

Minimally Invasive Approaches to Lung Cancer Diagnostics and Staging

Webcast

June 14, 2011

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Introduction

Andrew Schorr:

In the past, diagnosing lung cancer could mean invasive surgery. Now more advanced techniques are helping doctors called interventional pulmonologists perform procedures that diagnose and stage the disease while minimizing health risks and recovery time. Coming up, a leading interventional pulmonologist from Northwestern Memorial Hospital will discuss these approaches as well as the importance of working with your healthcare team. It's all next on Patient Power.

Andrew Schorr:

Hello and welcome to Patient Power. I'm Andrew Schorr. This program is sponsored by Northwestern Memorial Hospital. When you think of cancer, most think of lung cancer because it's our biggest cancer killer. Unfortunately something like 219,000 people who were diagnosed in the most recent year we have statistics for with lung cancer—and as you know the five year survival rate for lung cancer is only about 15 percent. If only we could diagnose lung—well, we want to prevent lung cancer if we can, and we'll talk about that, but if we can diagnose lung cancer earlier, we can do more about it. And if we can diagnose it in a way that is less invasive then people can have a higher quality of life. That's what we're going to talk about on this program.

And with us to help me is Dr. Colin Gillespie. Dr. Gillespie is the inaugural director of interventional pulmonary medicine at Northwestern University's Feinberg School of Medicine and at Northwestern Memorial Hospital. Dr. Gillespie, thank you so much for being with us. First of all, am I right that if only we could prevent lung cancer that would be great, and short of that if we can diagnose it earlier that would be a great thing too?

Dr. Gillespie:

Absolutely. Only about 16 percent of lung cancers are being diagnosed in the earliest and most curable stage.

Andrew Schorr:

Now, you're an interventional pulmonologist, and we talked about having really advanced techniques to diagnose and stage the disease. First of all, what's an interventional pulmonologist? A lot of people are not familiar with that title.

Dr. Gillespie:

So an interventional pulmonologist is a lung doctor who has a special expertise and training in bronchoscopy and minimally invasive procedures relating to the chest. A bronchoscope comes in two forms. The most common one is a flexible tube that we

can pass through your nose or your mouth down into your lungs and get access to the lymph nodes inside the chest involved in lung cancer as well as the nodules and masses that present as the tumors.

Andrew Schorr:

Now, we talked about advanced techniques developing, and we said you're the inaugural director of interventional pulmonary medicine at NMH. It seems that this is an evolving field.

Dr. Gillespie:

This is a pretty new branch in pulmonary medicine. You know, it's really developed in the last 15 years where people have really worked hard to generate and hone their expertise in these procedures.

Advances in Pulmonary Medicine

Andrew Schorr:

So you have more tools developing. Let's talk about some of those tools. So people think that there are various scopes that you put down, but how is that different from the way we've been doing it? Let's say if something was spotted on an x-ray or some other imaging what was the old way of trying to see what you were dealing with?

Dr. Gillespie:

So usually the doctors would look at patients and try to decide their pretest probability, or how likely did they think that this abnormality was going to be a tumor. You know, so looking at factors such as were patients heavy smokers, did they grow up in homes with heavy smokers, have exposure to asbestos? And, you know, if they were a high enough risk they might go directly to the operating room and have the abnormality just removed. In the Midwest in particular if there's a lot of fungus that can present as incidental nodules it can be easily confused for cancer, and so trying to tease out the answers with more precision is really helpful for patients to achieve the best outcomes.

What I can bring to the table or what doctors like myself can do is we have tools where we can go in and try to sample those abnormalities in the chest in the safest way as possible. You know, before we could go from the inside and take small biopsies, the only option would be to do a trans-thoracic biopsy, a needle through the chest into the lesion, and there's a pretty high incidence of a collapsed lung when that happens, and that can sometimes be quite problematic. When we do this the incidence of that problem is, you know, more than a magnitude of order, so somewhere in the neighborhood of about one in 500 to one in 1,000.

Andrew Schorr:

So tell us about your tools. So are you then going through the mouth or the nose? And what about the different types of scopes? I know you have all sorts of

guidance equipment and ultrasound as well.

Dr. Gillespie:

Yeah, so really I think the biggest development for the diagnostic component of interventional pulmonology is the emergence of the endobronchial ultrasound. The gastroenterologists have been using these technologies for probably about 10 years longer than we have, and it's just taken this much time to miniaturize the scopes to fit into the airway. And we have scopes that allow us to literally look through the airway wall and identify the lymph nodes, and sometimes these are masses, and anything that touches the airway we can see. We can identify the blood vessels, the lymph nodes, the lung, and we can take a needle under direct vision and biopsy whatever abnormality we can visualize. This decreases the risk and has increased the sensitivity and specificity, so we've improved how accurate and how reliable are we and able to get these answers.

