



# Mayo Clinic Podcast - Dr. Aaron Mansfield - YouTube Audio - ...

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## SUMMARY KEYWORDS

lung cancer, patients, smoking, cancer, aaron, biomarkers, risk factors, clinical trials, mayo clinic, people, treatment, lung, oncologist, tobacco, trials, exposure, colleagues, offer, individuals, based

## SPEAKERS

Dr. Halena Gazelka, Dr. Aaron Mansfield, Narrator

- N** Narrator 00:00  
Coming up on Mayo Clinic Q&A,
- D** Dr. Aaron Mansfield 00:02  
Lung cancer refers to cancer or a malignancy that arises within the airway, and then grows and potentially spreads to other parts of the body.
- N** Narrator 00:13  
Symptoms of lung cancer often don't appear until the cancer is advanced into other areas of the body. Smokers have the greatest risk of getting lung cancer, but it can also occur in people who have never smoked. Treatments can vary, but early detection is key.
- D** Dr. Aaron Mansfield 00:27  
It's the most common cause of cancer related mortality worldwide. And the improvements in lung cancer screening, targeted therapies, and immunotherapies have all improved lung cancer mortality overall.

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Dr. Halena Gazelka 00:40

Welcome, everyone to Mayo Clinic Q&A. I'm Dr. Halena Gazelka. Aaron, as we recognize World Lung Cancer Day is recognized annually on August 1, to raise awareness of the leading cause of cancer deaths worldwide. In the United States alone, the National Cancer Institute estimates that lung cancer accounts for 12% of new cancer cases annually. And more than 21% of all cancer deaths in the United States in 2021, were likely attributable to lung cancer. People who smoke have the greatest risk of developing lung cancer, but it can occur in people who don't smoke as well. Here with us to discuss this disease today is Dr. Aaron Mansfield, oncologist at Mayo Clinic. He specializes in lung cancer care. Thanks for being here today, Aaron.

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Dr. Aaron Mansfield 01:29

Yeah. Good morning. Thanks for having me. Dr. Gazelka.

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Dr. Halena Gazelka 01:32

Well, I think this is a really important topic, because it seems to me that, you know, we hear, when I was a kid growing up, all I heard about was that cigarettes were what was going to cause lung cancer, but there is still lung cancer, and not as many people smoke anymore in the United States probably.

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Dr. Aaron Mansfield 01:47

Yeah, absolutely. That's one of the misconceptions with lung cancer. Although tobacco is clearly the largest risk factor to develop this, there are many other risk factors and risk factors, we don't know. The fact of matter is all you need to be at risk of developing lung cancer is to have a lung.

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Dr. Halena Gazelka 02:06

And I guess we all have some of those that are working in one fashion or another to be here. So, that's great. Aaron, can you tell our listeners briefly, what is lung cancer? What does it mean if someone hears lung cancer?

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Dr. Aaron Mansfield 02:21

Yeah, I need to start by saying what it is not. Because there's a big misconception there and then just provide a little bit of detail as to what it is. So, there are many other types of

cancer, and many of them like to spread to the lungs. So, if a patient were to have colon cancer, or breast cancer that later spreads to the lungs, that would still be a colon cancer or a breast cancer, it is just in the lung at that point. It is not lung cancer. Lung cancer refers to a cancer or a malignancy that arises within the airway, and then grows and potentially spreads to other parts of the body. We have two big categories. There is small cell lung cancer in non-small cell lung cancer, which is everything else. And of that there are two main types, adeno, or squam. So, that's how we divide up the most common types of lung cancer.

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Dr. Halena Gazelka 03:13

And Aaron, what exactly is a cancer? Is it regular cells from the lung that have gone bad? Or is it a new type of cells that have come and taken up residence there?

