

PAUL FRIEDMAN: Well, why don't we start our morning session? I'll just ask either Siraj, or Pete, or Dr. Cha-- you guys hear me OK?

SURAJ KAPA: We hear you fine.

YONG-MEI CHA: Yeah, we hear you OK.

PAUL FRIEDMAN: So this is Paul Friedman. It's wonderful to have 163 participants so far and counting. at our cardiovascular ground round series looking at COVID. I think these are obviously extremely unusual times.

And on the one hand, we've seen the heroism, dedication, and commitment of physicians, and nurses, and the whole health care team in China, and in Italy, and now at our own coasts, and similarly here. Although in a way, here, we're in that preparation and waiting stage, where we have undergone a series of preparations ranging from changing the attire that we were at work, a mask policy which has really been leading in the nation compared to what other places are doing. The development of a test at Mayo Clinic, the development of convalescent serum testing, and other steps as we try to help other sites and prepare ourselves. And one of the really important things to arm ourselves and prepare ourselves is to learn from the experience from colleagues from around the world who have shown such impressive personal dedication and heroism in combating this terrible pandemic.

In that context, I want to acknowledge first our colleague, Dr. Suraj Kapa, who's organized a series over the next month of COVID specific lectures focusing on cardiovascular disease. And we've come to see that there are many manifestations of cardiovascular disease in COVID. These will range from an understanding of the experience in China that we'll hear about today, an understanding of some of the technological tools that are being used to prevent the disease, some of the innovations that are being developed to treat it, as well as some of the infectious disease issues.

I also want to thank our colleague, Dr. Yung-Mei Cha who reached out to colleagues in China. So we are very fortunate to have Dr. Li and Dr. Xu to share their experience with us. And with that, I'd like to turn it over to Dr. Cha to introduce our colleagues, and give them my heartfelt thanks for taking their time to join us, and share with us what they've learned so that we can be more effective as the pandemic puts its way towards it. So thank you.

YONG-MEI CHA: Thank you, Paul. So we are grateful to have two speakers from China today. So I think I'm going to introduce Dr. Yuan-Ning Xu first. And then he will be the first speaker, and he just joined us.

So Dr. Xu is associate professor and associate chief physician in cardiology West China Hospital in Sichuan University. The West China Hospital is ranked number two hospital in the nation. So Dr. Xu has very broad expertise in cardiology, including coronary intervention, TAVR procedure, and the EP procedures.

So he is the director of heart failure and device service. So at the beginning of February of this year during the Coronavirus outbreak in China, and the West China Hospital sent a team, including Dr. Xu to Wuhan People's Hospital. So Dr. Xu has been working in the intensive care unit for two months, and he's still on call every other day, 24 hour shift.

So we're so grateful to have him today talking about his experience in managing patients with COVID-19, and also talk about how the medical staff protect themselves from contracting the infection. So welcome, Dr. Xu. By the way, if you have any questions, please enter to the chat, and then Dr. Kapa is going to moderate the Q&A at the end of the two talks. Dr. Xu?

YAUN-NING XU: It's a great honor for me to be here to produce-- share some lessons from China about COVID-19. I will share my screen.

YONG-MEI CHA: [INAUDIBLE]-- OK, good.

YAUN-NING XU: Yep. Can you see it?

YONG-MEI CHA: Good, we can see the slides now.

YAUN-NING XU: OK, let's begin. I'm Dr. Xu from western hospital, and I have [INAUDIBLE] from February 7th. I have been working in the intensive care unit from that time to now.

Oh, sorry. I do not have any potential conflict of interest. First part, I'll do the introduction about COVID-19. COVID-19 is a novel disease for all doctors. The pathogen is new coronavirus. It belongs to-- pathogen has envelopes and proton spikes, and sensitive to ultraviolet and heat.

And the below three methods can make it biologically ineffective, but the chlorhexidine was ineffective. And if you expose-- COVID-19 is highly contagious for all people. COVID-19 is already highly contagious during the incubation period with an average of 14 days.

This is different from SARS coronavirus and MERS coronavirus. The most common transmission route is respiratory droplets and close contact. If you're exposed to the environment with high concentration of COVID-19 aerosols for a long time, this will also increase risk of infection.