Andrew Schorr:

Let's put this in a—really the current context is that just a few months ago there was this study with really exciting results that, if I have it right, said that for people who were heavy smokers but who at that point were not known to have lung cancer. So if these people were screened with CT scans (low-dose radiation CT scans) that there were cancers picked up early and these people could be treated, and it really helped save lives. So this whole idea of earlier detection, where does it fit in with what you do—because I know one of the criticisms before these results came out was, well, if we did CT screenings on more people we would identify things in the lungs that were not significant and there would be, you know, risks that were associated with trying to find out more about what that was. So where are we now and where does your field come into that?

Dr. Gillespie:

So the key behind that study is that people who are at risk for lung cancer were able to have a 20 percent reduction in the probability of dying from lung cancer by getting screened. So that's pretty dramatic. And where myself and my colleagues can, you know, kind of earn our place at the table is to try to help make sure that we're minimizing the morbidity of diagnostic procedures that are going to be performed subsequently. So if we can avoid going to the operating room and doing a surgical resection of something that may not be lung cancer, maybe we can do a less invasive procedure to sample the abnormality and prove that this is a cancer before proceeding with further invasive therapeutic and curative resections.

Andrew Schorr:

So the old way was you had to really go in there in a more invasive way. With your tools you can help understand if it is a cancer, what showed up on that imaging, and then even what type, right?

Dr. Gillespie:

Yep. So the key question is, you know, when cancer is the question tissue is the issue. You want to be able to have a sample of the abnormality to look at under

the microscope—for the pathologist to tell us if this is cancer or not and then to take that tissue and go one step even further and try to look at the genetics of the tumor and decide what's the best way to treat this specific kind of tumor. And, you know, we're learning more and more about this every day, and the whole idea of personalized therapy—that if we can see that you have a tumor that is particularly susceptible to one type of medication or another, we can go directly to the medication that will give you the highest probability of success.

When to See an Interventional Pulmonologist

Andrew Schorr:

Let's walk through this for someone. So someone may not have symptoms, which is one category, and somebody may have symptoms. So let's take both. So someone may not have symptoms but they have an x-ray or CT, and something shows up peripherally or in the lungs and they decide we better investigate that further. How do you get involved the, when the patient hasn't had any symptoms but something concerned their doctor?

Dr. Gillespie:

So that's [the case with] most patients. Most patients that have lung cancer don't know they have it, and these are often picked up incidentally because by the time you have symptoms the cancer is usually, quite far advanced. So for somebody who doesn't have symptoms, you know, taking a good, careful history, reviewing any old radiographs to make sure that if there is a spot that it wasn't there 10 years before which would not be consistent with a cancer, and then once you see that you decide what's the safest and best approach. If the lesion is touching the chest wall or very close to the chest wall, it might be that the best way to sample that would be to put a needle through the chest wall.

If it's located in another place in the lung we would ask ourselves, could we biopsy this bronchoscopically and utilizing some of our tools from the inside to sample this abnormality? Are the lymph nodes involved? If the lymph nodes are involved we would want to approach the lymph nodes because that in some ways can be the closest window to the abnormality seen in the lung itself.

Andrew Schorr:

All right. So then if someone's doctor said, you know, we spotted this on an x-ray or CT and we need to investigate further—if they're going to have one of your procedures, tell us what's involved in that. Is it outpatient? How long do they have to be put to sleep? Tell us more about that.

Dr. Gillespie:

So, you know, 99 percent of the procedures I do are outpatient procedures. People come in after fasting from midnight the night before, and we do what's called conscious sedation, where patients have their gag reflex numbed with some topical medication and then kind of get put into a dream-like state. Then we can go down and perform the procedures.

If the patient has some other problems that make me think we want to have more support or we're going to try to do some very complex maneuvers, we may actually use a general anesthetic, in which case you just come in and you go to sleep. Then we do the procedure and you wake up, go to recovery and go home. It is exceptionally unlikely or uncommon for anyone to have to stay overnight after having a diagnostic bronchoscopy performed.

Andrew Schorr:

Now, you have different tools. We mentioned about the ultrasound and I know there are different types of scopes. Where are you now? How can you really get where you need to even in the deepest recesses of the lungs?

Dr. Gillespie:

Yes, so it's the peripheral nodules that are really the most challenging, and we kind of marry two technologies to go after those. There's navigational bronchoscopy, and whether you use a real-time navigational platform or a virtual platform where you just use images, you can kind of help make a road map where you—it's almost like GPS, where you can kind of move through the lung in a very directed fashion aided by the imaging and the computer software analysis of that imaging to guide you directly to the abnormality.

Now, our scopes can't go all the way out into the lung. It can't go to all of these places, and so we again fall back on ultrasound which in this case is a different kind of ultrasound than the one we use to look at the lymph nodes, but this is called peripheral ultrasound. And it's almost like a long piece of spaghetti that's only about one and a half to no more than two millimeters in size, and we can take a probe and push that out beyond where we can see, all the way to the chest wall, and that allows us to see "abnormalities." We know what normal lung looks like and if we can find density or find the abnormality, we can see it before we biopsy it and localize our position to do all of our biopsies in a very directed and accurate fashion.

