Introduction and Speaker Background

Welcome once again to the Prostate Cancer Summit. I'm your host, Doctor Geo Espinosa. And it is my great pleasure to introduce to you Doctor Butala. Doctor Butala is a scientific co-founder of Catch Bio, a company dedicated to empowering individuals to quantify their cancer risk and take control.

Doctor Butala is also a physician scientist at the University of Colorado, where his research focuses on using advanced analytic methods on large health care databases.

Data sets. And as a practicing cardiologist, he has received numerous national awards for his innovative research, clinical acumen and teaching ability, and his work has been published in leading medical journals, including the New England Journal of Medicine, the Journal of American Medical Association, or Jama, and circulation.

Previously, Neel was on faculty at Harvard Medical Center, excuse me, Harvard Medical School and Massachusetts General Hospital, has worked for Boston Consulting Group on health care engagements and served as its executive director of Free Have a Free clinic.

Neel holds a A. B. magna cum laude in economics with high honors from Harvard College and MD. Cum laude from Yale School of Medicine and the MBA from Yale School of Management.

Neel completed his clinical training and internal medicine, cardiology, interventional cardiology, and structured heart disease at Massachusetts General Hospital.

Neel, what a prick. What a pleasure to have you on. And my goodness, what a resume. So impressive. Thank you for being on. Thanks. It's a pleasure to be here with you today.

Talking. How do you go from northeast Cambridge? Yale, which is New Haven, and then you end up in Colorado. They must have given you a nice, sweet deal there, What is that? Oh.

Were you looking for a different piece of life or what happened? Now? That's a pretty interesting move. That is definitely a big part of it, I think. You know, the northeast is great.

There's phenomenal, you know, medical and research institutions out there. But I think Colorado is different pace of life and frankly, a more balanced perspective on things.

And I think that's been really eye opening for me to how, I mean, prioritize, you know, things that matter and then really work on things that can help people.

So it's been good to have that opportunity in Colorado. It's a different yeah, different mindset altogether. Yeah. We were talking before we started recording as it got it.

Would I be able to handle that? I guess it would just take time or. And you adapt and then you're like, oh, this is so much better.

Why Personalized Cancer Screening Matters

Maybe now you can't do you have a hard time moving back to the northeast? Perhaps if you if you wanted to. So I've got I'm from Tennessee originally, so I kind of get different pieces of life. And every, every piece has its unique advantages.

So regardless, happy to be here right now. Enjoy it. All right Neel. So the big elephant in the room. Let's just talk

overview canter. The sooner you catch it the better it is in almost all cancers right.

Particularly lung cancer. You know, the big ones pancreatic. And we are, you know, behind in that process typically when you catch most cancers is a little too late.

And I think that, you know, there's some pretty interesting liquid biopsy technology out there as it relates to that. I am in favor of the patient having, you know, some level of control of their own health and kind of, you know, quantifying and, you know, that's why I'm a wearable person.

I have a bunch of them. I just like to know my numbers as it relates to heart rate variability, heart rate, blood pressure, everything, you know, GCMS, everything.

We are we are far behind as it relates to cancer. How do we how can we monitor our cancer risk? So what a great story. There is a release to cancer and then we'll dive into prostate cancer.

Yeah, it's a great question. I think, you know, there's so many resources been dedicated to treating cancer once it happens. Right. But not nearly as much dedicated to catching it.

Right. Getting it early screening. And, you know, there's guidelines that professional science have put out and physicians follow that. You know, when you reach a certain age, you get a colonoscopy, when you reach a certain age, you get a mammogram.

And really that's, applies in a population level. I think those are totally optimized to, to catch, you know, maximize the resources towards catching people when it matters.

But I think on an individual level, there is wide variability in cancer risk. Right. So 250 year olds, you know, both recommended for colonoscopy may have vastly different cancer rates, right, where one of them is highly unlikely to have a positive test result.

The second 1st May be very likely to have a positive test result. And if you find something, it's probably going to be cancer. And so I think in generating, you know, population level guidance, we've kind of missed, an opportunity to really individualize, you know, cancer screening and really personalized risk assessment.