And until April 4th, the COVID-19 pandemic has been outbreaking in over 200 countries and areas with over 1 million cases. We can detect COVID-19 in multiple specimens, with the highest positive rates in sputum samples and nasal swab. Next, I will talk about personal protection during COVID-19 outbreaks.

The respiratory tract isolation and contact isolation is essential in personal protection, including PPE and N-95 masks or surgical masks among medical workers. The homogenized protection methods should be emphasized in your whole medical team. If the ward planned for admission of patients diagnosed as COVID-19, which means this will be an isolation ward, then the standard class 2 or class 3 protection methods are required.

The isolation ward, like here, should be clearly divided into contaminated ward, buffer room, and cleaning room. The left picture here shows our standard class 2 personal protection equipment. And the right picture shows the class 3 PPE. And with a positive pressure, headgear which is used in highly risky operations.

And a lot of the nearly 50,000 doctors and nurses who assessed at Wuhan were infected from Jan. to now. So all these matters are very important. Early screening-- oh, sorry. If the ward plans for admission of patients diagnosed with-- oh, sorry. If the ward is not planned for admission of patients diagnosed with COVID-19, it is hard to screen out patients during intubation or without symptoms in daily practice.

So in these situations, professional exposure of medical workers or contamination of consulting rooms such as our cath labs, these situations will make a real source of infection. And for elective intervention [INAUDIBLE] for heart disease, we should talk about it. In our West China Hospital, the elective procedures were suspended during the peak of the outbreak, only retaining emergency intervention.

Early screen for patients with COVID-19 is very important, including active screening for patients with fever, cough, or other respiratory symptoms with unknown reasons, and also routine epidemiology history taking is very important. After the epidemic is controlled, the elective procedures restarted with 1/3 of previous volume in our hospital. Currently, the elective procedures have been back to normal in our hospital.

The third part, I will talk more about critical care considerations. Over 80% of COVID-19 patients are at mild status with no-mild symptoms. The rest of patients are at severe or critical status with respiratory failure to a different levels. We should pay more attention to them.

Symptoms would progress dramatically in some patients-- sorry, maybe the internet is not stable. Symptoms would progress dramatically in some patients in those two groups, leading to high mortality. But we would [INAUDIBLE] identify these patients accurately in advance. The elderly patients or patients with underlying disease account for a large percentage in our confirmed severe or critical cases.

Next, I will show you a typical COVID-19 case in our ward. It's a female, 68 years old, admitted on February 10th. And the chief complaint is fever and cough for one week. A large epi-- sorry-- epidemiological history is positive because her husband was diagnosed with COVID-19 two weeks ago, and kept in quarantine.

This patient has hypertension for over 20 years, and even the patient received a high flow nasal cannula therapy, the respiratory rate is still over 24 times per minute with hypoxia, and symptoms got exacerbated dramatically. And six days after admission, the respiratory rate increased to 34 times per minute.

So we suggest the patient to receive the tracheal intubation and the mechanical ventilation. This is an x-ray of this patient. Because the patient is too sick, we cannot finish the CT scan. After the ventilation therapy, we arrange the CT scan for this patient for two times.

After 10 days of intubation and a mechanical ventilation approach, the oxygenation was still hard to maintain. So we do some tests. We find the D-dimer, it elevated continuously, and we do the echo test to find out pulmonary arterial hypertension, and a new onset tricuspid regurgitation in this patient.

And we also do a CTPA test which confirmed the pulmonary embolism. So in this situation, we do ECMO support for this patient under adequate anti-coagulation therapy. But the patient died of MODS after 10 days of ECMO support and complicated with severe ARDS, mechanical ventilation-related pneumonia, hyper-coagulation status, acute pulmonary embolism, intractable hyperlactacidemia and septic shock.

And we find very interesting thing is after the intubation and the ventilation therapy, they have hyper carbon dioxide. It's very strange for this patient we will talk about here. Respiratory distress is a prominent symptom for critical patients. Moderate sedation and logistic treatment help to improve the spontaneous breaths.