Andrew Schorr:

Now, when somebody has a biopsy what does that mean? And do they feel anything and is there any pain afterwards? Tell us about that.

Dr. Gillespie:

So, you know, the lung doesn't have any pain fibers in it, and that's one of the reasons why it's so hard to diagnose lung cancer because people can't feel it. They don't know it's there. And that works to our advantage, in that once we get out into the lung, people can't feel the biopsies. There's no pain from the biopsy site after the fact. Bleeding is the one thing that can happen, and usually bleeding is an immediate risk. You know, during the procedure if there's any bleeding it's something that we deal with at that time and not something that commonly happens after the fact.

Occasionally people will have a bit of a sore throat or a scratchy throat after the

procedure because we've kind of been going down, you know, past their vocal cords, and that discomfort (if it's there) usually goes away in 12 to 24 hours.

The Goal of a Biopsy

Andrew Schorr:

I wanted to go back to what you're trying to get from there. So we talk about this new age of personalized medicine and having different therapies that line up with different tumor types in the biology of an individual's cancer. And I know there's broadly non-small cell lung cancer and small cell, and they're approached differently, but now we're getting into subtypes as part of all of that. So what do you do? Are you trying to get many little samples, or what are you trying to do to help the pathologists—and then whether it becomes medical oncologists or surgeons—know how to proceed?

Dr. Gillespie:

Because the risk of the biopsies that I'm doing is less than doing biopsies through the chest wall it's easier for me to take multiple specimens. So we really try very hard to get as much diagnostic tissue as absolutely possible so that the pathologists have the material to make the diagnosis—and then not just make the diagnosis but to run whatever studies the oncologists and the pathologists are interested in to try to figure out what the best way to treat the tumor would be.

Andrew Schorr:

So in these categories of non-small cell and small cell, what you take then goes to the lab and then out of that comes a discussion. Now, we've said many times there's a multidisciplinary team at Northwestern Memorial Hospital, so there are a variety of specialists that come together. So from what you do then there's a discussion about a plan, right?

Dr. Gillespie:

Absolutely. So one of the great things about my job and one of the reasons I love doing it so much is that, you know, there really is a tremendous team approach to caring for patients who are in a very vulnerable position. So we utilize multiple doctors with multiple different areas of expertise to focus on this problem. You know, the medical oncologists, the radiation oncologists, the thoracic surgeons, the pathologists, the radiologists, and the pulmonologists all meet on a weekly basis to review new cases, old cases, and really to make sure that we're discussing these people and that everyone has a chance to add their two cents to contribute to the optimal outcome for the people.

Andrew Schorr:

Let me ask you about Northwestern and interventional pulmonology. Now, yours is not a big specialty, and we even were talking about this sort of GPS system to let you navigate. That's not [typically found] everywhere, right?

Dr. Gillespie:

No, it's not. There are multiple places that actually have navigation, but there's no place in this city that does the navigation in conjunction with the peripheral ultrasound, and there have been studies published that show the marrying of those two technologies together results in a significant increase in overall yield.

Andrew Schorr:

And you've been involved in the testing and innovation of some of these approaches yourself.

Dr. Gillespie:

I have. I've done some of the early work with the virtual bronchoscopic navigation platforms, and we have been doing all the different ultrasonographic techniques in my training for, you know, over the last six and seven years.

Andrew Schorr:

We're going to talk in a minute about interventions that you can do beyond diagnosis and staging related to people who have developed these lung cancers, but the bottom line—just as we talk about diagnosis, with your field now (interventional pulmonology), and as you said so many people where they've had no symptoms, can this then give the whole treatment team a clearer picture of what they're dealing with so that we try to move that rate lower as far as mortality from lung cancer with earlier intervention?

Dr. Gillespie:

I'd like to think so. You know, the primary goal in making a diagnosis of lung cancer is to decide what the optimal treatment strategy is going to be. And so the simplest way to think about staging is whether patients are going to be operable, and in many ways we want more patients to be able to go to surgery because surgery has the highest known success rate for curing lung cancers if we can remove all of it at the time.

And then the non-operable patients are people who have a more advanced form of the disease that can't be removed in its entirety with surgery. We want those people to go to chemotherapy and to radiotherapy and to have the option to get the best kind of personalized approach to give them the highest success for the therapies that they're being offered.

Andrew Schorr:

Okay. But the point in both cases is you need to know what you're dealing with and still the best way to do that is to actually go into the lung and look—take samples and ask, 'how can we do that in a way that has the least risk to the patient?'

Dr. Gillespie:

Absolutely.

Andrew Schorr:

Okay. We're going to talk more about this, and we're going to talk about interventions that you can do that may come up with people who are dealing with lung cancer and maybe other conditions as well. We'll talk about that as we continue our discussion with interventional pulmonologist Dr. Colin Gillespie right after this.

Andrew Schorr:

Welcome back to Patient Power as we're talking about lung cancer, and we're learning about it from a perspective maybe that we haven't discussed before, and that's interventional pulmonology.