And that's what physicians try to do in clinic. But on a population level, it's just really hard to say, hey, look, you're a 40 year old, probably has a cancer risk, of the 60 year old, maybe you should get screened earlier.

Or maybe you're a 60 year old who is pretty low risk given everything else going on. If you have other competing priorities, maybe this is a lower priority for you compared to, you know, improving cardiovascular health, other things like that.

So it's really an opportunity. You know, I think a missed opportunity really an individual is, you know, personalizing, you know, cancer screening and risk assessment really.

Neel is, I'm going to ask a, a question that may sound a little silly or even provocative. Is ignorance bliss? In other words, you have these MRI full scans right there.

Oh, you may have something here. And sometimes that something is nothing. And now this thing is in your head and provokes anxiety. You get some sort of technology that tells you, you know, you are at increased risk of prostate cancer or colon cancer or lung cancer.

Do I want to know that? And if so, why? So it's a very individual question, right? So some people may say ignorance is bliss and they want to keep doing what they're doing. And that's totally fine.

That's a very, you know, that's a very, rational decision for some people. Some people would rather know more. I think you said you like you're like a quantified self type person.

You probably want to be on the side of, of, you know, getting all the tests. If that's what makes you happy and gives you fulfillment, reduces your anxiety, right?

Some people feel better and less anxiety with ignorance, and people feel less anxiety with some sort of concrete, you know, knowledge of a test result.

And that being said, I think you alluded to the possibility of false positives. And I think that's you have to be mentally prepared that, hey, if my scanner or liquid biopsy or whatever other test you get, does show positive result, what's the likelihood actually do have cancer.

And that varies by an individual. Right. So 250 year olds, one with a really high pretest probability as we call it, the probability of having cancer, given everything else going on, can vary significantly.

So let's say 150 year old, if I get a positive PSA, say odds are it may be, prostate cancer, another 50 year old, you get a positive PSA. Odds are it's probably not prostate cancer.

It just depending on all your other risk factors taking. Think about you as an individual. You know, the impact of a test result can be very different and even that same test results.

So I think people need to just be informed. Right. And that's what I'm super interested. Like, you know, if someone goes through a risk assessment like what we we'll talk about in a bit and realizes, hey, they're super high risk for a particular type of cancer.

It may they may be more interested in doing a more invasive screening versus someone who's kind of reassured that, hey, look, I'm probably in the lower end of risk here compared to other people my age and my sex and my my gender, and my, my race.

And so maybe I'll be less likely to do this screening. And so I think really empowering people with that knowledge of what their individualized cancer risk is, I think is super important to them, informed that decision making.

Right, because it's very individual. And I think it's important to realize that, hey, even if you are high risk for something, it's totally rational to not get screened or if you're super low risk, it's also totally rational to get a more aggressive screening regimen as long as you're mentally prepared that, hey, look, odds are, even if this is positive, it's not real cancer.

And then as long as you're sort of informed, I understand that. So I think it's a very individualized discussion, which frankly, it's hard to have, you know, a primary care doctor visit for 15 minutes.

So that's why, you know, that's why it's it's important to get that message out. So many elements to that. Right? So, you know, I, I deal mostly well at this point, 100%.

My clinical work is with men, and men just function differently. And we know men on average just don't go to doctors to get screened for anything.

Prostate Cancer Overview and Risk

Some of them think ignorance is bliss until they get diagnosed and there's like, oh God, what I should have done is, you know, maybe I should have gone more often.

Maybe. Right. You know, but when they got a heart attack, they get a heart attack or they get prostate cancer. Man, I should have had my PSA done ten years ago, and I never did those kinds of things.

So I think certainly with men, which I, will be the primary viewers of this summit, pretty interesting to how they function, how we function. I'm part of that group to some degree. And, and to motivate them to you know, ignorance may not be, you know, bliss and you want to know.

And the other thing, Neel, I wonder what you think of this. I mean, you live in Colorado now. I mean, I have to assume you I mean, you still work hard and you still do what you need to do from a clinical research perspective.

