Transcript Details

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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Strategies for Optimizing Timeliness of Diagnosis & Treatment of Patients with Lung Cancer During Global Crises

Announcer Introduction:
Welcome to CME on ReachMD. This CME activity titled: Strategies for Optimizing Timelines of Diagnosis and Treatment of Patients with Lung Cancer During Global Crises is brought to you by the American College of Chest Physicians, and supported by an independent educational grant from AstraZeneca Pharmaceuticals, an educational grant from Genentech, a member of the Roche Group, and an independent medical education grant from Merck Sharp and Dohme Corporation. Before starting this activity, please be sure to review the faculty and commercial support disclosure statements as well as the learning objectives.

Dr. Edell:
Good evening, everyone. I'm Eric Edell. And on behalf of CHEST, and our industry sponsors from AstraZeneca, Genentech, and Merck Sharp and Dohme, I want to welcome you all to our fifth installment of webinars that are on primarily the personalized online training for lung cancer management. As I said, this is our fifth in the series. And I'm very excited tonight, that we have three expert panelists with us that are going to share their experience on strategies for optimizing the timeliness of diagnosis, treatment and with lung cancer during a global crisis.

We're hopeful that through this webinar, you'll achieve the learning objectives that we have listed below. Our panelists represent pulmonologists, medical oncologists, and thoracic surgeons who are experts in the management of lung cancer. You can see the locations of each one of the panelists here. I'm very excited for us to hear each one of their presentations.

The obligatory disclosures.

Also on behalf of my co-chair, Tim Murgu, welcome you once again. And I'm going to turn the program now over to Dr. Channick, who will give the first presentation.

Dr. Channick:
Okay, well, I'd like to thank Dr. Edell and Dr. Murgu for the opportunity to speak on this topic. I think the last two years have been very hard on everybody. And it's easy to have a lot of COVID fatigue. But I think it's important to realize that you know, there's a couple of reasons to not forget about what's been going on. One is, you know, there's still a large number of deaths in the country every day from COVID. And I think also important is we don't have a crystal ball, we can't see the future, and we don't know when things may progress again. And when all of these tools that we've gained over the last couple of years, we will need to utilize again in order to take care of our patients and specifically our lung cancer patients.

So, I'd like to start out here with a question. When proper PPE is utilized for flexible bronchoscopy, what's the reported rate of COVID transmission for healthcare workers? I'll let you ponder that.

Okay, all right. So pretty equal spread. We'll get to that a bit.

So let's - I wanted to base this presentation on a case the hopefully brings out some of the important topics related to timeliness of diagnosis and management of lung cancer during the pandemic. And this particular one was pretty challenging. And this is a 19-year-

old woman who was in excellent health until December of 2020, when she developed fevers, cough, and shortness of breath over a few days. She went to her local ED, she was swabbed and was positive for COVID, told to return home to quarantine. And while her fevers improved, her shortness of breath or cough continued to get worse. She returned to the ED about a week later, and her oxygen saturation was 80% on room air. Her respiratory status declined in the ED, and then she was on 15 liters non-rebreather. A chest x-ray was performed. And this is what we're looking at. And for everyone in the audience who's seen a whole lot of COVID by now, you'll know that this is not a very typical view of a COVID pneumonia where you have complete volume loss of the left chest and white-out of the left hemithorax. So we already knew something was going on.

And then just to bring in kind of where we were at in Los Angeles at the time that she presented. So I have this red arrow pointing to kind of the day of her presentation where we had an average of about 13,000 cases per day. And then the death rate as you can see around this time is really starting to spike. So the status of the pandemic at the time or her presentation was really pretty critical.

And now, there was some good news. We had readily available testing, we had a lot of PPE and, overall over the last several months, we've gotten pretty experienced and a lot more comfortable caring for patients with COVID. But a lot of bad news as well. Our ICU was full, hospital was full of not accepting transfers, no ECMO circuits, vaccines were not yet available. So all sorts of concerning things, wondering how are we going to make this happen? How are we going to take care of this poor woman?

And just to show you her CT scan, which was equally concerning, where you can see that left mainstem bronchus is blocked off, she's got a right upper lobe lesion, and she's got a lot of narrowing bronchus intermedius, and even some tracheal stenosis. So really a very scary looking presentation.

So I present her because again, she presents a number of challenges, especially if we want to get her in as soon as possible. She's young, she's got a big chest wall mass, we think it's malignant, she's in respiratory failure, declining respiratory status, so and by the way, she's actively COVID positive, and at the peak of the COVID surge, and at a hospital that really did not have resources to take care of her. And of course, this is a page that comes in around 11 PM on a Friday night.

So this brings up, you know, how do we overcome some of the barriers to lung cancer care during the pandemic? And I think, for us, unlike the chaos during the initial surge, our institution was a bit more prepared during a second surge. We had extended ICU capacity. We're more familiar with managing COVID patients, hospital, and ICU protocols for present for prioritizing cancer patients, we had adequate PPE, and testing was widely available at that point. So this patient was transferred to our ICU.

And I wanted to segue off into one of the questions that we received before the webinar that asked us to talk about strategies to overcome delayed procedures. I figure that's a relevant thing to talk about at this juncture. And I think, to address that question, I think the issue is what is the root cause of the delay of the procedure? And I think we know with each surge of COVID, there's been different challenges. With the initial surge, right, it was everything was shut down. No patients were allowed to come in for elective procedures. Patients were scared to death to come into the hospital that they would get COVID. In later parts of the pandemic, it was, you know, more recently, with this more recent wave, it's been more staff because people, while not terribly sick, are not showing up for work because they have COVID, or there's issues with the supply chain. So there's all sorts of challenges. I really think you need to kind of address each of them as they come up.