Dr. Gillespie is the inaugural director of interventional pulmonary medicine at Northwestern University's Feinberg School of Medicine and Northwestern Memorial Hospital. Dr. Gillespie, so we talked about what you do as far as going in with various flexible tubes and ultrasound and taking biopsies and really helping the whole team understand whether it cancer or not, finding out what type of cancer is present and then following with a discussion about what treatment might be needed and if that's right for that patient. But sometimes you're involved in administering a treatment yourself. Tell us about that in your field.

Types of Treatment

Dr. Gillespie:

So, you know, the part of interventional pulmonology that actually got me interested in the field was really the therapeutic component of it. This is for patients who come in really short of breath—I mean that's usually the most common presenting symptom, because of some mechanical complication of their cancer. And this could be that there is compression of an airway or actually a tumor growing inside of an airway. It could be from fluid building up between the lung and the chest walls, compressing the lung. And when that happens and you can't breathe, nothing else really matters for the patient. They're oftentimes in dire circumstances to try to relieve that pressure and that discomfort.

And so by coming to see me, you know, I have an expertise in assessing these airway complications and seeing are there solutions—are there mechanical solutions to the problem that's causing this shortness of breath? So if someone has an obstruction in their central airways—so in the trachea, the main windpipe, or the main airways going to each lung—can we go and remove the tumor that's inside the airway? And we can do that using a rigid bronchoscope. We can use lasers. We can use cryotherapy, which is like an ice therapy. We can use various electrocautery tools to literally cut out and remove these abnormalities. And then we can put a stent or some other sort of superstructure to hold the tumor at bay if it's appropriate and allow the patient to then go get therapy—to get chemotherapy or get radiotherapy to that affected area and keep the airway open long term.

Andrew Schorr:

Now, we've talked about stents in recent years and also even balloon angioplasty

related to the coronary arteries. So do some of these techniques come into play there, like do you do anything with balloons? And tell us more about stents and how that works.

Dr. Gillespie:

Sure. So, you know, much of what's done in pulmonary medicine has been learned from and extrapolated from other fields of medicine. And so a lot of the stents that we use are stents that have been used by the gastroenterologists in the esophagus before we ever had an opportunity to do this. And we use metal stents in malignant disease especially, and these are very thin. You can almost imagine it like a chicken wire tube that we can deploy inside the airway to push open the airway and hold it open. Some of these come in a covered variety, almost like Saran wrap covering that wire tube so that nothing can grow through it and allow the airway to stay open.

There's another kind of stent that's unique to the airway, and that's a silicone stent. So silicone stents really can only be placed by an interventional pulmonologist, or occasionally some thoracic surgeons will do this, because you need to have a rigid bronchoscope to place them. And these plastic tubes are tremendous because they give us the option or the ability to place what's called a bifurcation stent, so a stent that could protect the windpipe and the central airways as one cohesive unit. That stent can be very important because there are some instances where that's the only option patients have.

Andrew Schorr:

Wow. So these are with people probably with more advanced cancer and they're having these breathing issues, which—well, we all need to breathe. So what you're talking about is ways of reopening what we call the airway, right?

Dr. Gillespie:

Absolutely.

Andrew Schorr:

Okay. And I mentioned about the balloons. Are the balloons used anymore before you place the stent?

Dr. Gillespie:

Yes, sometimes we still do use balloons. We use balloons to help expand the stent sometimes. We use the balloons sometimes to open up the airway before we—or in the process of deciding whether a stent is the right thing or not. Can we open up the airway to a viable airway below the obstruction? Because the key to stenting is that you have to stent across something to something, so you have to have, you know, good airway and good airway on either end in order to make a difference. If unfortunately there's a tumor that extends out into the lung, a stent deployed won't open up to anything and won't help the patient. So we use a lot of different tricks, using balloons and using the scopes themselves to really troubleshoot these issues at the time of the procedure.

Andrew Schorr:

I want to understand about, as you said, removing the tumor. How do you decide whether you can do it this way or you need open surgery?

Dr. Gillespie:

Well usually if you have advanced stage disease, open surgery is not an option because the surgeons really only want to operate on somebody if that surgery is going to help their long-term survival. And if someone has an airway complication from advanced stage lung cancer, you know, unfortunately the probability is that they won't tolerate the invasive surgery in the setting of having advanced stage lung cancer to make that a viable option. So, you know, historically a lot of these patients were told they just had to be kept comfortable and, you know, follow the natural history of this process until they died.

On the contrary, I pride myself in really working very hard to relieve those immediate life threatening situations and allow patients the opportunity to get therapy. And oftentimes the therapies are palliative, where people are removing the obstruction so they're not short of breath any longer but that they can still have good quality of life for hopefully, an extended period of time. But we never know that until we get a chance to see the patient and the images to see what we can offer them.

Andrew Schorr:

When someone has one of these stents put in do they feel anything? You know, would it be like if it were in a heart artery you wouldn't feel anything? And do you need—like with coronary stents you need to take medicine so that the blood flows and doesn't clot up. Is there anything they have to do when they have a stent placed related to medicines?