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Dr. Aaron Mansfield 03:23

Yeah, so these are cells that come from within our bodies, usually something has changed within their DNA. Be it exposure to tobacco, radon, or other risk factors, like I said, that we haven't identified yet, which changes the DNA makeup of those cells, which then causes them to grow in an uncontrolled fashion. So, they come from within us, but they usually have changes that we can detect now with the technologies we have, and then they just start growing in ways that shouldn't happen normally within our bodies.

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Dr. Halena Gazelka 03:56

And what is the risk of that? Is that just that they crowd out the good cells?

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Dr. Aaron Mansfield 04:01

Well, our normal cells have brakes on them, or they respect barriers. When one cell touches another cell, it often stops growing, it knows its place in the world. Unfortunately, with lung cancer and other cancers, those barriers aren't respected anymore, and they grow uncontrollably where they may, if it starts in the lung, they may start growing and then eat into the airway or into the chest wall, like the ribs, or they may leave the nest and go to other parts of the body in ways normal cells should not do.

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Dr. Halena Gazelka 04:35

We talked about how we're all aware that tobacco use can be a risk for lung cancer. What are some of the other risks? Who do you think of as being at highest risk for developing a

lung cancer?

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Dr. Aaron Mansfield 04:46

Yeah, so I think of miners. One of the other risk factors is radon, and that was proven by looking at miners who had mined uranium. So, that that's a known risk factor. Also, asbestos is known to be related to mesothelioma, which is another disease we treat. But when patients have a history of tobacco use, and asbestos exposure, there's a synergistic increase in the risk to develop lung cancer. And then there are many other less common exposures we could go through. But for most patients, especially the younger, healthier ones who don't have tobacco exposure, we have difficulties identifying what that actual risk factor is. So, that's a big gap in the field we're trying to sort through and try to get knowledge to sort out what was the actual cause for many of these patients where we don't know at this time.

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Dr. Halena Gazelka 05:39

Aaron, so many of the cancers that we talk about, like I'm thinking of breast cancer, some types of colon cancer have a familial risk, or they tend to run in families or be genetic or hereditary in some way. Is that true of lung cancers?

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Dr. Aaron Mansfield 05:52

It's less common in lungs. So, it gets more nuanced, where in breast cancer and ovarian we know about BRCA 1 and BRCA 2, we know of other genes for colon and even for stomach cancers. For lung cancers, it's not as clear cut per se. There's been associations where when parents smoke, their kids when they grew up, they start smoking, and there's certain underlying genetic risk factors. But there's not a clear single gene that is as strongly as associated with say, BRCA 1 and BRCA 2, with breast cancer that we're screening patients for right now. There are rare exceptions, but in general, it's not thought of being an inherited cancer.

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Dr. Halena Gazelka 06:36

Aaron, something you just said made me curious about the risk of secondhand smoke. My husband grew up in a home where his mother smoked copiously, and unfortunately died of a related cancer. And is the risk for someone who has been exposed to that as a child the equivalent to having smoked, or do we know that.

**D** Dr. Aaron Mansfield 06:56  
So, we know that any exposure to tobacco smoke will increase your risk, but it's lower for those who don't smoke than those who actually did the smoking. And it goes down with time from the end of your last exposure.

**D** Dr. Halena Gazelka 07:12  
Oh, that's interesting. What are the signs and symptoms of lung cancer that our listeners should be aware of?

**D** Dr. Aaron Mansfield 07:19  
Yeah, this is the problem because lung cancer often presents just like other things can present. Many of my patients have been diagnosed as having pneumonia, they've received many rounds of antibiotics that were not beneficial. And then they eventually make our way to us when a mass that was thought to be pneumonia on a chest X ray never improved. And then we get a biopsy to show it's actually a cancer rather than an infection. So, it can look like things like pneumonias. So, some of those symptoms that go with it are losing weight. When you're sick with an infection, you may not eat as well, same thing with cancer. So, there's weight loss, there can be cough. Those are the more common things we see. When it gets more severe, people may actually cough up blood, rather than just phlegm. Many of our patients have their lung cancers diagnosed incidentally. They go to the ER with belly pain, and they have a scan that catches the bottom of the lung, and there's a nodule that's found there. Then they make their way to our colleagues in pulmonary medicine. So, those are the two most common ways that they present to us. The more severe presentations are when lung cancer spreads either to the brain or into the ribs or another bone, where when it spreads to the bone, it can be very painful. And we get imaging to help sort that out. Or when it spreads to the brain, it can present like a stroke where people lose function based on what part of the brain it goes to.