I think as far as space, I think it becomes a discussion with the hospital regarding who are you going to prioritize to get in. You know, in our hospital, we made sure that lung cancer patients and cancer patients in general are at the top of that list. That goes also with prioritizing when there's minimal staff, what is the hospital going - where are your patients going to be up on the line if - are they going now? Are they going to be at the end of the day, or are they going to get delayed? So I think it's buy-in 08:03 from the institution as far as making sure that the cancer patients are taken care of first or near the top.

So it gets back to our patient about know kind of who gets a bronchoscopy. So early on in the pandemic, three societies produced guidelines for, and this is all consensus based, as far as who should go and when. So Society for Advanced Bronchoscopy released a consensus statement, and they divided it up into five different categories, anywhere from emergent, which will be a same-day procedure for someone like in this patient's case who's got severe symptomatic central airway obstruction or someone with massive hemoptysis or a foreign body aspiration that's acute, all the way to electives, such as doing the BAL for MAG 08:51, or doing surveillance biopsies for a transplant patient.

And then CHEST and AABIP, did a combined guideline, very similar again, dividing patients between emergent bronchoscopy, urgent bronchoscopy, and non-urgent bronchoscopy. Again, just helping providers know kind of where their patients should go and how to prioritize them and what level. If you have someone who's got a lung mass with lymphadenopathy, where do they go? And I think that was what's helpful. Can we shoot for around within two weeks is more reasonable? So now we know kind of how to move forward.

Also in the CHEST AABIP guidelines, they gave us some summary of recommendations, but fairly basic, meaning if someone's got

confirmed to suspected COVID, will you want an N95 respirator or PAPR. When a bronchoscopy is indicated to diagnose stage or characterize someone with suspected lung cancer, the thought is an area where there's transmission of COVID we suggest bronchoscopy performed in a timely and safe manner. So no one could really tell you exactly when it was supposed to be done, but how to get it done as soon as you possibly can and when it's safe.

So this is a proposal of recommended for IP procedures during the COVID-19 era. I just want to touch on several of these points. You know, what's been big in our hospital and actually continues to be big is screening. We continue to screen patients before aerosol-generating procedures, and we have a very adequate supply of PPE. Well, we did not use disposable bronchoscopes. That is a recommendation, but we did the high-level disinfection on the reusable bronchoscopes. And then using negative pressure rooms when you can with at least 12 air changes per hour. Initially, in the pandemic, we were really trying to limit the number of staff available. So that meant, you know, typically when you're doing a bronchoscopy, there's lots of at least in our facility, there's always a lot of extra people in the room. So we made sure we were kind of on a skeleton crew. And then minimizing things that will result in aerosol generation like avoiding atomized lidocaine. For us, rigid bronchoscopy really put us a minimal because we typically use jet ventilation, and we perform bronchoscopy for urgent to emergent conditions.

So now that the initial data came out, and a couple of years have passed, and we're starting to regroup, some of these questions we're looking back at which is how risky is it to perform a bronchoscopy on a COVID positive patient? This is something that scared us to death, or at least myself, early on when we weren't sure if we were truly protected. So and then the early guidelines are based on data from the initial SARS epidemic, which recommended significant restrictions on procedural volume. But we know that when proper PPE is utilized, the risk of transmission to COVID healthcare workers actually very low.

And there's an article that I listed there published in 2021, that analyzed 12 studies, which included 646 patients that underwent almost 1,000 bronchoscopy, and only one study reported a bronchoscopist who developed COVID. Now, is it possible something was missed? Of course, but I think overall, you see that the number - the risk of getting COVID when you're adequately protecting yourself while you're doing a bronchoscopy is quite low.

And so just to cut back to the case very quickly, in this particular patient's case, you know, what was seen on the CT is what was seen on bronchoscopy with obstruction of the left mainstem, the right upper lobe lesion, the BI was narrowed down, but there was kind of opening beyond the left mainstem bronchus. So with a lot of work, with stenting, and with catheterization, her post CT scan – or postprocedure x-ray shows really good ventilation of the left lung.

And so this reminds me to kind of go back so when the pandemic initially started, there's a group of interventional pulmonary physicians who started the global pandemic SARS-CoV-2 bronch database. They reached out to a lot of people to try to have them record their patients. I think this was a brilliant idea to try to get more information. And, ultimately in the manuscript, there are 289 patients with known or suspected COVID. And this was done in March to August of 2020. So really right at the beginning of the pandemic. And so, what they saw in this patient population is that bronchoscopy established the diagnosis in about half of the patients, and it also changed management in about half of the patients, whether that was new treatment, or changing their location or removal of existing treatment.

The other important thing is how patients tolerated bronchoscopy. So this second table looks at bronchoscopy-related adverse events. And you can see that the bronchoscopy-related adverse events occurred about 5% of patients. And then another about 6% of patients showed clinical decline within 12 hours. Death rate was actually surprisingly low in this group of only one patient.

Did the COVID outbreak impact access to lung cancer diagnosis and treatment? Again, this is now we're looking back and seeing how did it really impact? Were we able to take care of patients? Where were the delays? And so this is a multicenter trial from Italy, that compared to access the year before the pandemic and the year of the pandemic. And between these two years, there was about a 7% decline in new lung cancer diagnoses, that was not a statistically significant P value but erred in that direction. And that newly diagnosed lung cancer patients and 2020 were more likely to be diagnosed with stage 4 disease. But in this particular study, there was no difference in interval between symptom onset and radiologic diagnosis, cytologic diagnosis, or treatment. So this study is pretty impressive. There was actually very – there was no delay detected.

