**Hopeful Advancements in Lung Cancer Treatment**

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Well, welcome to the cancer sister show. I'm Dr. Bill Evans. If you're a first time listener, welcome, and if you've joined us before, I think you're really going to enjoy today's conversation with Dr. Rosalind Jergens. Roslyn is an associate professor in the department of oncology and McMaster University, and a medical oncologist and specialist in lung cancer. And that's the focus of our conversation today, there really have been some amazing advances in lung cancer management in recent years. I'm old enough to know the very beginnings of lung cancer treatment in Canada, which were pretty primitive with, with limited chemotherapy. And certainly not all the tools we have in our tool chest today to help patients who develop lung cancer. They're welcome Rozlyn. I'm just delighted to see you. And thank you for joining us today.

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Oh, thank you for inviting me, noted that your timing is impeccable as usual. It's lung cancer awareness month here in November. And so I think it's a really important time to remind everybody that the people who are susceptible for lung cancer or anybody with a pair of lungs and so it is important topic of conversation because I think it's it's lost upon people that we will lose more Canadian women to lung cancer than we will to breast cancer, ovarian cancer and cervical cancer combined. So this is an important topic and, and really worth discussion about all the advances that we've had in this last few years that have really changed the landscape for lung cancer. It's

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certainly a common cancer in Canada, we'll have about 28,000 individuals diagnosed with lung cancer, I think people tend to think of it as a smokers disease. And I think maybe it's good to mention that, yes, a lot of lung cancer is caused by smoking. But we're also seeing a lot of individuals who have no smoking history, develop lung cancer. And maybe important to underscore that at the beginning. And I also be someone who's involved in smoking cessation a good deal. Like to not blame individuals for getting lung cancer, because they start with

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this brought this upon themselves and nobody envisioned 100 years ago, how truly addictive nicotine would be. And, you know, unfortunately, these things become exposed to people in their youth. Before maybe they would know better, right, and the chemical takes over and it becomes very difficult to quit. And so you know, we do have good things that we can do to help people who want to quit, and we encourage anybody who is interested in quitting, to reach out to their physicians, we've got wonderful support programs that are provincial to help anyone who is interested in trying to get rid of that tobacco habit,

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really important message. And just to emphasize how addictive nicotine is, studies show that it's more addictive in first exposure than even heroin or cocaine, which is amazing fact, which I don't think most people appreciate.

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It seems so innocuous, right? Like, you know, how much trouble could I possibly get into by smoking a cigarette, right. And it could become a lifelong habit that affects your lung and cardiovascular health. So when

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we think about lung cancer for many years, it was like one disease. And then we came to realize there were at least several different histologies. And now we have evolved to understanding it more at the molecular level. Maybe you just tell us a little bit about that evolution from thinking about lung cancer as just a single entity and not even differentiating the histologic types to where we are today.

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Yeah, I mean, you'll remember this to Bill, you know, when I started my career, more than a few years ago now, that's all we needed was whether or not this was lung cancer or not, and whether the cells were big or small. And we've evolved from that to now having an absolute spectrum of molecular tests that we conduct on every new lung cancer patient diagnosis, in order to help personalize treatment. So when I see a new patient, there are very important things that I'm looking for on their pathology, to help me guide them towards the best treatment that will have the best outcomes. When I think about it, I lump people into three main categories. So those people who have driver mutations or targets. This doesn't mean that my patients are mutants. They're not part of the X Men or anything like that. These are patients who have cancers that over time have taken on these abnormalities in their genetic material that have given them Some advantages, but we have figured out how to take advantage of those abnormalities. I'm no different than kryptonite and Superman, we figured out how to go after their their strength and turn that into an opportunity to actually damage those cancer cells. So I've got some really exciting news for Ontarians bill. Ontario health and Cancer Care Ontario, announced now a couple of months ago, that they have expanded the molecular testing that is funded through the province, and they are now funding something called next generation sequencing. That allows us to identify a larger portfolio of these mutations that often allow us to match patients to tablet type treatments, mainly in the patients whose cancer has spread what we call stage four metastatic lung cancer. But we're starting to see these treatments even make their way into the resected space. And so as of last month, there are now I'm going to just count them out 1-234-567-8910 1112 12 different tests that this particular panel is doing. That will give us insight on to best treatment. And why that becomes important is because when we can match these patients with those types of treatments, the prognosis even for stage four, lung cancer changes dramatically. So for example, the the first one that we identified something called the epidermal growth factor receptor mutation or EGFR, it's identified and maybe 10 to 15% of newly diagnosed lung cancer patients. And the median amount of time that people live with that diagnosis is now between three and four years. And the next diagnosis, we identified something called ALC translocations al K, the median survival of that patient population is pushing five to seven years with the tablet treatments that had been discovered. It's an absolutely exciting space. So I look to see if somebody has any identifiable target, to help me personalize the treatment. It's

