

***Question 7. What is your experience with caring for patients under 18 years old?***

We did not care for any patients under 18 years old.

***Question 8. Besides ARDS, is there significant other organ injury with COVID-19, in particular ventricular dysfunction, pulmonary hypertension, encephalopathy, secondary bacterial co-infection?***

Most critically ill patients with COVID-19 had complications. Almost 60% of the patients were complicated with heart injury, which can lead to pulmonary hypertension causing Acute cor pulmonale. Up to 20% of the patients were complicated with acute kidney injury.

***Question 9. Are there any therapies for the critically ill patients with ARDS that appeared beneficial or harmful?***

If we use the lung recruitment maneuver, the high PEEP can induce lung injury, so we should be cautious and keep PEEP less than 20 cmH<sub>2</sub>O.

***Question 10. Any restrictions on rescue therapies for refractory hypoxemia in ARDS?***

For severe hypoxemia, we most likely would use ECMO. Before ECMO, we should look at their pulmonary compliance. If the

pulmonary compliance is less than 20, I don't think ECMO will be beneficial. Also, we should watch for hypercapnia. PaCO<sub>2</sub> over 80 predicts poor prognosis and the patient will probably be difficult weaning off ECMO.

***Question 12. Any strategies on how to manage the \*cardiac complications\* of the ICU patients? Anything different than the usual?***

To prevent cardiac injury, we should focus on correcting the severe hypoxemia as soon as possible. The cardiac injury is induced by severe hypoxemia.

***Question 13. Can you clarify the rate of co-infection with another virus for patients with confirmed COVID-19?***

Actually one team from our hospital are studying this. There's probably a high rate of coinfection with the influenza virus, but I don't know the result yet. Also we do check for flu. Negative flu test is one of the criteria for diagnosis of COVID-19. But most patients we checked were negative for flu. But I don't know the results from my colleagues. They use a better method for detecting influenza.

***Question 14, How to organize the team with non-critical-care-trained physicians?***

Our solution was to set up temporary ICUs. At the beginning of the outbreak, a huge number of patients rushed to the hospital and a lot of them required ICU care. We did not have enough ICU beds. So our solution is to set up temporary ICUs. I recruited physicians from other specialties with similar trainings, like anesthesiologists, cardiologists, pulmonologists, etc. These specialists followed us for round and managing patients like critical care fellows. We also recruited nurses using the same way. It seems this approach worked well in this specific situation.

***Question 15. Definition of “time-limited trial” of mechanical ventilation in this context (i.e. when does death seem inevitable?)***

This is an issue in patients with severe complications induced by hypoxemia, such as severe brain injury, severe acute kidney injury requiring dialysis, or multiple organ failure, especially in patient with many comorbidities, age over 80, or in multiple organ injury requiring organ supports. But actually we do not have a law to tell us the length of treatment trial in the different situations. In addition, we also evaluate the severity of their lung injury. Similar consideration should be given if the lung compliance is very low, it will be difficult for the patients to be weaned off from ventilator or ECMO. If the patients are quite young and

without any other organ injury, we will use ECMO as a bridge to lung transplantation. This is one option.

***Question 16. What is the survival rate for ECMO patients? What is the true survival of ventilated patients?***

Actually we haven't observed these patients for very long. I could say that the weaning from the ECMO was in around 50% of the patients. But because some patients are still in the hospital, I will say that the overall mortality is probably more than 50%. I say so because I cannot guarantee these patients who are still in the hospital will survive. The average duration of ECMO is around 7 days for the surviving cases. But for the non-surviving cases, it's much longer, around 20 days.

And the average age of our patients on ECMO is around 60 years old.

***Questions 18. What is the proportion of ECMO patients received VV vs. VA ECMO?***

Most of the ECMOs in my ICU are VV ECMOs, almost 90%. Only one or two are on VA ECMOs, because the patients are complicated with severe shock. We switched to VA ECMO (from VV).