Dr. Gillespie:

Yes, sometimes we do have to be very cognizant of that. With some of the metal stents patients can do quite well, and they often won't notice or realize that they're even there. They wake up from the procedure and are in some ways shocked that they can breathe and that it's not working any longer. But particularly with the silicone stents, we do have to be very careful that patients do nebulized medications. They use basically albuterol, which is similar to the medicine that kids use who have asthma, and they use some other what we call a mucolytic, something to keep the mucus very thin because all of these stents for the most part are covering the normal tissue of the airways, and these tissues help promote the clearance of the secretions in your airways. So because the silicon, you know, the stent takes up some volume of the airway, we want to make sure that you're able to cough your secretions beyond that stent so the stent doesn't get plugged with mucus. So patients have to do these nebulizers a few times a day as long as the stent is in place.

The Role of Interventional Pulmonologists in Treating Cancer Complications

Andrew Schorr:

Dr. Gillespie, beyond opening the airway there are other complications that can happen with the lungs—fluid, I know, things like that. Is that part of your field as well, helping with that?

Dr. Gillespie:

Absolutely. And we have a lot of experience in palliating patients who develop what's called a pleural effusion, and that's the development of fluid between the lung and the chest wall. And because the chest wall is rigid when this fluid builds up, the lung is what pays the price and it kind of gets compressed and that can cause shortness of breath. And for people who have advanced stage lung cancer that usually means that it's the cancer that's causing the development of fluid, but, you know, we have to be thoughtful because sometimes it's secondary to the treatment. Sometimes radiation can cause fluid to build up, and so we want to make sure that we approach these patients thoughtfully and we sample the fluid and understand where it's coming from, and then decide what the best treatment course is.

Sometimes the best thing to do is to try to get rid of that space altogether, so almost if you could imagine gluing your lung to your chest wall so that that potential space is gone and the fluid can't build up anymore and doesn't go someplace else. It no longer has the opportunity to exist.

Andrew Schorr:

Now, what about these procedures? Is all of these that you've described, the stent or even getting rid of the fluid, can that be done as an outpatient or are usually people in the hospital?

Dr. Gillespie:

Generally if you come in as an outpatient, you go home as an outpatient. It's very rare that I will take someone who is an outpatient and make them stay. We keep everybody [at the hospital only] if it's safest for them. If I have any concerns, I'm not going to let anybody go home, but basically, you know, the simple way to think about it is if you walk into the hospital for your procedure you usually walk out the same day. If you get transferred or you're an inpatient, you're already in the hospital and it usually ends up that you will stay in the hospital for another day or two as we sort everything else out.

The pleural procedures, when we're trying to deal with the fluid, those can easily be done as an outpatient. If we're going to put in a small, tunneled catheter—the PleurX catheter is the most well-known of these and it is a small silicon tube that's, you know, significantly thinner than a drinking straw that we can tunnel under your skin and in between your ribs into that potential space where the pleural effusion, where the fluid builds up, and that can be kept in for as long as it needs to be kept in. And patients can learn to have family members drain this, or we can have nurses come out to your home and drain this in a serial fashion so that the fluid never has a chance to build up to the point where the patient is ever short of breath

again.

Andrew Schorr:

Now, what about age? Does a patient's age affect any of these procedures, either for diagnosis and staging or these interventions to remove blocked airway—put in stents, fluid, etc.?

Dr. Gillespie:

Age is not in any way an exclusion factor, regardless of how old someone is. In many ways you really have to look at the whole person, how old are they, but what is their performance status, you know, how were they doing in the preceding weeks and months before these symptoms developed? And if there has been an acute change and we can intervene on that we can often return them back to the presymptomatic state if we act rapidly. And so no one would be excluded because of their age. But I want to be very clear with patients that these people are often very sick, and we don't want the procedure to be more risky than the potential benefit and so, if I don't think I can help patients I'm very forthright and tell them that, you know, I don't think that this is the right thing to do—but that is not a common scenario.

Andrew Schorr:

It seems like where they might not be right for open surgery there are many instances when you can help.

Dr. Gillespie:

Absolutely. I mean, we can—let's say for sure we can give people an opportunity where other times the doors would be closed. And oftentimes we can give people a less morbid option. So if you have fluid buildup in the lung and there's a procedure called pleurodesis, which is where we can go in and drain the fluid out and try to put a glue for all intents and purposes between the lung and the chest wall to obliterate that space. That usually had been done in the operating room with a surgeon and a general anesthetic. You know, we can now do that with conscious sedation, so with some medication— an IV to put patients in a dream-like state, topical medicines, then a small camera to drain the same fluid out—all while the patient is still breathing spontaneously on their own. We achieve the same end result.

Possible Complications From Procedures

Andrew Schorr:

Wow. Now, as much progress has been made you always have to mention to people that with any medical procedure there are risks, limitations and always concerns about complications. Why don't you take us through that, first related to when you're doing biopsies—any risks and complications there—and then when you're doing these types of interventions you just described.