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great that Ontario has done what's the access in the rest of the country. And the idea is Ontario. So

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I'm gonna be giving a lecture on that in December. But Ontario, is really honestly one of the first provinces to put together a plan of funding of these things. But we now know that BC has a robust next generation sequencing program. Alberta has rolled out next generation sequencing. Manitoba has now rolled out their next generation sequencing program, Atlanta, Canada has been doing it for quite some time based on philanthropic dollars, I don't know that the province is paying for it just yet. And Quebec just followed suit. So they announced that they too, were going to be funding next generation sequencing. So it's a huge movement, literally just in the last two or three months that Canada as a whole is investing into understanding the the makeup of these cancers so that we can give our cancer patients the best opportunity for good treatment.

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That's really good news. I wasn't sure what the status was for the rest of the country. And I had heard about Ontario, funding this. And I just think it's, it's amazing because it as you show, as you say, it allows you to select the right therapy, which is usually an oral therapy, which is also good for patients. So that's that's a huge advance. And as you mentioned, there's mentioned the two common or most common genetic abnormalities, but the list has got quite long, hasn't it? They're not so frequent. But nonetheless, they're important if you find things like Ross one or a met alter gene, or Rhett's and the people listening to this will wonder what we're talking about. But just understand these are mutations in genes that drive the cell to grow. And that we figured out, that's a very rural we, scientists have figured out how to block the activity of these gene and shut down the cells so that we're getting these long median survival times and the response rates are also very high, aren't they with these drugs incredible,

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like we're talking anywhere between 60 and 80% of patients when they receive these treatments, see dramatic shrinkage of their cancer. And not only do we see dramatic shrinkage, but that shrinkage is quite durable. So for some of them, it's a year for some of them, it's three and four years on that first type of tablet. So you can imagine how important it is to have that molecular profile. And so it's something that we work very hard for to make sure that we have as robust of testing as possible for each of our lung cancer patients. Now there's

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also an interesting story to around the EGFR gene abnormality and the early drugs the first generation drugs, they certainly worked. But then resistance sets in and, and increasingly, we've learned what the mechanism of resistance is. And then a new drug is developed to block that. And now we have sort of a sequence of things. In fact, the drug that was identified as a burden to overcome resistance has really moved into the first line therapy, I guess for, for most of your patients. Now, Ross,