Now how about this is another study looking at the same thing from Canada. It did the same thing, compared a year before the pandemic and the year of the pandemic. And I specifically highlight referral to diagnosis, because that's oftentimes where IP steps in, is that is that timeframe. And for them, the recommended wait time they were shooting for was 30 days. And interestingly enough, they actually saw that. They looked at the percentage of patients that went from referral to diagnosis in 30 days to be 40% 2019, and 48% in 2020.

But what we do see is that there's an overall big decrease in new lung cancer diagnoses of about 35%. So while out of those patients

that presented they were taking care of, people just weren't presenting for their diagnoses.

So going back to this case. In this particular patient, she had adenocarcinoma with an ALK translocation. And she was started on targeted therapy right away. We recommended that she undergo repeat bronchoscopy every couple of months after discharge, but she refused due to concern that either she, or more likely a family member, might get COVID.

So now what do we do? What do the guidelines say for something like surveillance bronchoscopy? Well, in this situation, you know, when we talk about airway stent surveillance, we're down to the subacute, so even waiting more than two weeks is fine. And patients with confirmed COVID infection who recover and need a routine bronchoscopy, guideline recommendations were really to base it on the severity of COVID infection and the time from symptom resolution.

So for her, we could have done the procedure. She opted not to. Instead, we did routine follow-up bronchoscopies to evaluate the stent - I'm sorry, instead of routine bronchoscopies, we actually performed phone calls about every two to four weeks. And it is because this patient did not have internet access, and we were able to assess her airway on CT.

And so this brings up the last point, which is telemedicine, which is I believe many will be talking about today, which is - and I like this graph, because it shows weeks prior to the onset of the pandemic, where a proportion of visits that were telemedicine visits were somewhere around 15%. And then within really a couple of weeks, we jumped up to 75%. Which is like better than anyone thought that we could accomplish. And for our institution, we knew we had an early multidisciplinary thoracic oncology clinic that quickly switched to a telehealth clinic, which we have kept because we find that it allows patients who live far from the hospital to get opinions from providers and multiple specialties all in one morning. And then we have family members sometimes remotely from across the country who either can't be physically present, due to distance or maybe they have COVID and they can't be present, but they're able to participate these meetings.

But I think important to remember about telemedicine and I think we've all experienced this is it’s not always seamless, right? It requires broadband or high-speed internet and internet capable device and technological literacy of the patient. So there's somewhere around close to 20 million Americans who don't have broadband service. So it’s important to remember that while telemedicine has been very helpful in opening up care for patients around the country, there's number of patients who are missed by this because of the lack of technology.

And so just take-home points briefly. Timing of bronchoscopy during the pandemic depends really on the urgency of the procedure, where the hospital is with the resources in the COVID prevalence with prioritization of lung cancer evaluation. Consensus statements help to guide the prioritization of bronch procedures. And I think it really helped us to know what everyone else thinks when we should be doing these procedures. But ultimately, it comes down oftentimes to a case-by-case basis when you make that decision. Assessment and follow-up of patients may be limited and requires a flexible approach to minimize transition. Again, considering telemedicine when possible. Determine appropriate options to reduce patient contact. And we didn't get into that too much. But when you consider imaging, when you consider liquid biopsy. And we may touch on that in the future here. And when performed under proper conditions, bronchoscopy in patients with COVID-19 has a very low risk of transmission to providers.

And for the last question here, regarding bronchoscopy in patients with suspected COVID, which of the following is correct?

Okay, alright. Well –

Dr. Edell:
Thank you, Dr. Channick. That was excellent. I do have a question. We don't have any additional questions in the chat box yet. And I encourage the audience, if you do have any questions for any of our speakers, please put them in the chat box. It's an opportunity for you to pick their brains. But I have one question. As you look back at what we've been through in this pandemic, and what we've learned from the standpoint of how to manage the aerosolized procedures that were involved in, do you anticipate we'll continue to do business like we're doing it now? Or do you think we'll go back to what we were doing before?

Dr. Channick:
Yeah, what’s going to stick long term? I think that's a good question. I think, you know, I've seen both, right. I've seen people admit that they can switch back, you know, and I think - but for all of our procedures, you know, everyone's still wearing PPE. Everyone's still taking it very seriously. And this is, you know, at a time when our cases are not as necessarily as high when the hospitalization rate, death rate is very low. People are still very concerned about it. And I think that there may be an overall change in really how we approach risk of procedures and really thinking about trying to prevent us from getting sick or getting us sick, and then ultimately getting a patient sick. So I think it might be interested in what other people think. But I think for myself, I think this is going to continue on a little bit longer.

Dr. Edell:
Yeah, I agree. I agree. If you would stop sharing your screen, we'll move on to our second speaker, Dr. Janani Reisenauer from the Mayo Clinic. She's in a unique hybrid of thoracic surgery and interventional pulmonary. Dr. Reisenauer, you're on.

Dr. Reisenauer:
Thank you, Dr. Edell. It's a pleasure to be able to present today and I thank the CHEST organization for putting on these webinars series.

Today, I'm going to be following Dr. Channick's lead on the subject. And we'll discuss risk stratification and prioritization of lung cancer cases, specifically during a pandemic as well as discuss a personal experience with the pros and cons of telehealth, which has already been touched on a little bit. And then lastly, discuss single-stage pathways to facilitate early diagnosis and treatment.

We'll start with our question. You have a 67-year-old male with a 12-millimeter biopsy-proven low-grade adenocarcinoma. He was scheduled to have a segmentectomy in the operating room tomorrow, but has tested positive for COVID-19 today. He's got mild symptoms, nasal congestion and a mild cough. How should his care proceed according to the guidelines? Understanding that there's some variability across institutions, but in general terms, the choices are below, which is either to proceed, cancel surgery and consider SBRT, delay surgery until it's safe per hospital protocol, or convert to a wedge resection because the complication protocol is lower than that of a segmentectomy. We'll give everybody a few minutes here to respond.