And the respiratory support treatment could effectively relieve respiratory distress. But hypercapnia is common after respiratory support treatment, I think possibly related to inhibition of the spontaneous breath. But if the patient got a hyper carbon dioxide, what can we do?

Mechanic ventilation could improve oxygen generation, but can do little to the hyper carbon dioxide before this patient. So I will consider extra extracorporeal carbon dioxide removal therapy for this patient. This is an effective treatment choice, and the pressure of carbon dioxide can fall by 20% to 30%. Next, I will show you this case.

This patient received a-- we performed extracorporeal carbon dioxide treatment. And the pressure of carbon dioxide falls from 87 to 24 millimeter mercury. It's very effective for this patient. Lessons on critical care considerations, two.

Abnormal coagulation is common in severe COVID-19 patients. D-dimer was independent risk factor of in-hospital deaths. So for all the patients with COVID-19 critical care cases, anti-coagulation therapy should be initiated for patients if otherwise contraindications. Another lessons is antiviral interventions. So far, no specific antiviral therapy against the SARS-CoV coronavirus and the MERS coronavirus and COVID-19 have been proved.

Recently, a little trial was published in the *New England Journal of Medicine*. This trial shows elective results also about lopinavir and ritonavir. Another trial about [INAUDIBLE] is ongoing.

Lessons-- another use of corticosteroid-- the use of corticosteroids is still controversial, only considered for patients with rapidly progressive degeneration of oxygen, radiology imaging, and excessive inflammation. We must shorten treatment period to 3 to 5 days, and limit the dosage no more than 1 to 2 mg per kilograms per day.

And finally, this is take-home message. Maybe I talk too fast. All populations are susceptible to COVID-19. Intensive precautions are essential. Respiratory tract isolation and contact isolation are main protection measures.

Severe and critical COVID-19 cases account for around 20%. Supportive treatment for organs and systems are principal. Carbon dioxide retention is common after mechanical ventilation. Extracorporeal carbon dioxide removal, or ECMO, should be considered if the retention is severe. Combined anti-coagulation should be initiated if there's no contraindications. So far, no specific antiviral therapy against COVID-19. And the routine use of corticosteroids is not very common. OK, that's all. If you have any questions, you can talk to me.

YONG-MEI CHA: Thank you, Dr. Xu.

SURAJ KAPA: [INAUDIBLE] Dr. Xu. I'll hand it back to Dr. Cha. We're going to go over questions at the very end. I'm just going to put everything together. So Dr. Cha, I'll hand the mic over to you.

YONG-MEI CHA: Yes. That's a great talk, Dr. Xu. Thank you. So it's my great honor to introduce Chunjian Li. Dr. Li is the professor and the chief physician in Jiangsu Provincial Hospital, Nanjing University.

So he is the director of CCU and the deputy chair of cardiology in the Jiangsu Provincial Hospital. And he has published over 80 articles, mainly regarding the coronary intervention. So he's a very well-established interventionist in China. So during the COVID-19 outbreak, the Jiangsu Provincial Hospital also was accepting patients with COVID-19 positive tests.

So in that situation, to prevent or protect the patient and the medical staff, Dr. Li led his team-- modified the clinical management strategy for patients with acute MI. So we have the opportunity today to share his experience in this regard. Dr. Li, please.

CHUNJIAN LI: Can you see my slides?

YONG-MEI CHA: Not yet.

SURAJ KAPA: We can see your screen but not the slides.

CHUNJIAN LI: Yeah. Maybe somebody else is sharing the screen I think.

SURAJ KAPA: Let me just do this.

YONG-MEI CHA: Did you click the file?

CHUNJIAN LI: Yes.

PAUL FRIEDMAN: Does your computer have more than one monitor? It may be that the wrong screen is being shared.

CHUNJIAN LI: Maybe some other screen is sharing on the screen. Let me try again. Can you see?

SURAJ KAPA: Right now, we just see the selection menu. I think if you switched monitors or put your PowerPoint on the same monitor as where your drop down.

CHUNJIAN LI: Yeah, I'm going to share. So you still can't see?

SURAJ KAPA: It's just starting-- there we are.