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I think one of the most important things that has come out of that knowledge bill is less so the strategy of understanding resistance per se, but what the efforts of understanding resistance have brought to us again, from the diagnostic space. And so it was out of the clinical trials, trying to figure out how to develop the next tablet that would overcome resistance to the first and second generation tablets that we identified that we can use blood tests to actually look at the genetic material of the tumor, and look for resistance. These are something that we call liquid biopsies. So that was the first anybody niche where we started using liquid biopsies. There's now actually a group of us banding together across the country. Looking at how we could implement liquid biopsies in a more robust fashion. There's a group out of BC that has had a huge Canada Wide program called Connect sia health, looking at DNA mutations identified on blood. So I think this is something to watch for patients is that we're looking at more minimally invasive ways to watch how their tumor mixture changes over time. And no, I think very few people would complain about having two tubes of blood drawn to have the physicians have a better understanding of what's going on. You know, it's harder to ask for for invasive biopsies and things like that on a recurrent basis. So I'm extremely excited for some of the work that's being done with liquid biopsies. And I do think, especially as we get into, you know, we haven't talked about early stage cancers yet, I hope we're gonna get a chance to touch on CT screening. But I think that some of these technologies are going to allow us to be even more and more precise, in combination with some of our radiographic measures to identify cancers in an earlier stage.

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There's so many things we can talk about, since we started off with the advanced disease and the molecular abnormalities. Maybe we can continue there for a few more minutes, particularly around immunotherapy. Because that's the other exciting advance in this space, isn't it to

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other biomarkers that we look for is to get a sense as to whether or not a particular patient's cancer is putting effort forth to try to defend itself against our own immune system. So our immune system, I think, gosh, you know what, it's now dinner table conversation, in the midst of this pandemic. So there's been a lot of awareness about our immune systems lately. But what people may not actually know is that I think people are familiar with our immune system, when it comes to fighting off what I call, you know, these little infectious terrors, right? Whether it's things like COVID, or the flu or bacteria, right, those types of things, the classic pneumonia. So people are very familiar how our immune system identifies these invaders, and they and they eradicate those invaders through the mechanisms of our immune system. But people may not realize that the immune system also has a critical role in managing what I call domestic terrorists and domestic terrorist threats are cancer, right. And so our immune system is tasked with looking for abnormalities in the cells and identifying those cells to be destroyed. But you know, when I talk to my patients, I remind them that cancer cells are a little bit like misbehaving teenagers. They try to sneak out and travel to places that they're not supposed to go without permission. And God love you know, we would prefer our teenagers not to be making copies of themselves without permission. But cancer cells are good at doing that. But one thing that teenagers can be good at is, you know, if they do get into trouble, they they they plead the fifth, right, it's not I didn't know better, it's not my fault. And cancer cells are extremely good at identify them themselves to the immune system as part of self. It's this whole concept called self tolerance. That's why we're not all walking around with Crohn's disease and rheumatoid arthritis and lupus and all those types of things. But what we have discovered is that we can actually manipulate that that decision of cancer to try to fend off the immune system and by blocking the cancers ability to fend off the immune system. We can actually get the patient's own body to fight the cancer on their behalf in a more effective way. And we've now got Goodness gracious six, soon to be seven drugs that are approved that work in various iterations in this space. And we now know that around 1/3 of newly diagnosed stage four lung cancer patients will have evidence on their tumor that they are actively working very hard to defend themselves against the immune system. And in those patients, when we use an immune based strategy, Bill, it's so exciting. So the median amount of time that those people live is two years, we now know that one in three of those patients will be five years survivors, which is again, something that we maybe never anticipated. And it's with good quality of life. These drugs are by and well by and large, well tolerated. And when we do get an overactive immune system, we've got very good mechanisms to settle things down and, and quote the fire a bit. But this has been absolutely game changing for patients.

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Ross, how do you find the patients who are going to have those really excellent responses, that, again,

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is part of the importance of pathology. So there's a special test that we do on the tumor, it's called Pdl, one testing is actually a relatively easy test to do, it doesn't take much material. But we do that on every single newly diagnosed patient. And it's become critical to our knowledge now in the stage four setting. But we're now using these drugs in the earlier stage settings as well. So we've been using them now for a few years in what we call locally advanced or stage three lung cancers. And we hopefully shortly are going to be using them in patients who have had surgery to try to improve their chances of being cured of that diagnosis as well.

