

Dr. Matthew Carlson:

Hey, welcome back to ENT in a nutshell, my name is Matt Carlson and today we're going to break from the general routine, where we talk about a very specific disease process within a subspecialty of ENT, and talk about something that's more global, something that's affecting all of us in all our different subspecialties, both nationally and internationally, and that's the topic of COVID-19.

We're joined by three special guests who are really in the trenches, caring for patients during this time. They include Dr. Caroline Gross, an intensivist from New York, Dr. George Wanna, a neurotologist from New York and Dr. Daniel Marchioni, a neurotologist from Verona, Italy. And so maybe we can begin with an introduction from Dr. Gross.

Dr. Gross:

Sure. I'm a critical care-trained anesthesiologist. Prior to the COVID pandemic, I split my time working as an anesthesiologist in the operating room and as an intensivist, caring for patients in the cardiac surgery, intensive care unit. Obviously my role now is very, very different, I'm now triaging and caring for COVID positive patients in the intensive care unit. And this basically involves the acute management of respiratory failure and mechanical ventilation, as well as management of our patients' preexisting medical conditions.

Dr. Matthew Carlson:

Wonderful, and Dr. Marchioni.

Dr. Marchioni:

Yes, I'm the chairman of the University of Verona, in ENT, and so regarding COVID, actually, I'm trying to perform some study about COVID and the manifestation in ENT. And, today, I think that one of the most important aspects is to try to understand how, avoid COVID inside the department, in order to perform a surgery, in order to perform surgery on the patients regarding malignancy or urgent cases.

Dr. Matthew Carlson:

Thank you very much. And Dr. George Wanna?

Dr. Wanna:

Hi, first, thank you for the honor to be on this podcast, hopefully it will give some valuable information. So before the COVID episodes started in New York city, I'm the chairman of the ENT department and Mount Sinai downtown, which is a New York pioneer and Mount Sinai, Beth Israel. My background was in neurotology and otology, and now the main focus on New York pioneer is to convert it into a non-COVID hospital for the patient who needs surgery, critically.

As far as the clinic, because of the shortage of a physician, I'm part of the DART service, which is the Difficult Airway Response Team, that's take care of patients with COVID disease, if they have a problem with airway and need a tracheostomy. And that's it.

Dr. Matthew Carlson:

Thank you very much. So just for our listeners, our three experts are really in a concentrated location for this. And I think we have a lot of practical information insights we can gain from them. So we have, again, Dr. Marchioni from Italy and Doctors, Carolyn Gross, and Dr. George Wanna from New York. So, in your two locations, can you just briefly tell us the number of COVID-positive inpatients you currently

have? How many are requiring ventilation, currently? And if you have any patients on ECMO? And if we start with maybe, New York.

Dr. Gross:

Sure. As of this morning, at Mount Sinai, we had 711 inpatients being treated for COVID. 130 of these patients, so just under 20%, are receiving mechanical ventilation and, as of today, we have three patients on ECMO.

Dr. Matthew Carlson:

And Dr. Marchioni?

Dr. Marchioni:

We know that in Italy, the problem was at the beginning of March and we received a lot of patients with the COVID-positive, and our intensive care unit was full. But today, luckily, seems that the COVID is decreasing so, actually, our intensive care unit, the number of the patient, are less with respect to before. And we have, in Verona, about 300 patients requiring intensive care units.

Dr. Matthew Carlson:

Can you describe the general atmosphere of your hospital, during this time? Or do you feel that the media has accurately portrayed the current state of affairs, where you're at? Maybe starting in Verona?

Dr. Marchioni:

Yeah, of course... I mean, you know that in Italy we receive a lot of patients at the beginning and the problem was that we were not able to receive all these patients inside the hospital, requiring, of course, ventilation or intubation. So the atmosphere was really difficult because, honestly, sometime we had to take a decision, which patient we have to treat, which patient we're able to treat.

So it was really terrible condition and nowadays the people are just a little bit more happy because, probably, we are assisting decreasing of the people affected, just because of the restriction. And so probably we are starting to see the light in the tunnel, actually the most important aspect is the protection. Because also another important aspect at the beginning was that we didn't find that protection, especially also inside the hospital and also the family doctor, and also for this reason, a lot of doctor were ill and at present we have a lot of the doctor dying because the Coronavirus.

Dr. Matthew Carlson:

And maybe, Dr. Gross, if you could comment on the current state in New York?

Dr. Gross:

Sure. I mean, we certainly are overwhelmed, the hospital is overwhelmed. On a physical level, we've had to expand to accommodate an ever-increasing number of patients. We've built additional patient rooms all around the hospital, including converting the hospital lobby into patient rooms. And we've converted a lot of regular hospital floors into intensive care units, in order to accommodate the patients who are critically ill and need mechanical ventilation.

Our physician and staffing ratios have changed dramatically, now a given nurse or a given physician will be caring for many, many more patients than he or she would have, previously, within a

given shift. So it is very daunting to take care of so many patients that have a disease that's still remains very new to us.

Dr. Matthew Carlson:

That is a nice transition to my next question I had for you. What are the ratios of staff that are currently redeployed or on furlough? And in what capacity are the providers who are redeployed, where are they working, particularly from people within the otolaryngology departments? Dr. Wanda, can you comment on that?

Dr. Wanda:

The mothership for Sinai is what Dr. Gross practiced, the bulk of the critical care people there. So we needed to help in every single aspect of those hospitals, so we just end up deploying the whole department from the ENT, from the downtown campus, to all of those hospitals to different role. To give you an example, there is probably 40% of the downtown campus ENT are now running a floor that is COVID, on Mount Sinai West. And then this is low-equity patients with COVID that we need to be discharged or need to be bumped up to intermediate care.