But your stress level might have, you know, reduced. And there's some benefits there in terms of your health and quality of life all together. When we are at a, you know, when when we are at a higher risk of a particular disease or condition, perhaps you say, okay, you know what, maybe I am moving to Colorado.

This is too stressful here. Or, you know, I'm going to eat better. You know what? Exercise. You know, I've been meaning to exercise, you know, now I'm going to turn it up.

Maybe there's some element there that motivates the person to, take more care of themselves. Yeah. And I think recognizing that, you know, even if you were thinking about cancer screening or not or, you know, I think I agree with you in general, in the US population, people are generally, not as proactive about screening for most cancers as they could be.

There's a huge gap there of just, you know, what's totally evidence based people may not be getting in terms of what's what's rational and what makes sense.

But beyond that, let's say you do get an abnormal test result or let's say you are diagnosed with something like prostate cancer, which we can talk about in a bit, where, you know, it's a slow growing cancer over time for many people, if you're had it really early, there's definitely things you could do to take control, right?

So even if you are at a high risk of getting prostate cancer before you even diagnosed or screened, there's things you could do, you know, modifiable lifestyle factors you could do to decrease the risk of developing prostate cancers.

And there's very specific biological reasons. And I'm sure you and your you and your viewers know as to why prostate cancer specifically is very modifiable by these things.

And then beyond that, even if you are diagnosed with, you know, a very, you know, early stage prostate cancer, there's things that one can do to reduce the risk of that growing.

And so I think, you know, people think of cancer. It sounds really scary. But really there is a lot one could do to take control and really reduce your risk of developing cancer.

And then even if it's something like a low, low grade or early stage things you could do to then modify the trajectory. And again, catching it early is super important.

Rather than, you know, the false assumption of ignorance is bliss and then you're too late. And then again, especially younger men, oftentimes when they're diagnosed, it is, you know, metastatic.

And that point you know the survival is is very low. So I think, you know, catching it early and then understanding that, hey, there's things you could do.

It's not something totally out of your control. You know, prior to diagnosis, and even if you are diagnosed, there's, there's a lot of modifiable action there.

All right, let's dig in. Prostate cancer. Give us a little overview. What's what's the prevalence. What how does it you know general overview on prostate cancer.

Who gets affected. How many things like that. So doctor gee I'm sure you and your viewers are probably more of an expert on it. At this prostate cancer summit.

Then then I can speak to, you know, bigger picture, but but I do, you know, my understanding and and I think the general medical understanding is that, you know, most people, the vast majority of men, if they live long enough,

we'll have some abnormality that will lead.

That looks like prostate cancer. Autopsy studies of 80 and nine year olds, you know, 70% of them have it, depending on the measure, have some level of prostate cancer.

So more men actually die with prostate cancer of another cause than of prostate cancer itself. That's just how human biology ends up being. That being said, there is a substantial chunk of men who die of prostate cancer.

And oftentimes these people are younger. Right. And these people have substantial years of life. You know, high quality life that are lost. So that's sort of emphasized the importance of screening.

And that's why I really in the last couple of decades, we've been screening very aggressively with or when we've been screening with PSA. So the level of aggressiveness, it's an eye beholder.

But so there's been more screening and more diagnosis, and we've realized that a lot of these people will die, you know, of something else in that prostate cancer.

But there's still an opportunity to reduce the risk of that cancer progressing, where even people who have not been screened, you know, things you could do to modify your risk of developing it.

So that's something I think overall, kind of the trajectory of prostate cancer has happened in parallel. Obviously, people diagnosed with prostate cancers, rapid improvements in therapy like therapies have evolved significantly to where even if you're diagnosed at a later stages, your survival can improve.

But it's still not great like 30. I think the latest I heard is like 31% of people with metastatic disease have, like, I think, a five year survival. Although again, that's don't quote me on that number because, It's pretty good.

But but bigger picture, you know, there's a huge chunk of things you could do to take control. And a lot of these things like diet, exercise, that are pretty standard, but also some things that are kind of surprising that we've noticed in our research and happy to a little more about that. That too.