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No, no, not everybody's going to be expressing PDL one. Some people just don't, for reasons, we perhaps don't understand, some have a modest response, some are very vigorous. So that becomes part of your decision making as to whether a person just gets immunotherapy alone versus maybe a combination with chemotherapy and immunotherapy or chemotherapy. So I

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started my conversation that I lump people into different groups. And there are those people who have those mutations, where we use tablets, and honestly many of those patients may not benefit from an immune based strategy, it becomes very important to talk to your doctor because these treatments don't necessarily work for everyone, we have to personalize it. We have the people then in the next group where it's about 30% of patients that benefit from a direct immune based attack and that attack alone. And that leaves us the remainder of the patients where we're in the process of using things like combined chemotherapy and immunotherapy or some times we're using chemotherapy and double immunotherapy, depending on the patient markers. And again, it still remains a personalized approach for these things. So even patients who don't have obvious characteristics that tell me that the immune system is at play, sometimes we can trigger the immune system to become part of the fight. So there's opportunities across the board. And again, it's it's that treating medical oncologist who will help guide patients and families towards what the best treatment might be. Things

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have become a lot more complex than when I was initially in the clinic seeing lung cancer patients but much more specific, much more targeted and much more successful, much

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more rewarding Bill oh my gosh, right. When I get to tell somebody and see them for their five year anniversary of of treatment when I told them that they might only have a year when they started. It's just amazing. Yes,

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getting access to these drugs is not necessarily easy. It's all very pricey, as I think people are aware of particularly immunotherapy drugs. That comes with the territory, like we're going to take a short break here to hear a word from the cancer Assistance Program and we'll be right back with Dr. Rosalind Jergens. To talk further about lung cancer.

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We'd like to take a moment to thank our generous supporters, the Hutton Family Fund and Banco media who make the cancer assist show possible. The Coronavirus has not stopped cancer. Instead, it is added to the isolation and challenges already faced by cancer patients in their families. From transportation and equipment loans to personal care and comfort items, parking and practical education. The cancer assist program remains committed to providing free essential support to cancer patients in our community. With no sustainable government funding, we need your help so we can continue being there for those who depend on cap to stay safely at home. individual and corporate support of signature events, third party fundraising efforts and financial gifts are greatly needed. Your support is vital. We can get through this together. Visit cancer assist.ca to see how you can make a diff France in the lives of cancer patients and their families.

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So we're back with Dr. Rosalind Jergens, talking about lung cancer. And we've talked a lot about advanced disease and some remarkable advances in molecular targeted therapy and with immunotherapies. But one of the things that's also changed is that techniques have been developed to detect lung cancer at a much earlier phase. And so in many jurisdictions, there's been the introduction of what we call low dose CT scanning rounds, maybe you can talk about what's happening in Ontario now and the rollout of that approach to finding lung cancer early and what differences that make and outcomes for people with lung cancer

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bill, I am so excited that we finally have support from the Ministry of Health to move forward the initiatives for low dose CT scan screening in the province of Ontario. It's been a long time coming. There's been pilot programs that have run in Ottawa and up in Sudbury, and then Toronto, and I think South Lake. And now the programs are going to be expanding across the province so that patients who are considered high risk for lung cancer, it's patients of a certain age category who have had a history of smoking within a certain period of time, there's actually criteria that people have to meet to be able to qualify for screening will be able to go on to get routine low dose CT scans. Part of the excitement of using CT scans to screen for lung cancer is that it's different than even some of the other screening tests that people are very familiar with, like mammograms or fit testing for colon cancer or pap smears. There's a lot of information we get when we do a CT scan. And we actually know that CT scans and the process of looking for screening for lung cancer actually not only reduces the risk of dying of lung cancer, but it reduces a person's risk of dying as a whole. And I think one of the key reasons for that is is one, we get a lot of information when we do a CT scan, all of a sudden patients find out that their years of smoking have caused them to get emphysema, or they may have cardiovascular disease that has an opportunity to be modified, that can lead to people living longer. But I truly believe the most important part of CT screening is is that it be paired with robust against smoking cessation, trying to help people quit smoking, I think those two things in tandem lead to people living longer. And there was a wonderful study out of the Netherlands that proved this principle. Absolutely, I think the best you could ever imagine. There was a trial called the Nelson trial that actually looked at CT screening. And what they did is they compared people who got the CT scans versus just routine chest X rays, versus actually people who who just were diagnosed with cancer in the normal route. And what they were able to show is those patients who got the CT scans, we actually were able to shift the number of people who were diagnosed with stage four lung cancer into the stage one and very curable space. And so chest X rays looked exactly like standard care, there was no improvement in lung cancer diagnosis. And I think that's been the most compelling data. So I'm very excited that this is something that's being put into place across the province for our Ontarians. I've