Some of them, including myself, are on the airway calls and at Mount Sinai uptown, other are covering ICU at Mount Sinai, Beth Israel, and other are in Mount Sinai, Brooklyn, covering also ICUs. And we have few of them at Elmhurst Hospital, which was on the news recently because they were overwhelmed covering a emergency department and ICU.

That, as far as faculty, as far as staff, all the staff is being deployed. Some staff has medical condition and we don't want to put them at risk, so we asked them to do some stuff from home such as video conferencing or telemedicine or telehealth, and other staff we try to find something completely from home, for them to minimize the exposure. Overall, there were different plan, a surge plan for the system, but all hands are on deck and the magnitude of the crisis, I don't think anybody can really talk about it on paper or on TV or anywhere, it's really something that nobody ever has seen before.

Dr. Matthew Carlson:

Thank you, and Dr. Marchioni, from your standpoint, being the chairman of your department, how have you redeployed some of the staff positions and supporting nurses?

Dr. Marchioni:

It's a good question, just to say also, some number now, just new today in Veneto, the new positive are about 30,000 people, are positive to COVID. And, at present, the people who died for COVID, in all Veneto that is the region, is about 1,796 patients. And also today the situation is just a little bit difficult.

But, anyway, of course, one of the most important aspect is to perform our activity, of course, because there are a lot of people requiring surgery and the visits, et cetera, with malignancy or a terrible disease, and so we have to continue to perform this but with the right protection, this is one of the most important point.

And it's really important to explain how to protect yourself and also to protect the patients. You need the right mask, especially for the ENT, because you know that ENT, when you are performing a visit, you have to open the mouth of the patient and so you have to put inside the fiber optic. And so, it's really important because it's high-risk visits and so you need to protect using the mask FFP two, in the US I think that is N95.

And also it's really important to put the visor and protect the highest. And, of course, everything is really important, wherever it's possible, to put the mask also on a patient. And this is just in the office and also in the department. And especially in the surgery OR, you must be careful when you're performing tracheostomy on a COVID-positive patient, because this maneuver is really high-risk and so we need a special protection for this.

Dr. Matthew Carlson:

So we'll transition now to discussing some of the disease-specific characteristics of COVID-19, both generally speaking but also how it affects patients presenting to otolaryngology. And so we'll begin by asking some directed questions to Dr. Gross. So Dr. Gross, Coronavirus is a ubiquitous virus, but what makes COVID-19 pathogenically unique?

Dr. Gross:

Sure. So COVID-19 is a disease spread by the severe acute respiratory syndrome, Coronavirus Two. And I think what makes this so unique to us is a few things. Number one, we know that this disease can be spread from human to human by close contact, we also know that it can survive on surfaces outside the human body for a significant period of time, hours to days. And it also has a relatively prolonged incubation period, up to about two weeks, where a patient can be asymptomatic and showing no signs of the disease, but still able to pass it on to other people in their vicinity.

So I think these three things all combine to make this a disease, which can very easily be spread among people in an unknowing way. The disease causes a profound respiratory distress syndrome in certain patients, while it causes almost no symptoms in others, which makes it a very, very elusive virus.

Dr. Matthew Carlson:

And how are patients generally presenting? Not just from an ENT standpoint but globally, their overall symptom set.

Dr. Gross:

Sure. So most COVID patients presenting to the hospital generally have a very similar constellation of symptoms, most commonly fever, shortness of breath, cough, a dry cough, many patients also describe fatigue and muscle aches. Because I work in the intensive care unit, I meet my patients typically later in their disease course after they have developed true respiratory failure, meaning they have required intubation and assistance with a ventilator.

Dr. Matthew Carlson:

What's the general time course from exposure to onset of symptoms? Is it variable or is it pretty predictable?

Dr. Gross:

It's variable. Some people don't... It's very difficult to quantify because a lot of patients don't know when their exposure event actually took place, but we're seeing a period of somewhere around five days all the way up to two weeks.

Dr. Matthew Carlson:

And we all hear everyone talk frequently about the relatively asymptomatic period before somebody becomes more critically ill, potentially. How long does this asymptomatic period last? I know it's difficult to characterize the prevalence of it because you don't know they have it because they're asymptomatic, but can you speak to that?

Dr. Gross:

Yeah. So patients will... Some patients have a bit of a prodrome, before the full fever and respiratory distress they'll complain of malaise or generalized fatigue. Some patients even complain of GI symptoms, nausea, anorexia and so all of these more general viral-like symptoms could represent a more prodromal phase to COVID-19.

Dr. Matthew Carlson:

And this is a very challenging question because we don't know what we don't, but do you have any sense for the proportion of people who are asymptomatic? And probably the only way to get at this is routine screening for a large population, is there any data out there to detail this?

Dr. Gross:

Sure. So you're absolutely right, before we can really characterize the asymptomatic individuals, we need some gold standard of diagnosis where we're really testing a very large number of people across the population, routinely. But some estimates say it's variable but almost a third to 50% of patients could be asymptomatic carriers.

Dr. Marchioni:

If I am sharing with you the Italian experience about the asymptomatic patients, at the beginning, two small town, Vo Euganeo and Codogno, were the town where a lot of people were affected regarding Coronavirus, and the government decided to perform the test in all the citizens. And we found that the percentage of asymptomatic patients are about 50%-70% of the cases, so it's a really large number, a really large number of people are asymptomatic in Italy, this was from Italian experience.

Dr. Matthew Carlson:

That's very helpful to have a population level screening to answer such a difficult question like that. So for Dr. Marchioni and Dr. Wanna, and maybe we'll start with Dr. Marchioni but can you describe the common otolaryngologic symptoms that this population presents with? And we always hear about anosmia being one of the early cardinal symptoms. Can you talk about your experience with ENT presentation.