Alright, hopefully the answer to this question is addressed in the coming slides.

So as many on this webinar already know, one of the difficulties of managing lung cancer outside of a pandemic, let alone within a pandemic, is that there's variability in terms of how the patient ultimately makes their way to treatment. There's not the most streamlined care, and some of this depends on location of the patient, as well as healthcare disparities, but also access to proceduralist and procedural time and procedural space.

And so when the when there's already been papers and literature citing delays and diagnosis to this very reason, and this is outside of a pandemic, it's understandable that this can be further exacerbated in the situation that we have currently found ourselves over the last two years.

So how can we streamline care? A prospective study that was recently published in the *Annals of Thoracic Surgery* looked at approximately 300 patients. And in the section that I pulled out looked at just lung cancer alone, but this was replicated in esophageal cancer patients as well. And all of these patients were reviewed in a multidisciplinary tumor board. And what they found is that the recommendations after the tumor board met and discussed the patients, changed up to 40% of the time, including staging and assessment plans, which changed up to 60% of the time. And recommendations were followed in 97% of cases when they followed up with these patients several months after meeting of the tumor board and carrying out of the proposed treatment plans. So what that suggests is that sometimes it's better to have another eye look at things but it's also better for efficiency of healthcare to have multiple brains looking at the same case.

So again, how to prioritize care, a tumor board became increasingly helpful and useful during the pandemic. I can speak from personal experience when we were all on a culture of Zoom at Mayo Clinic at the peak of the pandemic, we were still reviewing cases on a daily basis. And the questions that often came up had to do with the doubling time and the aggressiveness of this malignancy. What's the best way to stage and do a performance analysis of the patient? Does everybody need a bronchoscopy beforehand and an EBUS beforehand? Or can everybody progress safely to treatment? If we do progress safely to treatment, is that surgery or radiation therapy? And if we do consider surgery, is it appropriate to delay surgery by several weeks or months versus the risk of delaying and considering alternative treatments as we discussed?

What we've learned as a result of COVID-19 is, is there are now guidelines for how to triage thoracic patients. And not only was this published in the thoracic surgery literature, but also in the *Journal of Clinical Oncology*, as just one cohort of a larger group of patients that present with other types of cancer, for example, colorectal cancer. And what they did is divide this up into three phases, basically, based on the amount of resources that remain, the peak within your particular hospital, and the trajectory of the expected course of cases in that region.

And so just to look at these by phases, the first phase is arguably the phase that we're possibly in right now, where there's ample resources, there's ventilatory capacity, ICU capacity, the trajectory of cases do not appear to be in rapid escalation. And under this umbrella, solid lung cancers that were greater than 2 centimeters or node-positive lung cancer or postinduction patients that are kind of in that four- to six-week window, should be offered surgery as a priority. The recommendation was to delay predominantly ground-glass less than 2 centimeters carcinoma, carcinoid, thymoma, oligometastatic, or any patient that would have a presumed need for a ventilator. Again, this is generalizable themes. If a physician was in an institution where they were at the tail end of the pandemic, or in

between peaks, and there was overwhelming capacity to where now you're talking about OR utilization issues, you probably could delve into this third group.

We then looked at phase two, which where the hospital had many COVID patients limited but not totally excluded ICU capacity, limited OR supplies, or none of the above, but the trajectory is projected to increase in the next couple of weeks. In this situation, it was really recommended that surgery should be considered for more of those semi-urgent cases, meaning tumors that were infected, complications of surgery, somebody that was symptomatic, maybe had hemoptysis or significant shortness of breath, but really defer all those other routine, perhaps stage 1, or what we would call elective cancer cases.

And then the last would be phase three, which is essentially, is the situation a little bit of what I think Dr. Channick described, where all the resources are essentially routed at COVID. Supplies are exhausted, hospitals are on triage. And many are not even accepting patients. And in this situation, the guidelines recommend really only doing surgery if the airway is threatened,-or there's tumor associated sepsis.

This is the table that's presented in that paper. And in the interest of time and clarity, I won't go through each line here. But I think the most important thing to do is to kind of break this up into stages. And again, for somebody who is stage 1, the question is really can this person be delayed, and do surgery down the road and a couple of months perhaps? Or is this somebody that needs to have surgery right now? And if that's the case, consider SBRT or potentially even ablation for treatment.

Stage 2 and 3 are kind of lumped in the same cohort, maybe considering neoadjuvant treatment to buy them a few weeks to get over the peak. And then consider surgery kind of in that four- to six-week recovery window versus considering alternative treatment, meaning definitive chemoradiation therapy based on patient tolerance and patient status.

So the biggest question that comes up when you talk about delaying surgeries, are we harming patients by delaying their cancer care? And this was actually studied extensively during the COVID-19 pandemic, there's actually been some literature that was reported outside of the COVID-19 pandemic. And it references that slide that I showed earlier with the variability in pathways that have led to delays. But this study was interesting because again, it combined all cancer types, specifically 4 million patients from the National Cancer Database. And what they concluded is that the majority of lung cancer surgeries can wait for 4 weeks now, they did quantify this, or they did put in a caveat saying that these were elective cases and patients that generally were not symptomatic in a way that was harming their activities of daily living. And in those situations, lung cancer surgery could wait. As I said before, they did not adjust for patients that had semi-urgent surgery which we define as hemoptysis or obstruction. And their initial, and their final conclusions were essentially that this should be individualized to the patient, which again takes me back to the previous slide discussing the benefits of the tumor board and having a treatment plan established for that patient so everybody can agree on the steps that are taking place.

