

The First Line of Defense - Episode 3 Transcript
Kenner Family Research Fund

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My personal experience with pancreatic cancer is I reset my career into health care and patient advocacy after my father was diagnosed with pancreatic cancer, and I experienced that as a family member. Watching that take place and realizing all the places where we can get better at diagnosing and treating the disease. This is The First Line of Defense - Primary Care Clinicians and Early Detection of Pancreatic Cancer.

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This podcast is brought to you by the Kenner Family Research Fund, focusing on collaboration and information sharing as a way to make earlier interception of pancreatic cancer a reality.

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It is critical for US primary care clinicians to keep at the forefront of our mind pancreatic cancer. When people present with this constellation of potential symptoms and risk factors. I'm Doctor John Hallberg, a professor in the Department of Family Medicine and Community Health at the University of Minnesota medical school. I'm also a clinician and the medical director of the University of Minnesota Physicians Mill City Clinic in Minneapolis.

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So in primary care, we're always talking about preventive medicine. You know, we want to prevent things from happening. And when we can't prevent something from happening, then it's all about detection. And we're talking about detection. We want early detection. And really we want the earliest possible detection. My personal experience my father was diagnosed in the early 2000. And so he actually presented with jaundice but had been losing weight.

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My name is Willie Hoos. I'm advisor to the Family Research Fund, and I have been working in patient advocacy for the last ten years in pancreatic cancer. The jaundice is a relatively late event. As the tumor grows enough to block the output from the liver and causes backup of the bile, and then that causes the jaundice. So he was fortunate enough where his tumor grew in a place that blocked that flow early.

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So he got jaundice and turned yellow really quickly and was fortunate enough to have surgery and caught it early. But back in that era of treatment, the treatments still weren't good, and even

that early diagnosis didn't have a as good of an outcome as it does today, making the early detection even more important than it was back then.

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My father like to tell the story about. They lived in a small town in South Carolina. He had the surgery done at a large center back up in Chicago, where they had where we had all grown up. And six months after, he's walking through the small town in South Carolina, and he ran into the physician who had diagnosed him, and he said, you're still alive.

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And, you know, that's not the comment you want from your physician, right? But I think that was 20 years ago, 20 years out from my father and 20 years into the future. I have a lot of hope. I mean, I think the outcomes have been improving. The prospects are have improved the last 20 years, having a of Family Research Fund and Panchen and all the researchers who are working on early detection, the fact that those efforts are going and there's progress being made, that's that's more than hope.

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That's evidence of progress. And I think it has the opportunity of accelerating and really finding some things to implement soon.

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Here's Doctor Sursesh Chari to speak more on the future. At this point, I think that's the biggest hurdle we have is so what? What is the advantage of finding pancreatic cancer in this patient? You're not going to be able to do anything for him anyway. So that nihilism about pancreatic cancer is the other piece that makes it harder.

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My name is Sursesh Chari. I am a gastroenterologist with an interest in pancreatic diseases. I started my career at the Mayo Clinic in Rochester, and spent 20 years studying the connection between diabetes and pancreatic cancer, and have continued to have an interest in early detection of quality cancer. For the past three years, I've been at MD Anderson Cancer Center in Houston, Texas, and continue my work on early detection of pancreatic cancer.

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We believe that the earlier you diagnose pancreatic cancer, the more therapies a patient can get, and the more likely the patient will do better. And there's enough data to support that. The mindset regarding the dismal outcome of pancreatic cancer also needs to be worked out, and education has to be there to bring home the point that early detection will lead to better outcomes.

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The goal of Early Detection initiative that is sponsored by Pancreatic Cancer Action Network is to show that intervention in nuance a diabetes will detect pancreatic cancer early, and the

interventions that are used in early detection initiative. I'll call it EDI for short, are our first. The application of the n pat score. The N back score stands for Enrichment of Pancreatic Cancer and nuance, diabetes, and the score is based on the person's weight.

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The rate of rise of A1C, or glucose, and the change in the weight of the patient. Using these three parameters, a score is calculated and the first intervention in Eli is to stratify patients based on their impact score. The second intervention is a CT scan, and so those who have a high impact score are invited to undergo a CT scan.