Dr. Marchioni:

Yes. Anosmia is one of them main symptoms, you can have anosmia also at the beginning. For the rest, it's really difficult to find ENT symptom and we observe also some patient with hearing loss, but we didn't understand if it's related to the virus. Instead, the anosmia is one of the most early symptom that you can detect in a patient.

Dr. Matthew Carlson:

Dr. Wanna, do you have anything to add?

Dr. Wanna:

No. I mean, the cough, if you want to add to that. It goes to the same, how many people are really asymptomatic and how many people who has COVID has anosmia, it's going to be a question to answer later after we finish with what's going on now, with the disease.

Dr. Matthew Carlson:

Great. And being a neurotologist myself, I'll commonly get emails from people and one email I've received from several different people, is asking whether or not the symptom of tinnitus and also the symptom of sudden sensorial hearing loss, is a manifestation of early COVID. And that's because several providers have witnessed this in the general population. Do you think this is just coincidental, or do you think there are some associations between COVID-positive patients and the symptoms?

Dr. Wanna:

There might be, Matt, one of the COVID, the issue is hypercoagulability states, so we are seeing patient need to be a lot on heparin and anticoagulation because of what's going on. So there might be a very high likelihood that there might be some thrombosis or some obstruction at the very small vessel levels, in the inner ear, that eventually we'll learn about. So, in theory, yes, but, again, we have to wait a little bit to see what the real number will be.

Dr. Matthew Carlson:

Dr. Marchioni, have you experienced anybody presenting with these symptoms?

Dr. Marchioni:

Yes, some patient presented the symptom but, honestly, also as George, I didn't understand if the symptom was related to the virus or with the therapy. Because, also, in Italy, a lot of patients took anticoagulation and so, honestly, we must understand about this.

Dr. Matthew Carlson:

Dr. Gross, how is testing being performed at your center? Is testing reserved for patients who are symptomatic?

Dr. Gross:

Yeah. For patients presenting to the emergency room with COVID-like symptoms, testing is being performed on those patients who have symptoms, requiring admission. In this case, testing is done in order to cohort the patients and to direct therapy much like we did with the flu. Obviously, the goal is to broaden testing as more test kits do become available.

Dr. Matthew Carlson:

And from an otolaryngology standpoint for intake, for the operating room, we'll talk about this a little bit more later but do you have a screening protocol that you use, before you will take a patient to the operating room? And if we want to start with Dr. Wanda, please.

Dr. Wanna:

Yeah. So initially, when the whole crisis started we decided to stop all kinds of surgery unless really, really the emergency one. And the main reason is we don't want to deplete the resources for COVID

patients, that include anesthesia machine, anesthesiologists and staff. But now I think slow down in a way, relatively speaking about at least we have a light at the end of the tunnel. Hopefully, I don't want to be completely positive and then be disappointed on Monday, hopefully the number will be steady.

We start to realize that a small part of patients, they are critical, cancer patients or patients, they have obstruction in the airway and they might die, and they're going to need to have surgery. We have to create a COVID-negative area where we can bring in patients and then do surgery for them.

So we started from scratch and the protocol, now, it's very interesting. So the patients preop will be seen in a negative-pressure room, with the preop team. And they will get COVID testing and they will get a pulse ox, we're shooting for 95% and they will get chest X-ray. And when all of these are completely normal and we deemed that the case is critical, the day of surgery, they will be admitted into a negative-pressure room that we have to really establish for all the patient now. And then, again, we will repeat that pulse oximeter.

Ideally, we need to do a rapid COVID testing, the Abbott one, but we don't have it yet, but that will be added immediately in preop. And if you do have a good pulse oximeter testing immediately, in the preop area, then you will be taken to surgery. And then everybody will be taking PPE as far as this is a COVID patient, even if all testing are negative. So the staff, the nursing, the surgeon, the anesthesiologist, all will be wearing N95 and eye protection. And this is a protocol we're following, I will tell you more about it when we get enough cohort of patients to get the data out.

Dr. Matthew Carlson:

Great. Thank you very much and Dr. Marchioni, do you have anything to add as far as your preoperative screening?

Dr. Marchioni:

No. I think that is quite similar because also in Italian experience, we stopped all of the traditional ENT activity and the surgery. And only for malignancy and for urgent cases and, of course, all patients before surgery, we need to perform the testing so the swabs and the chest X-ray and the pulse oximetry. Is the same because we observed that just the swabs, we have about 40% of the cases that were false negative. So it's mean to have a really big gap of error and in order to avoid this error is better to perform the test with the pulse oximeter, with a working test and also the chest X-ray.

Dr. Matthew Carlson:

You brought up a very important point about false negatives. If you have a patient that you have a high suspicion for having the condition but you get a test and it's negative, how do you manage that beyond... I know you talked about chest X-ray, chest CT, pulse oximetry and things, but do you end up getting another COVID PCR test? Or how will you manage that and what's the delay, how long do you wait?

Dr. Marchioni:

Yeah, we received the patients in the morning and we put the patient in a room, in isolation. And, of course, the patient should put the mask and the gloves and after, one of my resident, he can perform the test of this batch. We are waiting this batch and actually we need about six hours in order to have the response. And after, if the response is negative, we can do the chest X-ray, if the chest X-ray is negative and the oximeter is good, of course, we have about 5% of the cases that are false negative. So the error is just a little bit less with respect, of course, 40% of the cases. And only when we have all the data, we can decide to put the patient in the operating theater.

Dr. Matthew Carlson:

Dr. Gross, from a standpoint of being an intensivist, how are you managing the issue of possible false negative testing? And do you screen again?

Dr. Gross:

Sure. We definitely screen again, I think in diagnosing COVID, we have to use all of the data available to us and our clinical judgment. So we weigh the patient's history, the story that they're telling us, as well as their vital signs, fever, hypoxemia, in addition to their chest X-ray findings. If everything looks like COVID but the test is negative, we'll certainly retest.