**D** Dr. Halena Gazelka 08:49  
So, it can be advanced when it's diagnosed because of what you said probably it mimics other diseases?

**D** Dr. Aaron Mansfield 08:55  
Yeah, unfortunately, when tumors grow within our lungs, it's not something that our bodies can sense or feel. So, we miss it at its' earliest stages, unless we're doing screening. So, for

half the patients roughly or more, lung cancer presents when it is already metastatic.

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Dr. Halena Gazelka 09:12

Do we do screening for lung cancer?

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Dr. Aaron Mansfield 09:15

Absolutely, we have data that are about 10 years old now that have led to incorporation of lung cancer screening within guidelines. With many types of guidelines in the various associations we have. We show that doing low dose CT screenings of the chest is superior compared to doing x rays for detecting lung cancer. And that was shown to improve lung cancer mortality and all-cause mortality, because we also found other things going on on the imaging results. So, there are some people who are concerned about the false positives that come up from doing this testing, but we have proven that this saves lives by reducing lung cancer mortality and all-cause mortality. Right now, the screenings are recommended for people who are at higher risk based on their age and smoking history.

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Dr. Halena Gazelka 10:06

Okay, that's what I was gonna ask if it was primarily for smokers rather than the general population.

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Dr. Aaron Mansfield 10:10

So this, unfortunately, it is hard. Like I mentioned, there are patients where we don't know the risk factors that lead to all types of lung cancer. So, we don't know how to include them yet in our lung cancer screening with CT imaging. So, the screening we have, which has been proven to be beneficial is for those who are actively smoking or have a history of smoking are 55 and older.

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Dr. Halena Gazelka 10:35

So, supposing that an individual has a concern, some concerning signs or symptoms, or they have a screening test that might be concerning, how do you diagnose a lung cancer?

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Dr. Aaron Mansfield 10:45

Yeah, so we like tissue to make the solid diagnosis. Like I said, many other cancers can go to the lungs. Also, various types of infections can look like a lung cancer in them. So, we

need to put a needle into one part of the body or another to figure that out. Our pulmonary colleagues tried to do a less invasive approach, or may sound invasive, but we go down the airway, and they use ultrasound to guide where they place that needle to get the most accurate tissue. If it's gone elsewhere in the body, then we adjust our approach based on where else it's gone.

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Dr. Halena Gazelka 11:20

You mentioned that there are multiple types of lung cancer. So, I imagine this might vary, but how do you treat it once it is diagnosed?

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Dr. Aaron Mansfield 11:28

Yeah, so the histology is very important. At the beginning, I mentioned there is small cell, and then the other types, the non-small cells. We go down different treatment pathways based on what we find. The biggest change in our practice has been that we're looking for most of those subtypes for different markers, which now guide our treatment. So, biomarkers are a critical component of how we treat lung cancer now. So, with that, we're sequencing the genes to determine if there are mutations for which we have targeted therapies. And then we're also looking at a protein that the tumor cells can express called PDL-1, and that helps us guide whether we use immunotherapy by itself or with chemotherapies, or whether we use targeted therapies that go after those mutations.

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Dr. Halena Gazelka 12:18

I recall a number of years ago, I worked as a physician assistant in Hematology and Oncology before I went to medical school. And I remember some of the treatments then, but they were fairly, you know, there were fairly concise treatment regimens based on large cell, small cell. It seems like the treatment of cancers has gotten incredibly complex, as you mentioned, biomarkers and genetics. It's pretty amazing.