But yeah, there's a wide. What I was going to say is, you know, prostate cancer. Yeah. You're right. I mean, that's kind of what I do daily. And it's such an interesting, disease because, yeah, most people die with it.

All you need to do is live long enough and have a prostate, and you'll have you'll have it, you can reduce the risk, but you have it. But that that that patient who comes in with a very high PSA hundreds, 200, 1000 who you know, now this is a whole different beast.

And so then there's about 32,000 men die from prostate cancer. So there again, particularly in that higher risk patient not only of getting it but of getting the more aggressive type.

If we can catch that early, that's a game changer. Yeah I totally agree.

How Catch Bio Quantifies Cancer Risk

And that's actually part of the reason I co-founded catch, which again, we can talk about, but it's generally catch bio is a company that allows you to quantify your own individual risk of cancer.

And it's we look at, you know, 19 different cancers for women, 70 different cancers for men, 21 cancers total. And really look at, you know, based on the available literature, what are the key factors that drive cancer risk.

And a lot of these are, you know, just like genetic or, you know, non modifiable, but a large chunk of this cancer risk is modifiable. Things you can change.

And so based on, you know a risk assessment it's like a big survey right now. You could fill it out. It takes like

maybe 15 or 20 minutes. You can really get your own personal quantified lifetime risk of every single cancer, every single major cancer.

And then you're all cancer risk. Right. And so, you can then be empowered with that information to say, you know, what am I going to do about it? Right.

You can say, well, here are some things that I can use to do to reduce my cancer risk, right. So maybe I'm a high risk for lung cancer. Well, here's some things I could change. Or maybe have a surprise, a cancer.

Maybe I should eat more soy or do certain lifestyle interventions exercise more. And there's really specific things things can people can do for any individual cancer to then take action to reduce that risk.

So we do a catch is we quantify everyone's lifetime risk based on a risk assessment. And then we provide, you know, action items you can do to reduce that risk.

In addition, by giving you your risk, we compare you to the average person. Right. What's the average person's risk of prostate cancer? The average risk bias prostate cancer across population.

And where do you stack up? And if you are sort of on the higher end, maybe you should want to get screened at an earlier age. Or maybe if you're in the lower end, you can sort of wait until the guidelines kick and your doctor kind of Bugsy about it.

And so it really empowers you with information that then allows you to, to then figure out, you know, do I want to get screened more proactively? Do I want to do these things to reduce my cancer risk?

So, doctor G, as you said, you know, those younger patients and it's really heartbreaking. We end up having really advanced disease, more aggressive forms of cancer.

And a lot of these people would score really high in our risk assessment. Right. If they were to join, you know, catch they fill these things out. They realize, hey, look, I have a positive family history.

I have, you know, maybe someone in my family has some genetic mutation. You know, maybe I'm doing all these lifestyle things that may not be the healthiest, you know, in to get, you know, all together when you interact all these terms, it ends up actually being a substantially higher than average cancer risk for an average, you know, 35 year old, in which case, hey, look, maybe I should be a little more aggressive by screening and things like that so that I think we really want to empower people that information to give them, you know, individualized knowledge about their cancer risk.

And I think for prostate cancer in particular, there's a lot of subtleties that I think are important to explore, particularly for young men who are the most likely to we have, you know, worse outcomes with this.

I'm fascinated with catch bio. Maybe we can expand on that a little bit. So I take about 20 minutes, I'll put in my information is going to ask me a series of questions.

How do what how can I be confident that the accuracy of this is it's correct? Is there an AI technology involved in this? Is there a bunch of research that's kind of plugged in together to give you your outcome?

How does it work exactly? And that's actually where my research background kind of kicks in. Where, you know, I have a lot of expertise in predictive modeling, using various different methodologies.

What we did here though, for Catch Bio and in particular our cancer risk model is we survey the literature very broadly. So we looked at the usual sources.

We also use an AI algorithm to find additional sort of sources or knowledge and literature papers that may not otherwise turn up. And then, as best we could, we actually try to model everything together in a large database.