One other thing that we have in our critically ill patients is often a breathing tube, and we can use a BAL, Bronchoalveolar Lavage, to collect a sample, which this form of testing may have higher sensitivity than our typical swab testing.

Dr. Matthew Carlson:

Are there any other upcoming tests that you think are promising, that will be more accurate or be able to identify or detect disease earlier?

Dr. Gross:

As far as I know, this is our best test that we have at our disposal now, using the tests that we have in conjunction with the best clinical judgment that we have.

Dr. Matthew Carlson:

Great. And there's been a lot of more recent discussion of antibody testing, are you currently using that and in what capacity is it being used?

Dr. Gross:

Sure. We are currently undergoing antibody testing, testing at Mount Sinai, the campus where I am is available for a physicians who have had COVID and have recovered. And the hope here is that positive antibodies confer immunity and if that's the case, immune physicians can be used in certain clinical situations where exposure is especially high.

Additionally, blood donated from antibody positive patients may be able to be used as convalescent plasma, may be able to be transfused to sick patients in order to help them fight infection. So we're using this both to protect our frontline providers, as well as hopefully offer an additional therapy for our very sick patients.

Dr. Matthew Carlson:

I'm so glad you brought that topic up. I think it's a critical topic right now and there's a lot of, probably, misinformation about it. What is your take on the use of Plaquenil, Azithromycin and potentially plasmapheresis for treatment?

Dr. Gross:

Sure. We have been using Plaquenil and Azithromycin either alone or in combination, to treat both non-critically ill and critically ill COVID patients. Pretty much, across the board, the main limitation to these two drugs as we know is the potential for cardiac arrhythmia in patients who are already predisposed. I



think we need more time and, again, more routine testing to ultimately determine the efficacy of these therapies but we certainly are using them.

Dr. Matthew Carlson:

And can you speak to the general timeline for the disease course? We already talked about the potential asymptomatic period but from the time a person's diagnosed, how long is it till they're cleared their disease? We'll often see these statistics about current people with COVID, people who have cleared it, and at what time point do they clear the disease and they're no longer considered contagious?

Dr. Gross:

So, from an ICU perspective, we're seeing fairly long courses of mechanical ventilation on the order of one to two weeks, before patients can really be weaned from the ventilator which is quite a long period of time and I think longer than, at least, we were initially expecting. In the patients who aren't critically ill, I think the general consensus is we're looking at about two weeks of persistent fevers and symptoms, up to two weeks. And I talked with one of my emergency room colleagues about this, they're telling patients who come to the emergency room with symptoms and who are not admitted but are sent home, to basically anticipate about two weeks and to wait at least seven days plus three additional asymptomatic days, before assuming that they're not contagious.

Dr. Matthew Carlson:

Thank you very much, that's very helpful. I think we'll move on to operative care, we've woven in and out of that a little bit but we're going to focus on a little bit more. And I particularly like the insights of Dr. Marchioni and Dr. Wanna on these questions. So, right now, many centers are reserving surgery for emergent or urgent cases. How are you currently triaging cases and within the field of ENT, what are the most common procedures you find yourself doing now?

Dr. Wanna:

So we created a oversight surgical committee for patients, critical. I oversee that committee but each subspecialty and other chair look and triage the cases, and we send emails to all our faculty about critical cases list to fill. Each subspecialty, for example, rhinology, tell us about a CSF leak or some infection active, going on. Head & Neck people said, any cancers that you don't treat within two, three weeks, it will have a adversarial effect on their outcome, any progressive airway disease that can affect life in laryngology.

So they did submit that list and then when that is the case they have, they will send the case that meet those criteria. We'll look at it, myself with the anesthesiologist, and then said, "Yeah, this is a go, it's a critical, it fit the criteria." And then we'll get it through the process of testing for COVID and all what I mentioned before.

What we found ourselves doing mainly, really oncologic cases and some airway cases. Like last week, we have a tumor that's getting a patient to be blind, they just need to decompress it. And the patient was losing their sight so we ended up allowing those type of cases, and this is what we're doing for now. As things evolve, we can loosen the criteria but for now, we still, as Dr. Gross said, we don't want to have this false hope and all be disappointed. We're still very strict about who gets into our operating room.

Dr. Matthew Carlson:

And, Dr. Marchioni, you're in a unique position because, hopefully, it looks like the curve may be flattening out or even reducing. How is that affecting how you're looking at doing cases? What cases are you doing now, and how is your volume now compared to what it was, say, two weeks ago?

Dr. Marchioni:

Honestly, it's the same because we must be careful and, at present, are performing tumor, malignancy and all cases requiring, of course, surgery because the patient can have some problem with the life. And so, actually, for example, the last week we had just a malignancy disease, of course, we have to manage also the tracheostomy on COVID-positive and in some cases, of course, for example, in malignancy for CL from the anterior skull base. And not only these cases, we are thinking about to introduce something like a traditional disease just because of the decreasing of the curve of the coronavirus but, in my opinion, is too early to understand that. So, probably, at end of April we will be able to try to open the operating theater also for other cases.

Dr. Matthew Carlson:

So Dr. Marchioni, what otolaryngology procedures are considered higher-risk or aerosol-generating. And are there specific steps you're taking to mitigate transmission during these cases for yourself and your coworkers?

Dr. Marchioni:

Yes. The high risk procedure especially nose surgery and surgery on rhinopharynx, because one of the most important aspects of the Coronavirus is the concentration of the virus inside the rhinopharynx. And also, of course, all the tracheostomy, when you are opening trachea, it's really generating aerosol of the virus and also the laryngectomy or pharyngectomy, all of these cases are at a higher risk, of course.

Also, if you had the test negative, is the same, we have to use the protection, in Italy we are using it for this kind of surgery, FFP two or FFP three, with a surgical mask so two masks. And we are performing the surgery with two gowns and three gloves, so it's a really different way to work, of course.