***Question 19. For the small number of patients requiring ECMO or prolonged mechanical ventilation, how did you decide on criteria (limited resource)?***

Just as I mentioned before, we consider patients with severe complications, such as the severe brain injury or lung dysfunction measured by low lung compliance as irreversible. So these patients may be difficult weaning from ECMO. If the patients only have lung injury, with no other organ injuries, and they are young, then we will evaluate the possibility for lung transplant, and will use ECMO as a bridge.

***Question 20. Any data on characteristics and outcomes in immunosuppressed patients (transplant patients, cancer patients, etc.)?***

It's true. We also manage organ recipient patients infected with COVID-19. Regarding outcome, if the patients still stay in the hospital, within 30 days postoperatively, and gets infected by COVID-19, the outcome will be really bad. But if the patient with organ transplantation has returned to community (for example, in home or in other places), and the transplantation was long time ago, the outcome will depend on the patient's condition. Most of the patients are doing ok. For the cancer patients, if the patients are on chemotherapy or radiotherapy, they are easily infected by

COVID-19. Also the severity will depend on the overall situation. If the situation of the patient is bad, and he has to be admitted, the outcome will be poor.

Regarding the patients with organ transplants compared with other patients --- this kind of patients have more severe immune disorders or severe immune suppressions. We can see severe lymphopenia and much lower CD4/CD8 ratio, compared to general population. But actually I haven't seen any patients with stem cell transplantation. I have only seen patients with solid organ transplantation.

***Question 22. What are your lessons learned on the optimal and practical PPE needs for the health care providers for patients in the ICU? In particular, should we assume full airborne precautions, or is droplet precaution sufficient?***

If possible, I recommend airborne protection. Because we're not sure whether the ICU environment is okay or not. Not all ICUs are negative pressurized. So if possible, I recommend airborne protection. When doing procedure, especially intubation, the more protection the better. We need to wear N95 respirator, full-hooded plus an additional

gown outside to protect any water or secretions from the patients. It is very important to protect our medical personnel.

***Question 23. What is the optimal number of times to don and doff PPE for the ICU nurses and physicians?***

We work in ICU with PPE and eye-shield for 4 hours and change shift with next shift.

***Question 24. What is the rate of infection of healthcare workers in ICU as more experience with the disease has evolved? Overall, what percent of the healthcare workers became positive for the virus?***

In my department, 2 nurses got infected in the hospital at the early stage of the outbreak.

Right now, we have one more nurse who is infected but is without any symptoms. She has now been quarantined for 14 days and we will follow up for one month. In my department, we have about 170 medical personnel including physicians and nurses. We have no physicians infected with COVID-19.

The total number of medical staff infected with COVID in my hospital is around 100. Total number of medical staff in my hospital is around 3000. With that you can calculate the percentage. Most of these infections happened during the early stage of the outbreak, because we did not know that the virus could transmit so quickly and also we did not have enough PPEs. But right now we are doing okay. I think we are almost done with infection in medical staff. I have the impression that we have not got any new cases since early March.

***Question 25. What is the optimal shift rotation, in terms of number of hours, for nurses and physicians in the ICU?***

Regarding shift rotation for physicians - In my ICU, we assign 3 ICU physicians for each 12-hour shift. In the first 4 hours, all 3 doctors stay in the ICU to make sure they know everything about the patients and to follow the treatment. After 4 hours, only one physician will stay in the ICU. The other 2 physicians will take a rest in the living area. They can change shift with each other. This is for the 12-hour shift. And they have flexibility in deciding their schedules. For example, whoever will stay in ICU for one or two hours first, and the other 2 can rest in the living area. This is our shift schedule for physicians.

For the nurses, we assign a group of nurses for every 8-hour shift. One nurse takes care of 2 patients. The nurses will also exchange with each other during the 8-hour shift in order to have lunch, restroom breaks, or to have a nap.