second wave of infection. So I think the final victory is we can control the outbreak in all countries. So if we can stay together, we can fight it together, we have to believe the final victory is coming. Nothing can stop us. Thank you.