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Dr. Aaron Mansfield 12:40

Yeah, we don't think of this as being just one disease or three diseases anymore. We're really relying on the genomics to help define what we do. Cancer doesn't always behave the same way. So, it's not like it was in the 90s or earlier where patients were getting treated with all of the one or two of the same regimens. Now it is very specialized and individualized based on those genomics and a microenvironment with the immune markers.

- D** Dr. Halena Gazelka 13:08  
Has that made a difference in survival rates as well?
- D** Dr. Aaron Mansfield 13:11  
Absolutely. Some news that came out in the last month and a year ago, confirmed one another's findings that when you see these graphs on how cancer mortality overall is reducing over time, over the last many years, a major reduction in cancer related mortality is due to the advances made in lung cancer. Lung cancer is one of the most common cancers. It's the most common cause of cancer related mortality worldwide. And the improvements in lung cancer screening, targeted therapies, and immunotherapies have all improved lung cancer mortality, and because lung cancer is so common, cancer mortality overall.
- D** Dr. Halena Gazelka 13:55  
Well, that is wonderful to hear. That's great. Tell me a little bit about what individuals can do to prevent lung cancer if they're concerned.
- D** Dr. Aaron Mansfield 14:04  
Yeah, since the major risk factor we know is tobacco exposure, if you are smoking, try to find ways to quit. We have resources to help with that. It's very difficult to do. Nicotine is very addictive, but we try to find ways and individualize ways that work for people to try to reduce or eliminate their tobacco use. If you're in a house where there's someone smoking, I would encourage them to try to quit and work with them knowing it's a very difficult thing to do. But again, there are resources to try to help people with this. There are radon mitigation things people can do for their homes. Often when a home is sold there's a test for radon now, and there's ways to mitigate if there's high exposures. Beyond that, the other risk factors are difficult to control.
- D** Dr. Halena Gazelka 14:53  
Thinking about the smoking, I remember in medical school, I was taught to write pack year history of smoking. So, how many years the patient had smoked and how many packs they smoke? Is that per day I think Aaron? Does it matter how much the person smokes, and does stopping smoking actually help? I've heard individuals say, well why bother, I've been smoking this long now.

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Dr. Aaron Mansfield 15:16

Yeah, so that's a common thing that people believe. But smoking cessation does reduce the chance of developing lung cancer, that's been proven. We know that. Smoking cessation is critical to reduce the risk of lung cancer in smokers. Lung cancer is not the only cancer that can be caused by tobacco exposure. So, there are other cancers you can help prevent by stopping smoking. So, there are many cancers related to tobacco use. So, it's to someone's benefit to cease smoking if they're doing so. Also, you may benefit your friends and family members by not exposing them to tobacco. But again, I just want to harp on many of our patients have never smoked. Others may have smoked very briefly, maybe in college or the military and then stopped once they graduated or left their military service. So, most of our patients in clinic are not active smokers, or have a very light tobacco history, or none at all.

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Dr. Halena Gazelka 16:19

Yeah, I think that almost every topic that we talk about on Q&A, smoking is said to be a, you know, a poor prognostic indicator, but basically to live your healthiest life and you can't, you know, you can't account always for the things that occur.

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Dr. Aaron Mansfield 16:36

Right, right. Yeah.

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Dr. Halena Gazelka 16:38

Aaron, if an individual has a diagnosis of lung cancer, how can they be certain that they are getting the best care? You talked about some of biomarkers and various treatments? How do they know that the physician that they are seeing has the latest treatment available?

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Dr. Aaron Mansfield 16:52

Yeah, I think between our community oncologists and our academic centers where, at least most patients with metastatic disease go for treatment, most people are very aware of the biomarkers that need to be tested, that align with the current FDA approvals. I do think there's a lag with the incorporation of testing for all those biomarkers, but we're seeing more and more of that is being done appropriately. So, other times, when this cancer presents at earlier stages, you might need to meet a surgeon or a radiation oncologist where it might not be as appropriate to see a medical oncologist like myself,

and various centers have different offerings of whether a center has a thoracic oncologist specialized in the resection or not. So, it's important to figure out what expertise is available locally. And if it's not, then then to go where it is available.