Dr. Gillespie:

So when we're doing a diagnostic bronchoscopy, from the patient's perspective the feedback that I've gotten is often it's the prep that is the most uncomfortable for patients because we have to spray some medication (and it often doesn't taste particularly good in someone's mouth) to numb up their gag reflex. But once the patient is put into the dream-like state that we work to achieve, they generally have no memory of the procedure whatsoever.

And as far as the risks of the procedure themselves the main things you want to be concerned about are bleeding and a collapsed lung, pneumothorax. Those are really the two biggies, and, you know, the incidence of those problems is somewhere in the neighborhood of one in 500 to about one in 1,000 cases. So they're not frequent, but they are something that we have to be very conscious of and aware of as we proceed and finish the cases. We follow the patients out post-procedure with follow-up chest x-rays to make sure that they've done okay and there haven't been any complications.

On the therapeutic side, the procedures can be, you know, more risky. The therapeutic procedures almost always require a general anesthetic, and in those cases, sometimes we don't have a lot of time to achieve our goals. If the patient is severely compromised we have to work fast to open up the airway and allow that lung to participate again, otherwise sometimes we are unsuccessful, and we have to be really careful that we approach people in a very thoughtful and systematic fashion, you know, within a system of an experienced team of anesthesiologists and the interventional pulmonary team, to give the patients the best possible outcome.

Andrew Schorr:

I was wondering, when you're placing these stents can a patient be confident that it's going to stay put?

Dr. Gillespie:

You know, the more experienced the operator the more likely the stent will stay put. It's a very common question I used to get from trainees, who asked 'how do you know what the right size stent is,' and it's just something that you develop over time and experience. But the goal is when we put a stent in you want to put the biggest stent you can get in to give the patient the most normal size airway and that will provide you the tightest fit.

Now, in some occasions, if the patients have a significant compression of the airway from tumor then we open it up, and the patient then gets treated there can be further improvement of the airway diameter, at which point the stent can become loose. And in some ways that's a good problem, and patients are prepared for this in that they have contact information that if all of a sudden they develop a new cough or a sudden change they can come back. And if the stent is loose we generally can remove them, especially the silicone stents, with ease.

Andrew Schorr:

And because this isn't major surgery these are procedures that are repeatable.

Dr. Gillespie:

Yes. They often are repeatable, and sometimes if patients do very well we can go in and remove the stents. Sometimes if patients have a recurrence of their disease we can go back and reopen the airway. You know, nothing is 100 percent and there are airway compressions and airway compromises that we can't improve on, but I think that it's something that's a real benefit to people that have these problems.

Andrew Schorr:

Dr. Gillespie, so we talked about your field being really advancing and many people aren't familiar with it. And as you described, it sounds like both for people related to minimally invasive diagnosis assessment of what might be or might not be cancer, or what type of cancer or for people who are having complications of cancer your approaches.

Dr. Gillespie:

Yeah, I think that, you know, as a pulmonologist I bring a unique perspective to the table. I give the full patient an opportunity to participate in how they're going to be treated and try to help educate them as to what their options are going to be. And in doing this I'm thinking not about just making the diagnosis, but looking at the person and saying, you know, if this person was a smoker do they have other problems that need to be addressed before or as they go to treatment, to make them better patients. I mean, a lot of these people also have COPD or emphysema, and quantifying that and making sure they're on the right medicines to optimize their respiratory function so that they can go to surgery or they can go to chemotherapy and radiotherapy and have the best possible outcome because their other problems are being addressed and managed simultaneously.

Andrew Schorr:

Yeah, and there's a lot to think about. We're going to take another short break. When we come back I want to ask you about statistics and how you talk about that with patients and their families. And also I think we want to take a whole look at where we are with lung cancer now and what can we do to lower risk. Any family I'm sure that you deal with where mom or dad is being treated, but they say, 'gee, what about all of us? How can we lower our risk for our biggest cancer killer?' We'll be back with more with Dr. Colin Gillespie right after this.

Andrew Schorr:

Welcome back to Patient Power as we continue our discussion on lung cancer with interventional pulmonologist Dr. Colin Gillespie from Northwestern Memorial Hospital. Dr. Gillespie, so you are involved in going in with scopes and ultrasound and all of that for people where a lung cancer may be suspected. But then people are saying, 'you know, doctor' (whether they say it to you or another member of the team) 'you know, I know the statistics are scary related to lung cancer, what about me?' How do you approach that with people? How should people view statistics when they're really wondering about their individual situation based on what you see?

Dr. Gillespie:

And that is where the art of medicine comes into play because I think it's really important that patients understand the statistics and that lung cancer is a deadly disease. I want them to understand this because I want them to be prepared for every eventuality. And at the end I want them to be able to focus on the best possible outcome, but everyone needs to be aware that, you know, most patients that get diagnosed with lung cancer will die from lung cancer.