YONG-MEI CHA: It's [INAUDIBLE].

SURAJ KAPA: Yep, it's up.

CHUNJIAN LI: It's on?

SURAJ KAPA: Yes, it's on.

CHUNJIAN LI: OK. Thank you very much, Dr. Cha, for your introduction. And dear Dr. Kapa, Dr. Friedman, it's my great honor to talk with you as colleagues on the topic of adjusted treatment strategy for ACS during COVID-19 pandemic. I am Chunjian Li. I work in the First Affiliated Hospital of Nanjing Medical University, or Jiangsu Province Hospital.

It's in Jiangsu, Nanjing, China. This is the largest hospital in Jiangsu province. We have 300 beds in cardiology department, and more than 4,000 beds in the hospital. Back to the topic, as you know, since December, 2019, COVID-19 has caused over 80,000 infected cases and over 3,000 deaths in China.

On March 11th, WHO declared COVID-19 a worldwide pandemic. And currently, COVID-19 has been confirmed in more than a million patients in more than 200 countries. The characteristics of COVID-19 epidemic include the following four respects. First, people from all ages can be infected.

It was reported that people aged from two months to more than 90 years were infected with COVID-19. Secondly, the main form of transmission is droplets. And the reproduction number is 2 to 3.5, suggesting a higher pandemic potential. Certainly, the incubation time is 4 to 14 days.

It's important to note that the transmission from an asymptomatic carrier appears to be possible. Fourth, the mortality is about 4%. It could reach around 10% like in Italy right now when there are lack of medical resources. And although age and comorbidities are predictors of poor clinical outcomes, there still occurred in young doctors, young patients, and the medical staff.

It's important to note that the in-hospital transmission is very severe. Dr. Jiang in Wuhan reported that 20 thoracic surgeries were performed for COVID-19 confirmed patients in seven hospitals in Wuhan during the epidemic period. As a result, 21 associated medical staff were infected.

In the past few months, more than 3,000 medical staff 476 medical centers have been reported as, suspected, or confirmed COVID-19 case in China. But the question is should we adjust the clinical pathway to treat the patients during the COVID-19 pandemic? The answer should be yes.

The purpose of this is to minimize the medical contact of the COVID-19 and to ensure the safety of the medical staff. In the past few months, there were more than 10 consensuses of adjusted treatment strategy for ACS during the COVID-19 pandemic. The major treatment principles include the following five respects.

First, nearby treatment. It was recommended that the ACS patient should be treated in local hospitals instead of transferred to the higher level hospitals. Second, safety protection. Those who have fevers should go directly into the fever clinic instead of the emergency clinic. Priority of thrombolysis. Thrombolysis should be considered for the first choice for STEMI patient instead of primary PCI.

Designated transport. Suspected or confirmed COVID-19 patients should be transferred to the designated hospitals. Remote consultation. Patients in local hospital should be consulted remotely by WeChat or Zoom like what we are using. I'm going to talk about the adjusted clinical pathway.

This is the clinical pathway just published last Friday in the *European Heart Journal* by Dr. Liu in Wuhan. This is similar to the clinical pathway delivered by Chinese Medical Association, so I'll just use this English word in my slides.

If a STEMI patient is admitted to the hospital, we first need to classify them into two different groups according to the patient's history, the temperature, the [INAUDIBLE], the nucleic acid test, and blood cell counting. For the temporary exclusion of COVID-19 patients, those who come within 12 hours we first should consider the thrombolytic therapy. And then the thrombolytic therapy could be performed in either the emergency center or CCU, and then elective PCI.

If the patient is admitted more than 12 hours and they have no very serious manifestation, then they should transfer to CCU to receive medical therapy, and then elective PCI. If the patient admitted with more than 12 hours of symptom onset with a high risk manifestation, including ongoing symptoms, hemodynamic instability, or malignant arrhythmias, or had contraindication to fibrin analysis, or did not meet the perfusion criteria, those patients should consider emergent PCI, and then transfer to CCU to receive medical care.