I think it also provides some patients with reassurance because one of the things that we don't get to cover in this webinar, but I think is of significant value to discuss is the anxiety patients are feeling, not only from the risk of contracting COVID in the outpatient setting, but potentially coming in and contracting it while being hospitalized, especially after they're recovering from lung surgery. And I think that's where providing that reassurance that multiple providers have seen the case and multiple people agree with a plan to delay helps patients with that additional element of anxiety.

So what can we do to expedite care and avoid delays? Are there any opportunities here to make care more efficient in a seemingly inefficient situation? Telemedicine has been alluded to. Dr. Channick discussed this, and I'll throw in my two cents. I think there are significant benefits is that a patient can see multiple providers from the comfort of their own home. When we did tele visits, I often had patients that had dinner cooking on the stove, and when they heard us calling in, they, you know, take dinner off the stove and come and do their 15-minute video visits and it was really convenient for them. It prevents scheduling delays. And patients don't have to worry about the cost of travel, time off of work, potentially reducing delays between appointments. Many times, we have a situation where a patient is contemplating SBRT or surgery, and they want to speak with both physicians and get an opinion from both physicians and having to schedule two different trips to Rochester, Minnesota where I work, or really anywhere around the country and have to take time off of work to accommodate two different visits with two different providers, you know, many patients are finding significant value and being able to do this over the internet, assuming that they're technologically capable of doing so and wanting to do so.

There have been multiple pilots with telemedicine that have been published. These have all been done in screening populations or follow-up surveillance populations. Notably, it has not been done in patients that have been undergoing consultation. But what they have shown is no difference in the quality or degree of care. And time will show whether this remains to be the case in this particular situation.

One of the other things that we're doing here at our institution is the single-stage pathway. This is where a patient with a high probability of malignancy is referred to thoracic surgeons. And this is something that I'm doing in my practice because I'm a double-boarded interventional pulmonologist and thoracic surgeon but so we offer the patient a single anesthetic, biopsy staging, and resection. We are

currently running the healthcare economics behind this treatment pathway, but anecdotally, it does appear to reduce the cost of travel, again the time off of work, and potentially reduce the delays between appointments. I think that this pathway has been shown that it's contingent upon a true multidisciplinary approach with a surgeon, pulmonologist, anesthesia, pathology, and radiology committed to providing this level of care for the patients, given that there are some unique nuances to it, which I'll cover. But it's certainly something to think about. And I think something that patients were thankful for, particularly a couple of patients from Canada that we recently treated. We're very thankful to come down and be able to do it all in a one-stop shop.

This is our room where we do targeted resection. We've got a cone-beam CT scanner in the room. You can see here we've got access to immunofluorescence dye, and we've identified the lesion of interest and my OR tech there has the stapler ready to go. And here we just did a wedge resection on a patient with a small nodule. But this is just one example of many of the creative pathways that people evolved over the last couple of years to get patients the care that they need and deserve.

The ideal candidate for this pathway are those with a moderate to high probability of malignancy, a multidisciplinary tumor board that agrees with the surgery first treatment approach. Slightly smaller BMI is ideal just given the nature of the room and the bed that we do these cases in, and the patient is willing to proceed all the way to surgery despite a nondiagnostic result during biopsy.

Here's just an example of a case of a patient with an 8-millimeter nodule that had grown slightly in size that was PET avid, mildly PET avid given the small size but PET avid nonetheless. Here's just an example of us performing a cone-beam CT with the region of interest highlighted there, and the needle going into the lesion. We have a pathologist that comes into the room as we are obtaining these biopsies to let us know that we, yes in fact have malignancy or we don't. And once that determination is made, we then proceed with endobronchial ultrasound staging if clinically indicated in the patient. And then if the patient has consented, we then flip them over and perform a minimally invasive thoracic resection.

Here's just another image of that.

And then here's the intraoperative image of the same nodule that's then been highlighted with dye, and I think we were attempting a segmentectomy in this patient. So, we like to highlight the lesion with dye so that we know our parenchyma margins are safe during the resection.

So in conclusion, the urgency and treatment options of patients are contingent upon hospital resources, tumor characteristics, and patient characteristics. The tumor board can obviously help streamline pathways and help guide decision-making along with other efforts. And despite demonstrated safety in delaying surgery if need be, there are things that we can do to reduce time to treatment such as telemedicine as was previously discussed, single-stage pathways, and other creative options that may evolve as we learn more.

Thank you so much. I'll close with the last question here. A 73-year-old male recovering from a COVID-related hospitalization 2.6-centimeter right upper lobe adenocarcinoma with a positive 10R lymph node. He requires oxygen right now, given that although his PFTs prior to his illness were normal. The most appropriate treatment plan in this situation would be definitive chemoradiation because surgery is off the table, neoadjuvant treatment followed by repeating physical exam and imaging, alternative treatment including SBRT, or three months of observation?

Fantastic, hopefully some of that was addressed. I'll stop sharing here and hand it back to Dr. Edell.

Dr. Edell:
Thank you very much, Dr. Reisenhauer. That was excellent. There is one question that came from the audience that I'd like for you to address. I think it's a very relevant question of the topic. The attendant asked do you use restage? Do we restage? Does anyone restage patients after four weeks' delay? And they're referring to a solid or part solid, so I'm assuming a early stage, clinical early stage cancer. And if so, by what method?

Dr. Reisenauer:
Well, I'll take a crack at it, and then anybody else can jump in if they want to. I think if you're referring to what it sounds like, is perhaps a low grade less than 2-centimeter adenocarcinoma, I would not necessarily restage that patient. I think a patient that the only exception maybe to that rule would be if the patient showed up with a solid nodule that had a very, very high PET avidity, where you worry that there's aggressive doubling time, you might could make the argument to reimage or restage that patient, or if the patient was delayed because they experienced COVID themselves and were quite sick and you want to ensure that their parenchyma has fully recovered. Before you operate on them, you might want to get a CT scan, but that's less so for restaging purposes and more for tolerance. I think stage 2 and 3, there's more rationale to consider potentially restaging, but I would not necessarily subject the patient to a battle with their insurance company for stage 1 disease.