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And the goal of EDI is to show that if you take patients with nuance and diabetes, apply the impact score and those who have a higher box score. If you do a CT scan, you can detect pancreatic cancer earlier that would otherwise happen.

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It's especially important in pancreatic cancer to identify it early because normally unfortunately, by the time it's identified for the vast majority of people, it's too late. Hi, my name is Scott Nelson. Early detection is key with pancreatic cancer because if it's not caught early, it involves itself with other organs in the body and makes it impossible to have the surgery.

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And the only way you can really get rid of pancreatic cancer is through surgery. So the whole goal is to get to the tumor, to the spot where you can have the surgery. And if you don't catch it early, it's incredibly difficult to do that. And that's why the survival rate is so low for pancreatic cancer. Currently, I believe it's 12%.

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The biggest question is if we remove the cancer and develop a vaccine to the cancer and give it back to the patient, then can we prevent the cancer from coming back? And there has been a paper in nature which just does just that. And the company that developed the Covid vaccine developed an RNA vaccine for pancreatic cancer. And I did fly to 16 patients and a half the patients.

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It made a huge difference in terms of recurrence of the cancer. So I think that there is tremendous potential in vaccines for prevention of recurrence of pancreatic cancer. The question of vaccines for prevention of pancreatic cancer in the setting of high risk patients. And that is another area that would have to be looked at. It's just that the number of cases of pancreatic cancer that occur in familial setting is not very high.

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So to prove the efficacy, we'll need a large number of patients. But there again that has been preclinical work in that area. Suggesting that vaccines would help is just bringing it to clinical

use. There was a paper in Nature Medicine which used AI on electronic medical records and came up with an approach that identified high risk patients.

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So there's a novel high risk group identified through AI that, if validated, would be, something like nuance, a diabetes. It would be another high risk group. Finally, in finding the lesion, there are now a number of groups looking at these so-called negative CT scans, like six months before the cancer. That pancreas appears normal on CT, but an AI technique called radiomics can be applied to this pancreas.

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One of the big applications of AI is in the field of radiomics, which is a science of applying artificial intelligence to images obtained through CT scans or MRI or other imaging techniques. And there was a study from Mayo Clinic which showed that all the CT scans that had a negative CT, the AI already omics could pick up almost all of those cancers using Radiomics.

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So AI appears to have a role in almost all aspects of early detection, and we believe that all of these will come into fruition sooner or later and will advance the field. The CT scan captures a lot of details about the physics of whatever it's imaging beyond what the eye can see and for example, the texture. There are a number of characteristics within that image that are not necessarily captured by the human eye, but are available as data in the images of the CT scan.

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Now, this machine uses those pieces of information, and it is thought that this is pancreatic cancer. This is chronic hepatitis. And this is normal. So it sees those same features in these various diagnoses. And then it uses all of those features and says, okay, I can tell this apart from this. And so it's using information that is not necessarily visible to the human eye, but is present in that scan itself.

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And it then hones in on an area and says, okay, this looks like pancreatic cancer. And the beauty of that study was that at the time, six months before, and you can't see anything, it's able to tell you there is a cancer. And the cancer is accurate. Exactly in the same spot as Babae. I picked it up. Fascinating to see that it picked up the exact location where the cancer was subsequently seen, so we really believe that it is able to do it.

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So this is an exciting development that the enhanced CT scan images are going to be very useful for early detection. We also don't recognize that AI is also being used by biotechnology companies and by biomarker development companies to develop the algorithms for the biomarker itself, and so that has hidden applications AI and biomarker development. Here's William, who's to speak more on biomarkers.

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A biomarker is something in the blood or in some other part of the body that can be measured, that would show signs of the tumor. So a direct evidence that the tumor is growing and shedding DNA into the blood, for example, or changes in the body's immune system, that might show a pattern that there's a there's then exposure or ongoing tumor that's perhaps growing.