Dr. Matthew Carlson:

Absolutely. Can you describe what FFP two and FFP three are?

Dr. Marchioni:

Probably in US, FFP two is N95 and FFP three is N99, so it's different in Europe. And so the difference is the filtration, because you can have a stop of the virus in 95% of the possibility, in FFP two, instead in 99% in an FFP three.

Dr. Matthew Carlson:

Great. And I think it's intuitive for all of us to understand why rhinology procedures or upper aerodigestive procedures might be high-risk, but could you talk a little bit about why otologic procedures are sometimes considered high-risk?

Dr. Marchioni:

Yeah, autologic procedure is a high-risk, especially mastoidectomy, using the drill, for two reasons. Because, of course, there is the high concentration of the virus inside the cells and when you are performing drill or drilling the mastoid, you are generating aerosol, so is a really high-risk procedure.

Dr. Matthew Carlson:

Yeah. And right now for otolaryngologists, one thing that we'll be asked to do relatively frequently is tracheostomy, for prolonged ventilation assistance. Obviously, this is considered a very high-risk procedure, maybe we'll start with Dr. Wanna, are there some strategies you've used to reduce your risk of exposure during tracheostomy?

Dr. Wanna:

Yes. So the first thing is, the New York Head & Neck Society, and this was spearheaded by the team at Sinai, did put guidelines on tracheostomy in COVID patients. So, technically, we don't do any tracheostomy before day 21 unless you needed it. So a patient needs to be three weeks before we entertain the idea of tracheostomy, just to decrease the viral load in this patient and the exposure. However, sometimes you will be ending in a situation that you're going to need to do it, an emergency, and these are the most dangerous situation for everybody. So in order to limit the exposure on everybody during the tracheostomy, there is the steps that you're going to need to follow.

One, you have to have a proper PPE dressing or PAPP. Sometimes the PAPP, which is a Positive Airway Respirator Pressure, that's like you will be covered completely, is not available. So you're going to need to have to gowns, three gloves, as Danielle said, N95 mask, on the top of the N95 a surgical mask, goggles and a face shield and two hat, and you have to follow the proper technique for yourself.

Number two, you have to limit the number of people in the room so usually we have an attending doing that, who's a senior person. We don't put the junior resident or people who have no experience, you want this to be efficient and fast and you want to limit the exposure. You limit the nurses in the room to one person and same with anesthesiologists, limited to one person. So the number of people should be limited in the room that you perform the tracheostomy.

Now, as far as sequencing, Dr. Gross can talk about the rapid sequencing but for us, the important things to do is to avoid [inaudible 00:37:37] if you can, because that will spray the blood sometimes and the viruses. And when you decided to open the trachea, the patient has to be completely paralyzed and you have to stop and do the technique in apnea or patient stop the ventilation, and try to avoid the suction. So correct PPE, limit number of people, experienced people in the room, avoid suctioning, complete paralysis and apnea when you open the trachea, and super inflate the tube before you opened the trachea to avoid secretions. And that's what we do and then, technically, we would love to have it three weeks after but sometimes you're forced to do it earlier.

If I can say one more thing, Matt, I don't want to take the whole time. I think, as we learn more, it would be smart eventually to do viral load testing on all the patients that they're going to have a procedure that is risky. And it will become like the HIV, if you have a patient where they have a low viral load, then it will be lower-risk to perform anything comparing to high viral load. And maybe the date will be seven or 10 or five after the infection, will be different to different patients. And I think that, if you think about scientifically, that will be probably a good way to do it.

Dr. Matthew Carlson:

That's very helpful. Dr. Marchioni, do you have anything to add?

Dr. Marchioni:

No. Exactly as George, the procedure is really crucial and you have to follow in step-by-step procedure. Another important point, if you are able, is better to avoid the tracheostomy or delay the procedure because the viral load. We know that the viral load is really high in the first week of the disease or in the second week of the disease. And so the tracheostomy is higher-risk, especially at the beginning. So in our hospital, we are discussing always with anesthesiology team, if it is really necessary or is possible to postpone the procedure. You have to do the really necessary tracheostomy and for the rest, the same type of George, we are performing also in Verona.

Dr. Wanna:

As we roll the antibody testing at Sinai, for all the staff recently, whether you had tested COVID-positive or negative, the frontliner, which means what Dr. Gross is doing, critical care, ENT anesthesia, and EED. If you start to have staff who have antibodies in ENT you can have a group of people, initially, to get exposed to more risky procedure because they already developed immunity. And also that's another smart way of looking at it, if you test all your troops and you have 40% of them already has antibody, maybe you can rotate with that through groups until something else happens, that's another way to look at it.

Dr. Gross:

I totally agree.

Dr. Matthew Carlson:

Do you employ a rotation for your different staff, so that you don't have everybody on at once, so that you avoid the very potentially catastrophic situation where everybody within a sub specialty have an infection at the same time, is there a system that you use?

Dr. Wanna:

Yes. So we have a team that rotate and, honestly, for airway, we're rotating it on a almost daily basis because we have the staff for it for now. But, yes, you don't want to... As a system, which mean as a hospital, we need airway coverage, we're going to create groups that are specific to the hospital. They rotate every second day or third day to avoid a lot of exposure at one time, for only the same people, that's definitely something to do.

Dr. Matthew Carlson:

One other question related to the airway team, are you considering using a percutaneous traches over open tracheotomy, to potentially reduce that risk of aerosol-generating technique?

Dr. Marchioni:

We thought about, at the beginning, and we observed that for percutaneous tracheostomy, the timing when the trachea is open, is more with respect to the open procedure. Because when you are performing the open procedure, you can control exactly when you want to open the trachea, put the cannula and it's really short time. And especially when you are performing this, the patient is in apnea so is really difficult to have a... Of course, it's high-risk but you can control.