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seen some pictures from those CT scans of, you know, the very small lesions that you're really a millimeter size, and then you can follow them in an interval and see that they're changing and shape and size, and then intervene with minimally invasive surgery. So it's not too hard on the patient to have this removed. And you know, just such a such a change from, you know, seeing people with, you know, football sized lesions in there.

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And we're looking at ways to even make these tests more what we call specific for cancer because you're gonna find all sorts of stuff, right? Like, you're gonna find little nodules from working out in your garden or previous infections or things like that, and trying to interpret what's real and what's really a cancer and what's just background noise can be challenging. And that's where research continues, as I was mentioning with these liquid biopsies to pair with the CT scans are like absolutely cool bill. They are doing things called Breath omics, where people actually breathe into a tube and they analyze what's in the patient's breath to potentially enhance the ability of these scans. These are research things, these are not ready for primetime yet. But I'm excited that we're working to try to enhance the ability of that, that diagnosis so that we're not watching people who shouldn't be watched and that we are watching the ones who do need to be watched.

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Exactly. Now, surgery has changed a lot over my career and particularly to minimally invasive surgery. And that's terrific He used in early stage lung cancer. But I've been interested to note that increasingly radiotherapy is being used in early stage disease, particularly for the elderly, or perhaps particularly frail and or the individuals. And it seems like the five year survival is every bit as good as the surgery. Yeah. So

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now when we get these early stage patients, and it's a conversation, we are still fortunate that there are these rapid assessment clinics or lung diagnostic assessment programs across the country or across the province. Most of them are run by respirology cysts or thoracic surgeons. But there's a conversation had with these patients about risks and benefits of surgery. And we do have good alternatives. Our gold standard is still surgery. But for patients who don't want to take on that risk, there's a technique called stereotactic radiation, it's higher doses of radiation given over just a few appointments. And you were absolutely right, the chances of controlling the area that have been irradiated is quite high, it's somewhere in the 80 90% range, which is similar to what we would see with surgery, different, different issues with each of them, right, the surgery requires a hospital stay and healing up from a surgery and a cardiovascular system, a heart and lungs that can tolerate that type of procedure. The radiation comes with its own woes, right? Because when you do surgery, it's out of the body, we put it in a bucket, it's kept on file for ever. In pathology, you know, with radiation, the lesion is there. And so it does require routine ongoing monitoring. And sometimes interpreting those scans can be challenging. And so we do work with a very specialized group of radiologists who are very good at monitoring those areas. Because we don't want to miss a cancer that's recurring through through the changes because radiation leaves almost like a scar on the lung. And so sometimes determining what scar and what might be a recurrent cancer can be tricky. But my gosh, it's just been such a wonderful addition to what we have to offer. And many patients like the idea of not having to have an operation, especially if their health is is not as robust as it may have once been, it

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certainly opens up the opportunity for those people who couldn't tolerate surgery to have a treatment that's potentially curative. So it's an important