For the suspected or confirmed COVID-19 patients, they should be transferred to the isolation ward with multi-disciplinary consultation to see whether they have severe pneumonia. If the pneumonia is very severe, they just receive conservative therapy. And if patient comes more than 12 hours of symptom onset and no high risk manifestation, also conservative therapy.

If the patient comes within 12 hours of symptom onset, then fibrinolysis therapy should be considered as the first choice, and then elective PCI afterwards. If the patient comes more than 12 hours with the very high risk manifestation, or they had contraindication to fibrinolysis, or did not meet the perfusion criteria, we should consider emergent PCI. These procedures should be performed in the isolated cath lab, and the medical staff should be on level 3 protection. Afterwards, they're transferred to the isolation ward.

For the rest of the patients, also we need to classify them into different groups. For the COVID-19 excluded patients, transferred to CCU, and the optimal medical therapy, and the elective PCI. Those who have very high risk manifestation, emergency PCI. And the suspected or confirmed COVID-19 patients, isolation ward, medical therapy, and then elective PCI afterwards. And if the patient has very high risk manifestation, we should consider whether the benefit to risk is favorable to do the procedure. If yes, emergency PCI in isolated cath lab. If no, medical therapy.

For those who temporarily not exclusion of COVID-19, the patient should stay in emergency center, and is excluded to CCU. If confirmed, transferred to isolation ward. The personal protection equipment-- I'm not going to say too much about this. I think Dr. Xu has talked about that. You can just go to the website to see the details.

Here are some examples of the patients who received the adjusted clinical pathway. This is a 46-year-old male-- persistent chest pain for six months-- sorry, 6 hours. COVID-19 was not excluded at that time. You can see ECG-- anterior wall myocardial infarction. The patient then received thrombolysis therapy with rt-PA at 15 milligram.

For this method, he received angiography and sees the LAD was open with 90% stenosis. And we put one stent with very good results. The second patient, 65 years male, chest pain for 45 minutes. COVID-19 was not excluded at the moment.

Inferior wall myocardial infarction. It seems [INAUDIBLE]. The patient also received thrombolytic therapy with rt-PA at 15 mg. Five days later, he received angiography, and then you can see that the patient had a very severe coronary artery [INAUDIBLE].

So this patient was on medical therapy after the angiography. We did not put any stent there. The third patient, 68 years old male. He's receiving mitral valve replacement and a CABG in 2017. An anterior wall myocardial infarction. He admitted to the local hospital and received the fibrinolytic therapy in local hospital.

Afterward, angiography shows that the LAD was totally occluded. It seems to be CTO. On the [INAUDIBLE], you can see it's open with a TIMI blood flow of 2 [INAUDIBLE]. And you can see some contrast [INAUDIBLE].

So it suggests [INAUDIBLE]. This patient was transferred to my hospital to do LAD CTO afterwards. So in February and March this year, there were 50 ACS patients, including 26 STEMI and 24 NSTEMI admitted to my hospital. 10 of them received fibrinolytic therapy, and 9 succeeded by clinical assessment, which was also proved by coronary artery angiography method.

Of 15 STEMI patients, did not receive fibrinolytic therapy due to relieved symptoms, resolutions of ST elevation, or admission of more than 12 hours of symptom onset. Only one STEMI patient received primary PCI, as both the CT scan and the nucleic acid test was completed within one hour, and the COVID-19 was excluded with negative results. Of the 50 ACS patients, 42 received elective angiography or PCI, with a mean time from admission to intervention of five days. This is a little bit longer.

Outcome, one patient transferred to surgery, two died. 47 have been discharged with a mean hospital stay of 9 days. The mortality is 4%, which is the same as COVID-19. So I think it is acceptable. These hospital stays are a little bit prolonged, as it was 5.9 days last year in my ward. However, not any medical staff was infected.

Summary-- the in-hospital transmission of COVID-19 is severe, which could further stress existing medical resources, and consequently increase the patient's mortality. Suggested clinical pathway for the management of ACS should be commended to minimize the medical contact, reduce the in-hospital transmission, and to ensure the safety of the cardiologists and associate medical staff. Thank you for your attention.

YONG-MEI CHA: Thank you so much, Dr. Li. That's wonderful. So if you have any questions, please send into the chat. Suraj, are you there?