Dr. Edell:

Excellent. Another question came through. And I'm going to ask Dr. Channick to take this one. It had to do with the use of PCR screening before procedures. The question was, are we still screening before procedures? Or are you just going by what the local rate of infection is?

Dr. Channick:
Yeah, that's a good question. I imagine this differs throughout the country. I can let you know what we're still doing. And but it is something that is absolutely in flux. Because at one point, maybe six or so months ago, more than six months ago, we completely stopped pre-procedure testing for all of about two weeks. And then the numbers started to go up, and we reverse course, and the procedure testing continued. And I think we are continuing to test patients. Our protocol is they have to be tested and the test has to be back within 48 hours. And it has to be a PCR. That has made it very difficult for some patients, but we're getting more flexible and we will test some people even on the morning of the procedure. If someone is COVID positive, they will do the procedure and they will do it with PPE and then we'll do it at the end of the day. So we're not refusing even elective cases. The hospital is still allowing that.

Dr. Edell:
Excellent. Excellent, thank you. Okay, so we will now shift gears a little bit. Dr. Florez, is our medical oncologist from the Dana Farber Cancer Institute.

Dr. Florez:
Hi, everyone. I'm delighted to be here, and I really like the progression of the talk. We started with pulmonology then surgery and then medical oncology. And that tends to be the pathway for many of our patients, they meet with the pulmonologist, then the surgeon, then medical oncologist, hopefully all at the same time or close to but sometimes it's just sequential.

So we're going to talk about not only diagnosis but treatment during a global crisis. This is question number one. Which of the following is true about lung cancer screening during the pandemics? We make most reference to the last two years, more patients were diagnosed with lung cancer during the pandemic, cancer screening is now elected, so we continue as usual, rates of lung cancer screening decreased during the first part of the pandemic, but improved during subsequent months. So you can vote now.

Alright, we have people that went into a different direction.

So this is a patient that I saw in clinic during the beginning of the pandemic. I was still at the University of Wisconsin. So this is a 63-year-old, Hispanic woman, highly educated, no significant past medical history, but non-English speaker. She called her primary care doctor due to worsening cough and weight loss. So we're talking about June of 2020. Of course, she got four different COVID tests later, and several – and a chest x-ray was done. The patient was not allowed to come into the primary care doctor's office because of the fear of, you know, she had a cough. And I think that's something very unique to our patients, because most of them have a cough. And I remember talking to the nurses and saying, 'They have a cough, what else,' you know, because most of our patients have that symptom. So she was found to have a lung mass. And during the very hectic part of the pandemic, she received a phone call in English only, telling her that there was something in the chest x-ray that should be followed. But as a non-English speaker, she didn't understand the message and that subsequently delayed her care until she became a stage 4 patient with multiple liver lesions. So that story is common. I met her at the time of the PET scan, but that we have seen how COVID had delayed diagnosis, how COVID has affected patients seeking care, particularly minorities, because of the high rates of mortality for vulnerable populations.

So the common pandemic changed the entire spectrum of cancer care, including delays in diagnosis, treatment, and halting of clinical trials. I remember at the beginning of the pandemic, talking to my colleagues in Italy, as they have a number of cases increasing compared to the Midwest. In the Midwest, we're a little bit sheltered from the coast, and it took a little bit longer compared to now where I live in Boston. They had 500 violations of clinical trials in the first week, violations is out of protocol. So many clinical trials were close to recruitment, clinical trial discussions were not taking place. We were all in emergency mode.

In 2020, COVID-19 was the third leading cause of death in the United States after cancer. And I cannot stress enough how many people we continue to lose. This is 345,000. We know this past 500,000 patients at this point.

As a medical oncologist, it's often hard, you know, many of our patients are staying alive or you prolong their survival through chemotherapy and immunotherapy. At the early, at the beginning of the pandemic, I remember getting a phone call and say now you're going to run rounds from the outside of the room, and only one provider is going to come in with all these PPE and these patients are most likely to die alone. And I trained at the Mayo Clinic, and nobody prepared me for having so many patients with end-stage cancer dying alone. There were some sections at the end, I think at the beginning of 2021, we started making sections for family to come over. But I remember holding my phone next to my patients in FaceTime with their families as they're passing away.

So I wrote this article because I remember laying down in the floor of my office thinking should I postpone this adjuvant chemotherapy because the chemotherapy benefit adjuvantly is kind of borderline for lung cancer. Should I continue with this therapy for this patient?

Which therapy is better for this patients into this global crisis? And at the beginning there was no data, so everything was based on the patient comorbidities, what we were doing. And some patients made decisions on their own on. And I remember discharging patients home, probably early on hospice, because they wanted to be home, they wanted to die at home, despite needing many things. And I think we learned quickly how to provide empathy covered in PPE. I remember labeling my shield with my name so they knew it was me. And it does weight a lot with emotions.

So subsequently, data came out to understand we which treatments for patients could be safe and which could not be safe. So I'm part of the steering committee, or CC19, which is a Cancer and COVID-19 consortium. It's the largest database of cancer in COVID in the United States. And little by little, we come out with new data. We learned that immunotherapy and targeted therapy did not increase mortality in these patients. We learned certain patients were at a higher risk for ICU complications, but the data came fast. But if you can see the days of publication of these papers, the first one was just a review. And that was in May 18 of 2020. So we have around two or three months without no data. And the subsequent papers are published in 2021. This is relevant to lung cancer. This is our full analysis of the COVID-19 Cancer Consortium, and including many of the studies that were published, because we saw so much data coming. So at the beginning, we were in a phase that was no data, right? We're like, what should I do? And I'm scratching my head. I remember talking to my friend, Dr. ___46:42 in Italy, and said, what are you doing over there? What is happening? Just trying to get some information early. But then we saw as an editor, we saw this increased large number of papers, it was sometimes hard to keep up.