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thing to highlight because some people think you know what, like, never want a surgery, I don't think I tolerate a surgery so then they don't seek care. So to understand that there are alternatives out there, you know, it's important for our community to know that we're no longer a one trick wonder, right, we've got multiple options for patients and having people be seen in the cancer program. Even if it's just to provide patients with a better understanding and ideally provide them treatment with good quality of life is key. Now,

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one of the, I guess unfortunate things about lung cancer is that the chest is pretty silent. And all too commonly people present with disease that's much more advanced. That's one of the reasons why we want to see low dose CT screening come into being in the province and across the country. But often people do present with more advanced disease that's centrally located in the chest and, and typically we've used radiation to control the disease, but it hasn't been curative, but therapies are changed. Again, they're with combinations of chemotherapy, immunotherapy radiotherapy. So talk to me a little bit about how those changes have evolved and what the benefits are.

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Yeah, Steve three is actually probably like I do more paperwork in stage four. But stage three is probably the most intellectually stimulating part of my job, because there's so many different ways to potentially approach these patients. Some of them it's more appropriate to start with a surgical approach and then add on things like chemotherapy or radiation after some patients is more appropriate to start with chemotherapy and radiation and then follow with a surgical approach. Others starting with chemotherapy and radiation followed by that immune based treatment that came into our hands a few years ago now. And we now know that we have not quite but close to doubled the five year survival of stage three lung cancer if you compare it to where we were five years ago. Now that trial is very exciting because even the the new standard patients did better than we ever expected. So there's about a 10% improvement just over the years because of better stage four treatments that have improved the survival of the the group that didn't get the immunotherapy on the research study. But gosh, only 40% of patients are five year survivors with stage three where it used to be around 20%. So big advances there. I'm also very excited bill for some of the work that's coming out in looking at potentially neoadjuvant. So pre surgery, things like chemotherapy and immunotherapy. So there was a wonderful study that was presented at our big American Society of Clinical Oncology meetings. And actually, the lead author or President presenter on that study was one of our colleagues from Montreal, Dr. Spicer, and he collaborates actually with our own Hamilton surgeons, so we know each other well. And they looked at the combination of chemotherapy and immunotherapy, just for a few treatments, with the plans of then taking these patients for surgery. And it was a highly successful approach and may offer an opportunity to spare the need for radiation and save that for later. When I talk to my patients, you know, when you're diagnosed with cancer, your doctor is only dealt so many cards to play. And it's my job to try to play each one of those cards to the best of my ability. And so when I can reserve a card back and keep it for future, that's a really important advance moving forward. And so even patients where they may not have been in a situation where a surgery looked possible, probable we're seeing such dramatic downstaging that all of a sudden surgery may be playing a bigger role in stage three than it ever has before. So I'm really excited to see how this evolves, I really think this is going to be the biggest change in my world in the next five years.

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I sort of skipped over what you do after people have surgical resection of their cancer and, and have prognostic features that suggests that they will recur have a high probability and of course, we learned that adjuvant chemotherapy with a couple of platinum platinum based regimen was helpful that things are evolving even there, depending on your your tumor markers. And also depending on whether you might be a candidate for immunotherapy, most recently, that seems to be a yet another exciting area and change in practice.