With the percutaneous, of course, looks like minimally invasive but the trachea probably is more open for more time and probably you can have more aerosol invasion. So we decided to perform only open tracheostomy but this was our experience.

Dr. Wanna:

Just one thing on that, Matt, as you do percutaneous, you have to remember those patients are all anticoagulated, heavily. And sometimes there is a risk of bleeding in a setting that is not excellent for controlling it, just to keep that in mind.

Dr. Matthew Carlson:

That's a very good point. So just generally speaking, for operative cases within otolaryngology, how is OR anesthesia induction managed? Do you have one anesthesiologist performing the intubation? And then how much time do you wait for personnel to enter the OR suite?

Dr. Gross:

So I cannot agree more with everything that's already been said about airway management. The goal is to minimize the number of people that are in the room and involved with the airway, to use only the most experienced people and to really avoid anything aerosolizing, which is primarily the patient coughing or bag mask ventilation.

So for operative procedures or for intubation of COVID-positive patients on the floor or in the ICU, we're performing rapid sequence induction for all patients, paralyzing them on induction of anesthesia to minimize coughing. We're avoiding bag mask ventilation and we are using one person, the most experienced person in the room, to perform the intubation. We are also using, preferentially, video laryngoscopes like the GlideScope or the C-MAC instead of a typical MAC or Miller blade to perform the intubation, because it allows the anesthesiologist to stand slightly further away from the patient.

One additional thing that we're doing, upon intubation, we're using a clamp to clamp the back end of the endotracheal tube, so that the aerosolized particles from the airway don't escape into the room before the breathing tube is connected to the ventilator itself.

Dr. Matthew Carlson:

You bring up several really good talking points. You had mentioned using the video laryngoscope for intubation, to remove the intubator further away from the upper aerodigestive tract of the patient, to reduce the risk of spreading. One thing I think, within otolaryngology, that has been useful for us to consider is when we perform laryngoscopes, nasopharyngoscopy on patients, we can record the footage so that if we need to show another provider, they don't need to come back and separately scope the patient.

Also, by using a video attachment or a video head to the nasopharyngoscope, we're also distancing ourselves from the patient somewhat to reduce the risk of aerosolizing particulates. The other point that you bring up that I think is very worth discussing further is, the implications of this care streamlining and how it impacts the learner. So you had mentioned that in your situation, you take the most experienced person to do the intubation. How do you think that, that situation is impacting our learners overall? And maybe we can start with you, Dr. Gross.

Dr. Gross:

Sure. I mean, trainees have certainly been affected by this dramatically. In one sense, it's expediting medical training in a sense, I mean, Mount Sinai, in addition to several other medical schools in the United States have actually graduated medical students early, in order to add trainees to the workforce. So certainly these interns and other very junior residents would not be exposed to this degree of

medical acuity, or this amount of critical care in normal circumstances. That being said, we have to be careful how we deploy these people into the workforce, we want them... Personally, I want them to learn about critical care and learn about these patients but they need to protect themselves. And to expose them, junior residents, unnecessarily to COVID is certainly not the answer, we have to make sure that they're learning but that we're still being very careful and not allowing inexperienced providers to perform very high-risk procedures.

Dr. Matthew Carlson:

Thank you. Dr. Marchioni, how has this situation affected trainees in your center?

Dr. Marchioni:

I agree because we avoid to have the residents during, especially, tracheostomy because around procedure, it's really high-risk. And so this is terrible period and we observed dying, also, young people without any comorbidity and the disease is really crazy, and so we must be careful. And I decided to dedicate just people with experience to perform a tracheostomy, avoiding the residents.

Dr. Matthew Carlson:

So now we'll transition to the topic of clinical care. So Dr. Wanna, how are you approaching patient care in the clinic right now? Are you triaging? Are you performing a lot of virtual consults over the telephone? And what's your general approach?

Dr. Wanna:

Yeah, so When the crisis hit, I think the government expedite telehealth coverage across the Tri borough States, which mean New York, New Jersey and Connecticut. That did help a lot so we did push, already, the platform very, very fast. And we have as of, probably... I'll tell you the number yesterday, we had over 4,000 telehealth visits, within Sinai system, in one day. As far as ENT, we reach out to all the patients and tell them that we have this platform, and then I tell them that we are going to continue their care via telehealth.

So some people opt in, some people said, "We're fine, we'll come when we need it." So each provider has some number of different telehealth visits that they do. However, we still need to see... I still see patients in my office because some of the visits cannot be done properly on telehealth, they need to be... For example, sudden hearing loss, something stuck in their ear and other stuff that somebody bleeding, they need to come. And the emergencies now, in New York city, are all full of airway COVID patients.

So for that, we ask the patient on the phone, if they feel any symptoms of COVID, the most common that we know about, which is like cough, fever over the last few days. And we triage them on the phone for that, if they said, "No," then we'll ask them to come to our office. Once they come to the office, we expect them to be even asymptomatic with COVID so they get a mask at the entrance of the hospital. Initially, we used a temperature check then we stopped doing it because we rely on the patient, that they don't have temperature.

And they come upstairs to see us, there is a small skeleton of people left on the floor, so we'll minimize the exposure and everybody will be wearing N95 and the respected PPE for it, as if it is a COVID patient. And then we perform the exam, the patients understand that we take all the precaution. We don't see a lot of patients like I see two or three, sometimes four, sometimes zero, but that's the precaution we are taking.

Dr. Matthew Carlson:

Thank you. And just so we get a sense for how things have changed, maybe not by number but by proportion or by percentage. How many visits, now, are performed virtually or over the telephone versus as a patient face-to-face visit, in clinic?

Dr. Wanna:

Over probably 99% observations, of the visits, are done over the phone or over videoconferencing.