**D** Dr. Halena Gazelka 17:52

Often individuals wonder if a second opinion might be helpful. Lung cancer is really common. But is this one of those areas, we've discussed some before where I've been told that, you know, experience really matters how often your surgeon does this surgery makes a big difference if it's not incredibly common. Is that true with lung cancer? Should people consider a second opinion if they're wondering?

**D** Dr. Aaron Mansfield 18:14

Yeah, I'm biased. So, I have to state that at the beginning. But I think it's important to know that you're seeing, if you have earlier stages of disease, and you need a surgeon to make sure that they're specialized in thoracic surgery and oncologic surgical principles for resection of that. Being in medical oncology, where I think a second opinion is very valuable, is the clinical trials we have to offer. We've radically changed practice over the last 10 years. And it has been through offering, well developing and offering clinical trials that have changed that practice. So, I would say we're many years ahead of the curve, so to speak, by looking for biomarkers that are not being done commonly and offering treatments that target those markers that we find. So, that's where I think the second opinion is useful because it's primarily the academic centers where those trials are being offered, although there is a major effort to make trials available closer to home, so people don't have to travel so far. But the fact of matter is, most of these opportunities are available at major academic centers.

**D** Dr. Halena Gazelka 19:23

Can you give us an example, Aaron, of some ongoing clinical trials that Mayo Clinic might offer and how do individuals find out about them?

**D** Dr. Aaron Mansfield 19:32

Yeah, so one trial, we still have open for various indications, but it just led to FDA approval. So, in lung cancer, we've known that patients can have fusions in a gene called Rett, where the Rett gene binds to another gene that it shouldn't, and that results in a mutant protein that drives these now cancer cells to grow and spread throughout the body. We used to borrow some drugs off label that our colleagues in the thyroid group would use, but they

didn't work that well. Three or four years ago, we brought in these much more potent Rett inhibitors, and started looking for Rett fusions in all of our patients. So, we put on almost 20 patients on a trial that led to approval of, there's now two drugs that were approved, and we have both of those studies open. But we put many patients on just showing that these pills that you take once a day for one of the drugs or twice a day for the other, almost always dramatically shrinks these tumors and has durable responses where we don't just shrink it temporarily, but we maintain that for many, many months, or in some cases for years. So, that trial is still open for patients without lung cancer since the FDA approved it for lung. But that just speaks to what we've done looking for a biomarker where there's not an FDA approved indication, assigning patients to a treatment based on that identification. And many of those patients who we put on study years ago are still on that study, still benefiting from this drug. And now we're looking for patients with other types of tumors with this mutation to try to offer this drug to them.

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Dr. Halena Gazelka 21:08

That's a fantastic example. How do patients find you?

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Dr. Aaron Mansfield 21:13

So, I get emails every day and phone calls from colleagues. For clinical trials, there's [clinicaltrials.gov](https://clinicaltrials.gov). If you're told, if your oncologist or surgeon or physician tells you, hey, we found your tumor, it has this biomarker, one, there may already be FDA approved therapies that patients should be treated with. Other times there are trials at academic centers that should be sought out based on those biomarkers. So, [clinicaltrials.gov](https://clinicaltrials.gov) is the best site for that. Mayo Clinic also lists our active clinical trials, which may provide a little more detail than what's on the [clinicaltrials.gov](https://clinicaltrials.gov) web page. Both those can be very confusing for someone without a medical background because they do provide in to help someone understand if they're eligible to participate or not. But without a medical background, it can be hard. So, there are lung cancer foundations, mesothelioma foundations that help patients with lung cancer or mesothelioma understand what trials might be there and what ones they might be eligible for. So, those are good networks to get into or just having a patient care group with others who've gone through trials to help guide that process, I think is invaluable.