So these were analysis that was led by one of my mentees showed the overall the mortality for patients with metastatic lung cancer was 15 to 30%. And of the patients with cancer that had the highest mortality, the patients with lung cancer, obviously were in that group.

So what are the consequences of COVID-19 in cancer care in the U.S. perspective? So we had delays in diagnosis, delays in treatments. And we have early dismissals on hospice. I saw it personally, and there's many papers about that.

But something that I saw personally in data is the stage migration. And what a stage migration is when we see the data from 2022, and one for patients with lung cancer, patients were most likely to present to the ER with a metastatic site and symptoms not being diagnosed early. And that is relevant to the first question. During the first part of the pandemic, we saw a decrease in the number of lung cancer screening. And we're already doing very poorly with lung cancer screening to be clear, but then the numbers significantly decrease after that.

We also saw the fear of coming to the doctor, which is often seeing. And telemedicine help with some of this. But some of my newly diagnosed patients were like, well, I didn't want to go to the doctor, who wants to go to the doctor and a pandemic. And I remember my nurse saying, we are not the hottest place in town right now to visit. We are a hospital. So many patients delay seeking care, particularly vulnerable populations and populations that lost their employment during the beginning of the pandemic, because their insurance was related to employment.

So it's not only the consequences of the virus, but the socioeconomic consequences of the pandemic itself. And people being sent home to work, restaurants closing, movie theaters closing, and these people lost their insurance. So going to a doctor meant a very big bill when they're currently unemployed.

So this is the initial paper that showed the decrease a lung cancer screening in the first phases of the pandemic. And the most, and this is particularly the first month before like before the COVID-19 surge. This is a single institution analysis. And then how it decreased during the surge, and also the number of new patients and the number no-shows went from 15% to 40%. And I don't have to preach to the choir that lung cancer screening saves lives here in a CHEST symposium, but also how poorly we're doing about it.

During the pandemic, there are also changes to the guidelines with the hope to grab more minorities that already not really being screened, and the guidelines change. As you can see, there's on all the guidelines is a little bit controversial. But the hope is that we were going to do better with lung cancer screening, and that affects some of the numbers that we saw in the second part of the pandemic.

So what has happened? So there's two phases, the acute phase of the pandemic that lung cancer screening went down, then we slowly recovered. And the NCI and the American Cancer Society released grants to motivate reinitiation or return to screening. This was just presented at ASCO less than a month ago. This is particularly for breast, but other initiatives have been seen, and which increase the implementation of screening is still within the environmental the pandemic. And we're seeing more and more data how we can learn from this crisis to continue to screen our patients.

Something that really happened with the pandemic is many of the disparities that existed in lung cancer widened. People lost their insurance, people didn't have the financial resources to look for health, vulnerable populations, blacks, African Americans, Hispanic, and Native Americans have jobs that which they don't have the privilege of going home, increasing like working from home, increasing their

rates of infection. Many of my minority patients work in grocery stores, public transportation, janitorial services in the hospital. And I remember they told me, 'I don't have the option to go home.' And I remember talking to some of my immigrant patients is like, 'just need to stay away from my family members, we're a very big family a very small space.'

And something that really shake me to the core was these results in 2021 in which showed that the patients with Medicaid before COVID were more likely to die in the hospital compared to commercial insurance. We knew that, because there's limited resources and support at home. But during COVID, Medicaid patients were more likely than commercial patients, commercial insurance patients, to die at home without hospice. And I highlighted in this light because dying without pain and dignity is a human right. Hospice services are covered by Medicaid. So many of the challenges of these patients with metastatic cancer increase as people were dying at home without hospice. And I'm repeating it so it can sink in a little bit.

We have talked about telemedicine. And telemedicine has been a great resource for areas that are remote. We talked about - I was at Mayo before and, you know, traveling to Rochester is very expensive. You have to buy a hotel, you have to travel, fly, and to Boston to. And that improved access to physicians. So I'm going to talk about the pros of telemedicine. Improved access. It allowed members of the family to join very important conversations from different parts of the country, allowed international patients to have opinions from physicians during the emergency time in the United States. But there was also a challenge with telemedicine that we continue to see. And new data has been published about this. And if the patient is non-English speaking, actually provided a digital divide, because it was less likely that our interpreter was incorporated into the telemedicine, because interpreters were already very few and stranded. So I don't saying no to the telemedicine with patients that English is not the first language, but to use the appropriate resources to support it.

And the digital divide is real. We many of us take care of farmers. I took care of farmers in Wisconsin, and I remember one of my patients had a phone that I can call him in the farm next door. So I needed to call that farm, they would answer, and they would get Walter - that's not the real name - to come and answer the phone. And I remember my medical assistant calling and is like are you interested in a telemedicine appointment, Walter? And my patient is like, 'I don't even have a computer.' So for some patients that have very limited resources, we need to listen to them that telemedicine may not be possible. It is there and is helping. Another con of telemedicine is that after we learn the benefits of telemedicine, the emergency order was removed and now patients that were previously seen out of state by telemedicine, now you can. And it's like literally we just give our patients a benefit and because of unclear reasons, that benefit is being removed. And that has been very difficult. I have a patient from Nigeria that I was talking to her and we were all fine. And now she has to come in person for a service that she was getting before via telemedicine. So a lot of institutions are credentialing and licensing their doctors in different states. So the benefit continues. I'm currently licensed in all New England, in order to provide those services. And I'm actually licensed in Florida now, because a lot of our patients go back to Florida in the winter.