SURAJ KAPA: Yeah, I'm here. Yes, I muted both Dr. Xu and Dr. Li, and you're muted too, Dr. Cha. So we had a lot of different questions. So I think for Dr. Xu, so one question was the difference in standard class 2 PPE, like hazmat suit and like, compared to the US recommendations.

Like in China, what was your level of PPE you would routinely use in the hospital? Was it the level of more extensive hazmat suits on a routine basis, or was it more like non-N-95-- just surgical masking in patient care? What was your approach?

YAUN-NING XU: Yeah. In our hospital, we should first wear N-95 masks with a hat and with cloths-- one-time-use cloths. And double-- sorry. Sorry, wait a moment. I forgot how to say it. Double gloves.

So double gloves, N95 masks, one-time-use, and one-time-use headgear, and one-time-use-- [INAUDIBLE], I don't how to say [INAUDIBLE].

YONG-MEI CHA: Gown. So you're talking about you're wearing a gown, right? The isolation gown.

YAUN-NING XU: Yeah, isolation gown. So this is a class two prevention equipment. But if we talk about the class 3, the class 2 will need another positive pressure headgear.

SURAJ KAPA: [INAUDIBLE]. And one of the questions was that it seems like in the US, only 50% of patients are really presenting with fevers. But it seems like [INAUDIBLE] in China was around 98%. Is there any reason you might have for the differences that are being seen?

YAUN-NING XU: I don't know the exact reason. But in China, the fever is really very, very common. And we can see the fever is usually the first symptom for the patient with COVID-19. And so we do the temperature test very, very frequently. Before you get into the hospital, and before you get into the ward, before you get into your home. Everywhere we do the temperature test, so very frequently. Maybe this is the reason we can find more fever than US. I think maybe it is a reason. And other reason I don't know.

SURAJ KAPA: OK. And one last question for you Dr. Xu. So you've already commented on it in the chat, but you've commented that-- what anti-coagulation scheme are you using, therapeutic or prophylactic? And why do you think this coagulopathy, this increased risk of clotting, is happening? What's the mechanism it?

YAUN-NING XU: The accurate reason for the coagulopathy is unknown. I think it's highly related to vascular endothelial injury, but it's still not sure whether their virus attacks the endothelial cells directly. So analysis of thrombocytopenia is common. And some studies in China showed that myelosuppression is also seen in COVID-19 patients.

So the patients usually with the hypo-- sorry, platelet [INAUDIBLE] and with a hyper D-dimer is similar. It's very, very common.

SURAJ KAPA: And so Dr. Li, getting to you, there are a lot of questions related to the ECG findings, and the management of the coronary syndrome. So one of the questions was, the concern about the high rate of potential false positives, where we might see something that looks like an ST-elevation MI, but it's not amongst COVID patients. So in other words, coming in with normal coronaries despite the concerning EKG findings. What are your thoughts on that, and about using thrombolytics routinely in such patients?

CHUNJIAN LI: Yeah. I mean, we should first consider the diagnosis for MI if the patient has persistent chest pain, elevated ECG, we should consider [INAUDIBLE] first. As I was told that COVID-19 is [INAUDIBLE]-- there is very few patients who have increased [INAUDIBLE] after infection with COVID-19.

And very, very-- one of my colleagues told me-- he was in that there was not any patient who got myocarditis by COVID-19. So COVID-19 really affects the heart very, very little.

SURAJ KAPA: And so one question is, have you performed right heart catheterization-- so pulmonary artery catheterization-- in these patients often in the ICU setting? So the question is, is there a high prevalence of pulmonary hypertension or intrapulmonary shunting with such a high pCO₂?

CHUNJIAN LI: Sorry?

SURAJ KAPA: So the question is are you doing a lot of right heart catheterization? In other words--

CHUNJIAN LI: No.

SURAJ KAPA: --is there a lot of pulmonary hypertension or intrapulmonary shunting with a high pCO₂?

CHUNJIAN LI: No. We generally do not do right ventricular [INAUDIBLE]. Very little.