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Dr. Halena Gazelka 22:29

Aaron, do you and your colleagues provide any virtual consultations for individuals who want a second opinion?

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Dr. Aaron Mansfield 22:35

Yeah, absolutely. We have an e-consult or virtual, well, we have a variety of offerings. Some are physician to physician, where we do one of those offerings is called an E-review, another is called an E-Consult where we get the material sent to us, we review them, and then we tell that oncologist that, yes, we have a trial, send the patient or hey, we agree with everything you're doing, no need for this patient to travel. And then we're also offering that to patients through ZOOM, where we need a lot of materials to be sent here for us to review and provide an actual consultation. But I've been doing this both domestically and globally for patients who've been requesting that.

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Dr. Halena Gazelka 23:20

That's wonderful. Aaron a little bit earlier, you mentioned that sometimes it's difficult to participate in clinical trials because of distance, etc., and at Mayo we have become increasingly concerned about providing equitable care to individuals such that everyone can receive excellent health care no matter where they are located. And I'm wondering, are there healthcare disparities related to lung cancer that our listeners should be aware of?

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Dr. Aaron Mansfield 23:47

Yeah, absolutely. In terms of the trial space, there are a few. And one is the availability of the clinical trials. You know, historically, they've been at academic medical centers, and less frequently available at the community oncology centers. That is changing, the NCI and our cooperative clinical trial groups are trying to make more trials that are meaningful for patients available closer to home. Clinical trials require significant time commitment, because these are experimental drugs, we do need to make sure that they are safe. So, major efforts are underway to try to make this available or make these trials more widespread. I hope we get a new model of just in time trial activation, where if a local oncologist finds that a patient has a biomarker, which would make them eligible for a study, that they don't need to do months of paperwork to open that study, but they can try to activate it overnight if they have certain things in place. So, we can make that available to the patient on the fly. But a lot needs to go in for that vision to happen. The other issues with clinical trials there are racial disparities and who participates in them. One of our former trainees here and some of my other colleagues and I published on that just showing overall enrollments not representative, because it's primarily based on where they are offered, and the travel required to get there. That takes resources to do. In looking for those biomarkers, I just had our annual meeting this year. It was presented that there are discrepancies and disparities in testing for these biomarkers, and it's not being offered to anyone. So, those data highlighted that we need to do better at offering the

next generation sequencing than we are doing right now currently. We could get into the weeds about some of the genomics, but the way some of the data are filtered, we think does introduce some biases based on ethnicity. So yeah, there's multiple disparities that I think a lot of people are focused on and trying to improve upon.

**D** Dr. Halena Gazelka 25:51

I think it's great to know that you, your colleagues, and even your national organizations are interested in that topic and working actively on it.

**D** Dr. Aaron Mansfield 26:00

Yeah, absolutely.

**D** Dr. Halena Gazelka 26:02

Aaron, any last thoughts for our listeners today?

**D** Dr. Aaron Mansfield 26:06

Yeah, we still have a lot of work to do for lung cancer, I fully recognize that. But in the last 10 years, we've seen significant changes, we are individualizing treatment, people are living longer and better than they used to. So, there probably been more changes for lung cancer than other tumor types in that period. And it's been one an exciting time to practice in, I realize the work that is has yet to be done. I hope we continue to make things better, but things are better than where they were. So, I'd like to end on that positive note.

**D** Dr. Halena Gazelka 26:39

Aaron, as we recognize World Lung Cancer Day on August 1, we are so grateful to you for being here today and that there are individuals like you who are working actively on this disease. Thank you.

**D** Dr. Aaron Mansfield 26:51

Yeah. Thank you for the opportunity.

**D** Dr. Halena Gazelka 26:53

Our thanks to Dr. Aaron Mansfield, medical oncologist at Mayo Clinic, for being here today to discuss evaluation, management, and treatment of lung cancer with us. I hope that you learned something. I know that I did. We wish each of you a wonderful day.

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Narrator 27:08

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