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So you know, when we think about early stage lung cancer, I mean, that's the hard part about lung cancer is if you compare us to some of the other early stage cancer diagnoses, like breast or colon, even when tumors are quite small and small in our realm is three centimeters or less, or just over an inch. It's not very big in the grand scheme of things. When you look at a tumor of that size, and either breast or colon cancer, the chances of that person being cured and alive five years later is well over 90%. It's a very highly curable situation. In those two situations. If you look at lung cancer, even when we remove very small and early cancers, the chances of someone still being alive and disease free five years later, is in the 70 to 80% range. So you know, still very good, but less. So we've been looking at ways to try to impact how do we help improve the survival of this group. And one of the ways that we improve the survival of the group when people's tumors are just a wee bit bigger, so more than four centimeters or whether local lymph nodes are involved, the little filters that we have in our body that are important for your lips, your immune system, we offer those patients post surgical treatment no different than we do for breast and colon cancer where we offer them chemotherapy, we've historically often offered around three to four months of chemotherapy. But we've now had two big clinical trials that have come out one in that driver mutation space and one in the immunotherapy space, where we have seen significant improvements in the time before the cancer recurs. It's still too early to know if we're actually seeing people more people cured by the strategy. But we now know that people who have those EGFR mutations, there's an opportunity to give them a tablet treatment. And patients who we can see in their surgical specimen are fighting off the immune system, we now have a Health Canada approved immune based treatment that we can offer after completion of chemotherapy. And there's three more big clinical trials, including the one that was led here in Canada that we'll follow to try to inform or reinforce more of that data. It's still a personalized approach. We don't do either of these things across the board, we look at that pathology and decide who's going to benefit from these different strategies.

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So across all stages of non small cell lung cancer, we've got these important advances. And it's probably important that we underscore to the audience that we've been talking exclusively, I think about non small cell lung cancer. The other type of lung cancer is small cell. And we used to see it as the chemo sensitive disease, the one that we saw the best and quickest responses to chemotherapy and those were the cases that encouraged you in the clinic and the OH older days now you have all the advances in non small cell. And advances in small cell been more modest, I would say. But even there there's been some change in some impacted immunotherapy.

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Absolutely. So we now have Health Canada approval to combine chemotherapy and immunotherapy in these small cell patients. And there are exciting trials looking to try to build on that work. In the in the in the patients who have locally advanced small cells so not spread to other parts of the body, where we're investigating whether or not doing immunotherapy after chemotherapy and radiation, those patients might provide benefit. So it's slower going here. These tumors are very bright, the small cell tumors, they they figure out how to get around are widely ways very quickly. But we now have immunotherapy approved. And there's even a new treatment in the second line setting that's coming to play. So there has been some movement in small cell in the last couple of years to Well,

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I love your enthusiasm about treating lung cancer, it's really important to bring that enthusiasm to lung cancer month in November. And maybe just in the final minutes, you might talk a little bit about where you see the field going, maybe the clinical trials that are going on at the Juravinski Cancer Center. Absolutely. Thank