And as we hopefully shift the demographic to more early stage cancers, hopefully that will change and we'll have more cures than not, but right now that's the reality of the disease. And so in discussing this with them I try to, you know, be very clear as to what stage we think they're at or where are they at and what do the statistics say, but then I always try to make sure people understand that, you know, each one of us is an individual and how we apply to that bell curve no one knows. And in those statistics there are people that survive for a long time, and every doctor has their own anecdotal experiences where people have done remarkably well in situations that in many cases seemed hopeless. And it's those people that, you know, I try to remind my patients are out there. And, you know, I want them to know that as long as we're prepared for all the eventualities we're going to hope and we're going to work for the best possible outcome.

The Stages of Cancer

Andrew Schorr:

Take us through the stages just for a minute. So there you are: somebody, you know, in the morning had a procedure that you did and then the discussion is, 'well, did you find cancer and what stage is it?' So what's stage zero? What does that mean?

Dr. Gillespie:

Well, there is no stage zero.

Andrew Schorr:

Okay.

Dr. Gillespie:

Stage zero is no cancer.

Andrew Schorr:

Yay.

Dr. Gillespie:

But, you know, stage I cancer generally is where you have a small, localized tumor just inside the lung that hasn't spread anywhere. If a surgeon went and removed that portion of the lung, your cancer is gone and you no longer have cancer and you were a stage I.

Andrew Schorr:

Now, I have one other question about it when I was asking about stage zero. If there's something that looked like cancer but then wasn't—I mean it looked like cancer on a CT scan or on an x-ray, what does it turn out to be usually?

Dr. Gillespie:

At least in the Midwest it usually turns out to be what's called a granuloma. It's a scar like formation usually from a fungal infection. And so, you know, the Midwest is full of a fungus called histoplasma, so histoplasmosis can be an infection that people get and never know they had it. Or they just maybe had a small flu-like syndrome or upper respiratory tract infection that just went away on its own and until they had a chest x-ray, which could be months or years, even decades later, that an abnormality is found and it's been there for an unknown period of time.

Andrew Schorr:

So a point I want to make is just because somebody is referred to you they shouldn't be terrified that necessarily it's cancer.

Dr. Gillespie:

Not necessarily. I mean the phrase I always tell my patients is there's a solution to every problem, and we're going to find the answer, and we're going to put together the plan that's going to give them the best possible outcome. And, you know, my effort is that I will try my hardest to find cancer and hopefully if I find something else that is ideal. It is tremendous to call someone up and say, 'hey, listen, we have a result and it's not cancer, it's consistent with this granuloma.'

And just to be clear when somebody has that, you know, they're not done. Because I just want to make sure, so we continue to follow them after the fact to make sure that it continues to behave like a granuloma or like histoplasmosis and not something else. We don't want to just close the door. We want to just keep our index of suspicion up and keep our guard up to make sure that, you know, in the coming weeks and months that this truly does behave like it should.

Andrew Schorr:

All right. And that was scarring, right, and you don't need treatment for that, but you would be followed.

Dr. Gillespie:

Correct.

Andrew Schorr:

All right. Now let's go on beyond stage I. You found a type of cancer, it goes to the pathologist. You're trying to understand the biology of that. What would stage II be?

Dr. Gillespie:

You know some of this is a bit of a moving target these days, but stage II cancers generally are larger physically in size and may have some local lymph node

involvement but also that can be removed almost in their entirety surgically. Because you never know, it's often that stage II patients will after surgery get chemotherapy, whereas many stage I patients won't get chemotherapy after surgery because they won't need it. But many stage II patients will have surgery and then they'll still need further therapy. And sometimes radiation is mixed in to this picture of therapeutic options as well.

Andrew Schorr:

Now, I know there's stage II A and B. What's the difference between the A and the B?

Dr. Gillespie:

Well, I mean, these get to be pretty detailed conversations, and oftentimes patients shouldn't focus on the exact differences. These are things that we doctors spend hours arguing about, and really the simplest message I give to patients about staging for lung cancer is whether you are a surgical candidate or not a surgical candidate. Then [the next step is] making sure that you've got a comprehensive team giving you all of your options available from the surgical, the medical and the radiation, oncologic, therapeutic options.

Andrew Schorr:

Now, stage III I know is where maybe it's spread to the lymph nodes. So is surgery still in play there or not?

Dr. Gillespie:

So sometimes it is. So this is a case where the As and the Bs really have a big importance. So people who have III A lung cancers, there's tumors involving the lymph nodes inside the center of the chest, and this is a particular scenario that, you know, I in particular can provide some value because people who were originally diagnosed with their cancer—either our institution or another institution where they had a mediastinoscopy, which in many ways is the gold standard approach to staging of lung cancer. It is a surgical procedure where a surgeon makes a small incision in the neck and kind of goes down along the windpipe and biopsies the lymph nodes along the way.

But mediastinoscopy is—for the most part, it's a procedure that's done once and a second mediastinoscopy is very, very challenging and really is only done by very experienced thoracic surgeons. So if someone has already had a mediastinoscopy and found tumor there it doesn't mean they're not a surgical candidate. It just means that those people need to be treated with chemotherapy up front. And if we can prove that we've killed all of the cancer in that lymph node then they can still go to surgery and be cured. And so that's one of the tricky situations and a place where I can really help.