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Some of the tests that are out there are looking at DNA or changes in DNA in the blood and looking for evidence that cancer or pancreatic cancer exists. Studies like the early detection initiatives, ongoing study that will show what combination of biomarker blood based tests and imaging can help find the tumors earlier. So the techniques for actually finding tumors are increasing.

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There's now several diagnoses, stick tests that are in various stages of being proven to help identify a cancer earlier. Some of those are already available and others are becoming available or being better validated every year. So I think there's a real opportunity to have a blood test and a diagnostic workup that becomes much more systematic and much more accessible.

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A comment about where the biomarkers might fit in a diagnostic strategy is no biomarker is perfect. So there's always some amount of false positive or false negative. Meaning there's a chance that if the blood test shows that you have a risk of the cancer, there's still a chance that that biomarker was giving a signal that was based on some other thing that wasn't cancer.

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So nothing is going to be perfect. But when you start combining something like new onset diabetes, which in one way is high glucose being a biomarker, that's not just from pancreatic cancer, it can be from other things. But then when you combine that with something else, DNA that matches a pattern of pancreatic cancer, more so than an average diabetes case.

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That's the type of combination of things that will increase the ability to find pancreatic cancer early.

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So five years from now, I think the diagnosis of pancreatic cancer, it is healthcare stuff can move a little slower than we all want. So five years seems right around the corner. But so five years from now, the diagnosis of pancreatic cancer I think is going to be much more data driven and informed. And I think I believe that the nuance that diabetes study by EDI will have results showing that looking for new onset diabetes and looking for weight change, combined with either a blood or urine test and scan, will be a very reliable way to diagnose a significant portion of pancreatic cancers.

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Earlier. I hope that that algorithm of looking for diabetes, looking for weight change, awareness of the other symptoms, and having some of these biomarker blood tests available. I think in the next five years, all of those tools will be much more available and top of mind for clinicians to use routinely. And that will have a dramatic impact on the portion of pancreatic cancers that we can diagnose earlier and get better outcomes because of it.

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And the clinician side, yeah. It seems so simple that you just deeply listen and you read the room and you read the patient. But we all know that's not that easy. We're distracted. We're human. You wish that everybody had the time and, you know, to just sit and listen and isn't completely distracted by typing on the keyboard and, you know, entering things in the electronic record.

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And that's not always the case. EHRs are chaotic places. Clinics can be chaotic places, but it's on us. We have to figure it out. And when I knock on that door, you know, when I go see somebody behind that exam room door, it's like theater, right? Curtain up. I have to put whatever's on my mind aside and be present and really listen to this patient that's in front of me.

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And I think if we all did that, if patients sought care when they needed care, and the clinicians, you know, were there to help them and listen. And, you know, it's a little bit of a detective novel, detective work that we have to do. Put that hat on and we can solve this. It actually is fairly simple. And that is you listen, you need to be deeply listening to your patient.

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I know this is a hard and chaotic setting, but you need to read the room. You need to read the patient. You need to read the family. Are they in distress? Is there a look of fear on their face? They know themselves better than anyone else knows, and if they're telling you that something is wrong, you need to listen.

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And then you need to look and you need to look at the body language. You need to look at the eyes, look at the skin, do your exam, get your lab tests if necessary. Get the imaging and it comes together. I mean, it sounds so simple and I know it's not, but I think that we just need to be present.

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And this is why I love primary care. And so I love family medicine. I, you know, in my better days, I say that I get paid to listen to stories. But by listening to stories, you make diagnoses and you make connections. We've heard a lot about important research in the field, but it really comes down to listening to the patient.

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Primary care clinicians have an important role to play, but it's not easy.

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Thank you for listening to this episode on how pancreatic cancer screening is being transformed. There is hope for the future of early detection with biomarkers and AI. Not only is early detection increasingly more feasible, it makes a significant difference in survival. In the next episode, we will hear a conversation with Chris Sander, a computational biologist based at the Dana-Farber Cancer Center and Harvard Medical School.

00;19;11;22 - 00;19;23;02

He explains his research on how AI and machine learning are being used to help with early cancer detection.

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Thank you for listening to The First Line of Defense - Primary Care Clinicians and Early Detection of Pancreatic Cancer.

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