Dr. Matthew Carlson:

Great. And Dr. Marchioni, can you talk about your experience with triaging clinical care? So seeing a patient in clinic and whether or not you're using any different platforms for telehealth.

Dr. Marchioni:

Yes. Honestly, we are performing really limited number of patient and face-to-face. And for the rest, we can try to explain via telephone or video chatting, but not only for the office consultation, but also in the ENT ward, where we have a lot of oncologic patient. We stop all the visit from, for example, also the relatives of patients. So it's really terrible because the patient, they are not able to see the relatives and for this reason we are deciding to perform video chat with the relatives and with the doctor and the patient with the iPad. I bought, personally, different iPads for the department in order to have the possibility to explain it to the relatives, to the patient, in order to add the contact between the patients and the relatives. This is something crazy but it's work.

And for the rest, also, we are trying to organize a visit to video chats but, of course, sometime is not easy because you have to see, for example, the larynx of the patient, the nasopharynx of the patient. And so, in that case, you need to see face-to-face, the patients.

Dr. Matthew Carlson:

Right. That brings up my next question. One of the most critical aspects of a face-to-face visit is the clinical examination. Are there any tricks or any tips that you use to examine a patient? Like, for example, you might use tele otoscopy, you can see some of those systems being sold on Amazon, are there other ways where you have a person who's more remote, a visit with their local ear, nose and throat provider and then call onto you to give more information about the exam? Are there any things that you have done that you've found useful?

Dr. Marchioni:

In Italy, we are performing, of course, all the test or visit with the camera, with the endoscope and is really simple to check the patient of course, with the protection. Because if you need to see their orthoscopy is not so high-risk, because you just to put a mask on the patient and just to put a mask on yourself, FFP two, and you have already a good condition and the not so high-risk. The problem, when you are performing endoscopy of the nose or the larynx, and in that case, you need a protector on your face and also, of course, we are using the FFP two with a surgical mask and with the head covered, and with us in the operating theater.

Dr. Matthew Carlson:

That's great. Dr. Wanna, do you have anything else to add?

Dr. Wanna:

No, I know the tele endoscopy for the ear that you can plug it to the phone or on the iPhone. We're not using it, honestly, anything that can wait, even pain in the ear, I'm putting them on drops and tell them to call me in a week. So I try to avoid anybody to come to the office unless needed.

Dr. Matthew Carlson:

Great. Thank you. And now we'll transition to a potpourri session where we ask several questions pertaining to other aspects, that are still very relevant. So, overall, how has this impacted resident and fellow education? We spoke specifically about surgical training but I think there are some potential silver linings, where we're developing new platforms for education. And, Dr. Wanna, can you speak to some of those that you've been developing or working with?

Dr. Wanna:

Yeah. I think everybody rallied for the resident and the medical students, really, they are put at tremendous pressure in every single aspect of it. We're relying a lot also on them, there is physical, emotional, mental, you just name it and educational is a big part of that. So I think like Sinai and other institution, we're developing Zoom conferencing and teleconference. And we're doing that on a regular basis so we would be able to have, basically, a zoom conferencing for the resident across the board. Which is, in a way, the silver lining and that is good because it's exposed, now, a Sinai resident to a different program and then to a different attending almost on a regular basis, so that's very, very helpful.

We're really monitoring, also, the technical part and the surgical part, they will learn it, we're going to come out of that and there'll be plenty of cases for them to learn. I think we're also very concerned about their emotion and their, really, state of mind. So we're very careful about that because this is taking a lot of toll on everybody.

So also the residents are video Zooming with each other, and then sometimes they find that colleague in other program and they join also there as well. So it's been a collaborative effort with everybody, definitely it's a positive because we're getting information from all across the US and even from worldwide. But it's something of that we probably will continue to use in the future, and that's probably where we are with the education.

Dr. Matthew Carlson:

Thank you very much. And Dr. Gross, in your setting, have you used anything in particular for your residents, for didactics?

Dr. Gross:

Absolutely. I agree. I think, like Dr. Wanna said, we also adopted these teleconferencing platforms fairly early, Zoom, to try and help us do educational sessions without person-to-person contact. And I totally agree this is a devastating disease but maybe we can take from it, the silver lining that I do think, like he said, there is more collaboration now and there's more ingenuity in terms of teaching techniques, now. And hopefully we can take some of these things with us into the future, even after this pandemic ends.

Dr. Matthew Carlson:

Dr. Marchioni, are there any unique platforms that you're using in Italy, and how has this changed resident education from a didactic teaching standpoint?



Dr. Marchioni:

I think that is the same like George said, we're using a lot of Zoom conference, especially, to perform lecture, to see also live surgery. We are performing, sometime, a connection with the operating theater and also, our resident, they are working with us, especially for oncological cases. And so, also, they are performing in the operating theater but not on the tracheostomy, that is a really different situation.

Dr. Matthew Carlson:

I have to say, one of the things that's most remarkable to me amidst all of this, is how everyone has become much more united across the United States and international. I've never had more interactions with other providers at other centers than this time, right now. And a resident at our place said this recently, and I thought it was very interesting, they said they've never been more busy than now. And I think it provides a testament to our driven nature to educate people, both at our center and other centers nationally, internationally.

So in some ways, despite all the tragedy and anxiety that's been developed by this, I do think there are several things that we will learn from this and take later on in the post-COVID era. One other question I have, more from a social aspect, we talked about the period of being asymptomatic and providers have a much higher risk of being exposed. How are you managing that, socially? When you leave the hospital knowing that you might be carrying it but you're asymptomatic, do you self-isolate at home? Do you limit your interactions with others? How do you manage that? And maybe if Dr. Gross wants to start?