So if someone has had an mediastinoscopy already, many times the only option is for someone to do a biopsy from the inside, and that's where the endobronchial ultrasound really comes into play and allows us to find those lymph nodes that were once positive, to resample them and see have we gotten any more tumor. And if

there's still tumor after your chemotherapy then you should just continue with your chemo and radiation therapy and not going to the operating room.

Andrew Schorr:

That situation you just described though might be exactly the one where maybe because lung cancer is so common, someone might have been out there in the community as you say, maybe at a smaller hospital somewhere and they had that original diagnostic procedure. They were told they couldn't have it again but also that it probably was inoperable—that maybe that's where a second opinion at Northwestern might be worthwhile.

Dr. Gillespie:

For sure, and that's something that we really try hard to make sure that we are available for people to come and to just get another set of eyes and another, you know, set of brains thinking about their problem and seeing, you know, are there any stones that haven't been turned over—are there any other approaches that are out there that can give me a different outcome?

Andrew Schorr:

Dr. Gillespie at the beginning I said our first dream would be could we prevent lung cancer, and so you're around unfortunately people who develop it, but for all of us out there who haven't, is there anything you'd say to us, you'd say to our families to reduce our risk?

How to Reduce the Risk of Developing Lung Cancer

Dr. Gillespie:

So that's a simple one, and that is smoking. You know, there's about maybe 17 percent of people who get lung cancer never smoked and really don't have much tobacco exposure, but for the other 83 percent and more people smoked or people were around smokers. But it's really individual smoking exposure that is the highest risk for lung cancer and if we could stop everyone from smoking that would be the absolute best thing we could do. And unfortunately I'm going to be busy for the rest of my career helping to take care of people who have been smoking, but hopefully in the future there won't be doctors who will want to do what I do because there will be less and less patients who will need to be treated for it if we could get people to never smoke—to make cigarettes not be something that's part of our culture.

Andrew Schorr:

Right. And I would say we know how hard it is to quit, but if you aren't smoking don't, and if you are smoking take advantage of all the programs. It may take you many times. I have heard that sometimes it takes the typical person who quits 10 to 14 times of trying to do it, but it's still worth doing to try to have your lungs recoup. And they can to some degree, can't they, Doctor?

Dr. Gillespie:

For sure. It's never too late to quit, and there's never a bad time. And, you know, people shouldn't feel bad about being smokers. I mean it's, you know, we all make mistakes when we were younger especially people who—you know, my generation doesn't have any excuse. When I was in grade school people told me not to smoke. But for people in their 50s, 60s and 70s, nobody told them it was bad or that this was going to happen to them. And, you know, if you have the right genetic milieu to have a profound addiction to cigarettes it's really challenging to quit. It's one of the hardest things people will do in their lives.

And when they're smokers and they want to quit and they can't, I encourage everyone to talk to their primary care doctors, talk to anybody they can. There's a great resource, it's the 1-800-QUITNOW phone number. It's a national resource that anyone can just call at any time, and that phone number will get them linked up to support structures in their area. You know, there are medications that your primary care physician, that your pulmonologist, that your oncologist can give you to help you quit smoking.

Andrew Schorr:

And lastly, doctor, just one last thing I wanted to ask you about. We mentioned the data that came out that said for people who have been heavy smokers the screening with CT was able to catch the lung cancer earlier, asymptomatic, intervene and lower mortality. Between that and your tools with trying to (in a minimally invasive way) diagnose and stage people, do you think there's the hope that we're moving in the right direction to try to lower the mortality from lung cancer?

Dr. Gillespie:

I do think that's true. I think that in the amount of time, you know, in the last 13 years that I've been out of medical school the way lung cancer is perceived and treated has changed dramatically. And we've only just begun. You know, breast cancer and lymphomas are way ahead of us in therapeutic options and in results and there's a lot of effort that's getting started now behind lung cancer. I think that the next 10 years are going to be tremendous for us in what we can offer to people who have this terrible disease.

Closing Comments

Andrew Schorr:

Thank you so much Dr. Colin Gillespie for your expertise in this advancing field of interventional pulmonology and making it available to people at Northwestern Memorial Hospital and throughout the Chicago-land area or wherever people come from in helping them get the most advanced care. Thanks for what you do, and I hope people listen clearly to our messages about hope if you've been diagnosed with lung cancer and having the highest quality of life and also working with all our families to try to lower our risk in the first place. Dr. Colin Gillespie, thank you so much for being with us.

Dr. Gillespie:

Thank you, Andrew. It's been my pleasure. You know, it's a privilege to be a physician and to have the opportunity to take care of people in need.

Andrew Schorr:

Thank you, sir. Well, this is what we do on Patient Power, connect you with leading experts like Dr. Colin Gillespie from Northwestern Memorial Hospital in Chicago, Illinois.

I'm Andrew Schorr. Remember, knowledge can be the best medicine of all.

Please remember the opinions expressed on Patient Power are not necessarily the views of Northwestern Memorial Hospital, its medical staff or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.