SURAJ KAPA: All right. And another question is, in terms of the electrocardiogram abnormalities that you're seeing, are you noticing a lot of ECG changes in COVID patients who don't have ACS? In other words, any of the other abnormalities you're noticing on the ECGs, and what are the most common changes you're seeing?

CHUNJIAN LI: I'm sorry. As I have been to Wuhan. In Jiangsu province, there are only around 100 patients who got COVID-19. And I just talked about my colleagues who work-- I have two colleagues who worked in Wuhan for the past several months. They stated that they didn't recognize a special ECG trend for the COVID-19 patients. So that's even-- there is maybe some change. That's not specific, I think.

SURAJ KAPA: And Dr. Xu, how about yourself? In the ICU wards in Wuhan, have you noticed a lot of ECG abnormalities that are typical?

YAUN-NING XU: Yeah, we do ECG, but actually I did not see any cases where myocarditis was due to COVID-19. Many patients maybe have a slightly [INAUDIBLE]. But I never diagnosed a patient with myocarditis I think. So I don't think myocarditis is very common. It's very, very not common, I think.

SURAJ KAPA: And we have a lot more questions than time, because we're getting to the end of the hour and quarter-- or the 45 minutes rather. But I'll ask two last questions. So first for Dr. Li, was the approach of using lytics all across China, or was it only in a couple of provinces? In other words, were there different approaches in different provinces, or was it universal?

CHUNJIAN LI: Using what? Sorry.

SURAJ KAPA: For using thrombolysis. Like, was your pathway that you used pretty consistent across all of China, or was it more regional?

CHUNJIAN LI: You mean thrombolytic therapy?

SURAJ KAPA: Yeah, the pathway you used.

CHUNJIAN LI: I think in the epidemic period in China, in most centers, they used thrombolytic therapy for the STEMI patient. But there are some maybe small portion of the hospitals that do perform primary PCI. But for those patients, they have to do CT scan.

And if the patient has a negative CT scan, or some hospitals, they may have a very quick nucleic acid test, if it is negative, then they do primary PCI for those kinds of patients. But in most of the hospitals, generally, the thrombolytic therapy is the first choice for STEMI patient.

SURAJ KAPA: And Dr. Xu, one last question for you. So what is the current status, do you feel, overall in China? Is it cautious optimism and things are settling out? In Singapore, there's concern that things are coming back and there's increasing rates. How are things over there?

YAUN-NING XU: Sorry, I can't hear you very clearly.

SURAJ KAPA: Yeah. Dr. Cha, do you want to ask?

YONG-MEI CHA: Yeah. So Dr. Kapa was saying [SPEAKING CHINESE]. So in China, is it stable, or any concern for recurrent wave-- get more patients infected as a second occurs? [INAUDIBLE].

YAUN-NING XU: [SPEAKING CHINESE]

[LAUGHING]

OK, sorry.

[INTERPOSING VOICES]

[SPEAKING CHINESE]

YONG-MEI CHA: So Dr. Xu is saying currently, they have not seen any signs of recurrent waves-- of second peaking. And then I think the government is still trying to do the screening tests, especially for those patients who have been asymptomatic. So in China, we're still doing the screening if patients have symptoms, I guess. That's the situation.

YAUN-NING XU: Yeah.

SURAJ KAPA: Wonderful. So I think we'll stop here since it's a little bit-- three minutes over time. And I know people have work to do. So thanks, everybody, for coming. Again, to claim CME and MOC in the chat, you can type RAM amazon mom up 25072003010. We want to thank Dr. Li and Dr. Xu for joining us from China in the late hour over there, and really appreciate all the advice they've given. And again, we'll have another COVID related Grand Rounds next Monday. Thanks, Dr. Cha, for being there and for coordinating everything.

PAUL Thank you, all. Really appreciate it. Very educational and helpful session.

FRIEDMAN:

SURAJ KAPA: Thanks.

YONG-MEI CHA: Thank you, Dr. Xu and Dr. Li, again. Thank you.

YAUN-NING XU: Thank you.

PAUL [INAUDIBLE]

FRIEDMAN:

CHUNJIAN LI: Bye.

YAUN-NING XU: Bye, bye.

YONG-MEI CHA: Bye, bye.