Dr. Gross:

Oh, absolutely. I mean, prevention is still by far the best way we have to combat the disease. And if we're asking the rest of the community for social isolation and then we have to do our part, by practicing it ourselves. And I personally am trying to social isolate the best social distance, the best that I can, and when I'm not in the hospital. And I know many people in the hospital who have been separated from their spouses or their children for weeks, in order to limit the exposure of their own families.

Dr. Matthew Carlson:

Dr. Wanna and Dr. Marchioni?

Dr. Wanna:

So I struggled with that because the community are offering a lot of hotels to stay, when you come from the COVID area hospitals or you don't get home. But the way I do it and it might be a little bit different, honestly, my wife put a towel in the garage. So I get into the garage, I take off my clothes, put the towel and get immediately to the shower and then get dressed without seeing anybody. So everybody's doing it differently, some people are taking shower in the hospital and then just changing their clothes in the garage. It did definitely change how our life is but that's what I tried to do to avoid it. The family has been in the house for the last month and did not leave it, and that's what everybody's doing their part too.

Dr. Marchioni:

Regarding me, my situation is just a little bit crazy because I'm driving between Noventa and Verona, I'm working in Verona but I'm living in Noventa and I have a special permission to take my car and drive in Noventa and Verona. And I live within Noventa but in isolation, which mean that I have my room with

my bathroom and of course I can speak with my wife via Skype, so this is good, and also with my son and sometime I can meet them just with the mask. So I'm trying to do this to avoid to spread the virus to my family because of the false negative, and we are working every day in the hospital, and we don't know what's happening.

Dr. Matthew Carlson:

Just, in closing, I have a couple of last questions. Are there any key lessons that we've learned during this time, that will benefit us later? Maybe, Dr. Gross, if you want to start?

Dr. Gross:

I mean, the thing that I try and think about is just the resiliency that physicians and staff has shown, during this period. And I think everyone has worked outside of their comfort zones, has expanded their roles, acquired new knowledge, adapted to changing situations. And I think that if we take this resiliency with us, put it in our back pockets and just remember what we're capable of, I think that'll really serve us well, undoubtedly. Well, hopefully not to this scale, we very likely will have crises in the future and I think if we just take this resiliency, I think that will really help us a lot, moving forward.

Dr. Matthew Carlson:

That's a very good point, Doctor Wanna?

Dr. Wanna:

I think we learned that human, during crisis, really become close to each other, which is a beautiful thing to see, and everybody will come to help the other person. But on the micro, looking at that, I do fear that we're going to probably have a plan, much more rigid, and structure for pandemic. It's never going to be perfect or good but I think we learned a lot, how to source planning and on the job. And definitely that comes with some chaos all over the world.

I think what we're going to learn from that is, a pandemic and something that could be a public health issue should be top on the list about structure, response for that. And you're going to see lots of institution, they're going to start to have drill on these for the years to come and hopefully we never go through that again.

Dr. Matthew Carlson:

Thank you. Dr. Marchioni?

Dr. Marchioni:

I think that the lesson to learn from COVID is that, of course, in this period I understand very clearly that life is only a passage and we must take in mind, and the human being will be saved only if we will be able to help each other, so it's another important point. And now we understand clearly the real value of the life, especially of the freedom, because now we are in prison in our home without the possibility to meet friends or relatives and no restaurant, nothing. And so I hope that tomorrow, when we will be free, we can appreciate in a really great way so we will see, honestly.

Dr. Matthew Carlson:

Very well said, thank you. Well, we're so grateful for this opportunity to learn from you all, you have been working in the trenches and I think all of us, our thoughts turn to you in New York as well as Italy,

throughout all of this. Is there any specific advice that you might have for the listeners who are just starting to see increasing numbers of patients coming into their medical center, now?

Dr. Wanna:

I think personal protection is key, very early. Definitely if the state can implement social distancing, it's very helpful but I really do saying it's extremely important, I cannot emphasize a lot on protecting yourself.

Dr. Marchioni:

Yes, I agree. The protection is the key. If we will be able to have the protection, everything is going well.

Dr. Matthew Carlson:

Thank you. Amidst all of this, what gives you hope, Dr. Gross?

Dr. Gross:

I'm hopeful, when I talk to my friends and my family in New York and certainly talking to people from other cities, and our colleagues in Verona, definitely. And I hear people so diligently practicing social distancing, a huge part in the fight against COVID is ongoing inside the hospital but so much is happening in the community as well. And when I hear that people really are working towards public health measures, I can more clearly see the light at the end of this tunnel.

Dr. Matthew Carlson:

Dr. Wanna.

Dr. Wanna:

I think if you walk... I'm in my office now, in New York city, if you walk in New York now, you see how it's empty in the middle of April, comparing to when you come to visit me, Matt, and see how much the response of New York is great. That's a huge, really, hope for me to see how good we are as people become as one. And the other hope, honestly, is this, in all of us you find we always want to share and care about others and make sure they learn from our mistakes, and we learn from them. Having you and having Caroline and having Danielle and doing this in the middle of a crisis, that gives you a lot of hope about who we are as people.

Dr. Gross:

I agree.

Dr. Marchioni:

Yes. I agree, totally, of course, we must understand our mistake and after, this is really important for the future.

Dr. Matthew Carlson:

Well, thank you so much. I, again, can't emphasize how grateful we are as listeners to be able to learn from you. If there's anything that this time has taught us is that the benefits of unity, resilience, the developments of certain platforms that we'll take in the future, telemedicine, telehealth, are all things that I think make us stronger at this time, amidst of time of some anxiety and chaos and some tragedy. I

think your just being on the telephone or being on this podcast, on a Saturday, is a testament to your dedication to education. And I can't thank you all enough, Dr. Gross, Dr. Marchioni and Dr. Wanna for joining us today. Thank you.

Dr. Gross:

Thank you.

Dr. Marchioni:

Gosh, thank you.

Dr. Wanna:

Thank you.