So remaining challenge with the pandemic. We still don't know the long-term consequences. We are seeing an increase in number of cases right now, again. Not to the point of Omicron in January of 2022, but we're seeing a number of increases in cases. People are going now. I don't know if any of you have fly recently. I tend to fly a lot and every time I take a plane, there's less land people with masks. And screening rates, not only a lung cancer, but all the diseases, remain very poor in certain areas.

What are the consequences of COVID-19 in cancer research? Many trials were delayed, many trials didn't open. Is this holding some of the research? In 2020, we have seven different approvals for lung cancer. But we cannot see those approvals as of 2021. That was research that was started many years before to get to the approval. So are the approvals in five years from now going to be delayed, especially as we develop new targets and lung cancer.

Finally, we continue to fill our most vulnerable populations. And some of the most vulnerable populations are patients with lung cancer, in which they have limited resources, limited capacity, financial, and physical to make it to appointments. And, you know, I have to say, I continue to be afraid with my patients when they get COVID-19 infections even if they're vaccinated, because I have lost several of the patients to the disease. And it's so hard to lose a patient that, you know, they dealt with early mortality with their cancer, the cancer is doing better on a patient who has complete response on targeted therapy, and then COVID took her away from me. And I think that was very hard for the family. And there are many issues with social justice with COVID and what will happen after.

So as I wrap out this webinar, is COVID-19 delay diagnosis, treatment, and life care of patients with lung cancer. It did show that as a healthcare system, we're able to get all hands on deck, learn from each other, and work towards the improvement of our patients. We focus on this politics, red tape, and things that sometimes delay treatment, and we were all working together. Immigration is still a reality, it still continues. Telemedicine integration is not going anywhere. Telemedicine is here to stay. And a big proponent of telemedicine, particularly when my patients are in targeted therapy, they're taking a pill every day, you know, driving from Maine to Boston is going to be five hours. But we still don't know the long-term consequences. It's still a part of the care and still a part of the conversations with our

patients.

I have a patient that's getting for EBUS tomorrow, and I tell her don't interact with anybody that you don't know, because you're going to get tested for COVID today, because that would delay further things.

Alright, questions number two, for patients with lung cancer, allcomers, the associated COVID-19 infection mortality was: less than 10%, 10 to 30, and higher than 35%? You can vote now.

I'm going to stop sharing so we can answer questions. We are on the top of the hour.

Dr. Edell:
Excellent job, Dr. Florez. Very compelling, right spot on. I'm going to ask a question, then there's one in the chat box that we can do it as a panel. Hopefully people won't mind if we go over a couple of minutes. With what you have heard from the other two speakers in what you've presented. Dr. Florez, what we've learned from the pandemic, what we've learned from our healthcare system, that those lessons that we take now with us, does it give you optimism? Or are you frustrated that we can do better in the future?

Dr. Florez:
I think it gives me material. Let me tell you this, because sometimes I encounter issues in which, Oh, this clinical trial the blood draw needs to be at Dana Farber. It's like, it is a CBC. Like my patient is in Maine. I'm not going to get her to drive five hours for a CBC. So we learned that we can be flexible. So let's stay flexible because everything we do is for patients. Let's remain flexible for things that don't affect care significantly. She can do the CBC in Maine, she did it last year. Right? Why are we switching back?

And I think something that really helped me positive is that we can quickly learn. And I see tradition as an obstacle innovation. And learning quickly during COVID-19 makes me hopeful that maybe one day lung cancer will become a chronic disease for a stage 4.

Dr. Edell:
Excellent. Dr. Channick, Dr. Reisenauer, optimistic? Frustrated? Dr. Channick?

Dr. Channick:
Optimistic.

Dr. Edell:
Excellent. Dr. Reisenauer?

Dr. Reisenauer:
Same. Optimistic.

Dr. Edell:
You know, I think that sums up pretty well, the flavor of what we've learned. I would say that when this pandemic started, I was scared and really worried. And what I've seen as a member of this community, I've seen nothing but pride and optimism. I agree.

The last question that came through the chat box, I want to address it from one of our attendees is, do you think there is a role for prophylactic Evusheld during chemotherapy? So any role for prophylactic antiviral during chemotherapy? Quickly.

Dr. Florez:
There has not been studies. I don't think there is a role. There's one quick article that shows that actually may increase toxicity. So at this point -

Dr. Edell:
Excellent. Excellent.

Well, I want to again, thank our outstanding panelists. I want to thank CHEST for putting this tremendous webinar series together. I would love to have our attendees refer back to the previous four webinars that we had. There was a couple of questions that came through that had to do with liquid biopsy and genetic markers in lung cancer that was addressed in our third webinar. I'd like to thank our industrial partners again, AstraZeneca, Genentech, Merck Sharp and Dohme because we can do that without our industry partners helping to support with their educational grants. And finally, please go to CHEST.net for other programs that CHEST puts on.

And you all that are attending will get a question in your email at 30 days and 60 days as part of the program to help with our space learning, help anchor some of the lessons that you've heard from our panelists today.

So thank you again, everyone. Have a great evening, and I hope to see you someplace truly face to face, not virtually face to face, in the near future.

Announcer Conclusion:
This activity was part of a seven-part series brought to you by the American College of Chest Physicians, and supported by an independent educational grant from AstraZeneca Pharmaceuticals, an educational grant from Genentech, a member of the Roche Group, and an independent medical education grant from Merck Sharp and Dohme Corporation. To receive your free CME credit or to view other activities in this series, go to reachmd.com/cme. This is CME on ReachMD. Be part of the knowledge.