36:16

you, Bill. You know, like I said, we have seen advances across the board. The other one we haven't talked about is Mizo thelia. It's a cancer of the lining of the lungs. And we've now had an advance in the most difficult to treat type of mesothelioma, where we can use immunotherapy to treat those patients and we've seen a significant improvement. So that's a very exciting advance. If I look at what we're offering our patients here in the Hamilton region, we actually have a whole portfolio of clinical trials. We have clinical trials that are looking at some of the targeted therapies like EGFR and trying to improve upon the current standard. We have multiple trials in the frontline stage for space. I'm actually really excited because we've got one that's a combined immunotherapy for those patients who already show us that they've got a sensitivity to the immune system. But we know it doesn't cure them. All right, only about 30% make it to five years. And I'm greedy, I'm now very greedy Bill and I want to do better. And so I'm one of the the international leaders of a trial looking at the combination of that standard drug we use in that space, a drug called Pember lism AB with another immune based drug called a tigit inhibitor. And so we've got a trial looking at that. And it's actually really exciting in the Canadian context, and you'll appreciate this bill in your prior role. But they've actually looked at it in a combined formulation. So instead of infusing one drug after the other, they've mixed them together so they get infused into the IV all at the same time, which is better for our healthcare system. We've also got another trial looking at improving for those patients who are using chemotherapy and immunotherapy and adding an additional immunotherapy to that space that looks to be beneficial. It's called a LaGG, three inhibitor. And then I've got multiple trials in the space where where patients who don't benefit from the frontline setting. We've actually got some combination immunotherapy trials, some exciting trials looking at this strategy called antibody conjugates, where we're either pairing chemotherapy or radiation and it's almost like a smart bomb where the antibody is targeting the treatment to the individual cancer cell. And when that antibody lands on top of the cancer cell, the cancer cell opens its arms and brings that in and it brings you to the chemotherapy and radiation in it's a little bit like the Trojan horse, right? We knock on the door of the cancer cell and Incans the the sneaky radiation or chemotherapy that's then released in harms that cancer cell. So if we don't have a driver mutation or something to target we can use our Trojan horse approaches to to come and attack the cancer cells from within. We've also got many early phase clinical trials looking at new targets. We've got an actual trial we've got a few trials that we're looking at in any spaces. We've got a post surgical trial looking at a novel immunotherapy, we've got a trial in stage three that we're looking at trying to improve that world there was some very exciting data I'm sure you saw it bill at at World lung and ESMO looking at combining on the post stage three setting and so we're going to be working with that particular space. So lots of excitement in the lung cancer space. I lead the portfolio of trials that run out of the Juravinski Cancer Center and at any given time, we've got upwards of 100 trials across all the different diseases where we're trying to make an impact on improving the treatments for cancer patients. So for those of you who were from our area Yeah, we always would encourage you there's we've actually got a website where you can reach out to us or ask your physicians to contact me. And I'm happy to connect you with the right person who might be able to talk to you about clinical trials in your space. I personally am working on some biomarker stuff, I really am excited for this liquid biopsy stuff. So that stuff I toy with on the side, we're looking at putting together a Hamilton program to try to do liquid biopsies early on in the journey. So that we get that information as quickly as possible. That's one of the difficulties right now is I want all these tests. But to get all these tests, that takes time, and that can be a very scary and frustrating part of the journey for patients. And if we can do things to make that unknown zone, go faster, so that we have a plan that we can put in place. That's better for patients and families and doctors all combined. So we're going to continue to work on some liquid biopsy program opportunities as well. Wow,

41:00

that's an awful lot of activity, an awful lot of different research projects, you're shepherding through love it, Bill.

41:06

That's why we do what we do. Right isn't, you know, I want I want more tenure survivors. I got my first taste of it when I was in training, and I'll never look back. Trying to help cancer patients along their journey is, is what I love to do.

41:21

Well, when we last talk, we were talking about clinical trials and was on our radio show. And as a result of all your enthusiasm for clinical trials, many individuals called the radio station wanting to know more on how to get in touch with you so that this will have the same benefit.

41:38

Do you want her things she here we are probably two years later, and she's still in remission from her lung cancer. She's been off treatment for almost four years now.

41:47

That's wonderful. Well, I really love and the opportunity to talk to you, you're so enthusiastic, and I'm sure that's communicated to our listeners and should lift their spirits if they're struggling with a diagnosis of lung cancer. And for those of you who are just listening out of curiosity, to be aware that there's been these tremendous advances against one of the most common cancers, and then one of the most deadly cancers in the past. This is kind of indicative of the progress that's being made across the oncology field. And I think there's that's one of the reasons I want to do a series of shows on advances in cancer. So a previous show you heard about breast cancer with Dr. Shawn Mukherjee, and we'll be doing one shortly with Dr. Sebastian hunt, also from the German ski Cancer Center on prostate cancer. But this has been a wonderful exchange. Dr. Jergens with you and talking about lung cancer, you're so knowledgeable, so enthusiastic, and he's such great analogies, and I won't forget the domestic tourists quickly. No wonderful way of thinking about how tumors evade the immune system. So I think our listeners will have really enjoyed this conversation. I want to thank you, and also thank the cancer assistance program for sponsoring and along with the Hutton Family Foundation. So thank you for joining us, Bill for

43:03

inviting me and thanks, everybody for taking time to listen, especially with lung cancer awareness month.

43:08

All the best take care now.

43:12

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