We have a database of about 500,000 individuals that are followed for over 20 years, that, you know, for a research perspective, we're able to model the simultaneous impact of all these factors, right?

So let's say you see a paper that says soy reduces your risk of prostate cancer by 30%. You see a paper that says, oh, you know, increasing red meat, you know, increases my cancer risk by 10%.

Well, if you put well, the people who eat more soy end up eating less red meat and vice versa. So these effects may be overestimate or they may be interactions.

So actually able to use machine learning or AI or you know, whatever technology you want to call it, but fundamentally use advanced techniques to figure out how we can model all these risk factors that have surfaced in the literature over decades together in this data set of people, and then figure out, well, when we think about a holistic person, all these risk factors at the same time, what's the true impact of each piece?

Which ones are the most important? Which ones are actually, you know, not necessarily, in the causal more sort of correlate correlate or have multicollinearity.

So we basically have come up with these models and we run these separately for every single cancer. And then we sort of combine them together. So it's actually a pretty, pretty scientifically advanced approach to it.

We do a general literature review and then sort of joint modeling together and then combine it using, sort of some advanced statistical techniques, which we don't have to get into here.

But essentially no one's been able to do this before. We're actually, drafting a paper hopefully for publication soon and to really, you know, get this out there, too, because we want to make sure that the, you know, the message gets pretty far.

But I think we've used a pretty scientifically advanced approach of correlating the literature jointly modeling everything, and then using it in space.

This is really quantify an individual's lifetime risk of cancer. So I think you know that you know that putting all that together, I think we have a pretty scientifically advanced model, which I think, you know, has we've kind of proven out in a, in a large database already.

So from a prostate cancer perspective, so is the individual putting in their PSA, their family history, their genetic risk. If they have Brca2 mutation, what are they putting in.

So so yes, all of that except for PSA right now. Because we actually want to be pre k. Right. I think once you get a PSA, in some sense you've already made a mental decision.

You've already kind of been in some sort of algorithm. You've met some criteria, some doctor, someone's told you we almost want it. And there's risk models out there for people that incorporate PSA, we actually want to be upstream of that and really talk to the average person who wants to see, like, do I even get a PSA that's often the most, you know, anxiety provoking decision that a male has to make.

Right? And so, we we're actually not incorporating PSA right now. That being said, if you input your PSA, that certainly helps better quantify your risk. You know, as you get further right.

There's also risk trends. We have in our platform. So PSA can certainly help refine and narrow down your risk. But really right now it's meant to just inform that first decision for that initial screening test.

And if your PSA is super high, like I think you should probably see a doctor and I'm not sure you want to be relying on, you know, a platform for, you know, for us to give you that medical advice, frankly.

But I think we want to inform your decision based on what's out there and really educate you on things like, do I get

a PSA or if I get a PSA, what's the next step going to look like, and what's the positive predictive value of that.

And so you really inform as it going into that decision. You know, and I think that actually reaches a much broader swath of the population. You know, as you said, many men don't even see doctors. Right?

So we hope to reach those people who wouldn't otherwise be thinking about things, in this way. People, so is genetic risk part of that information that's asked so if they have a certain mutation and so forth, and if they don't know what that is, do you get them to order a 23 a me or some other test?

Yeah. So if you leave it blank, it just sort of estimates the average risk for that. And so if you put it in there, you can certainly, you know, estimate your risk, but otherwise the population average.

So hey, we can actually deal with missing information pretty well in our models. That being said, we that would be one of our sort of action plan recommendations or screening recommendations.

Hey, consider getting genetic screening. And again, we don't currently offer it. Through our platform, but we certainly partner with 23 and me to then, eventually get that information imported.

Or have you, have you record it? But, there's other services out there, not just 23 in me. But certainly that, you know, encourage, you know, genetic genetic screening.

For sure.

Using Risk Scores to Guide Screening and Action

In terms of so you provide them with a certain risk. Let's just stick with prostate cancer. We know that it's for all cancers. I'm actually very interested from all cancers perspective, not just prostate cancer. Right.

Because men, you know, they get all kinds of other cancers. But let's just say for prostate cancer perspective, they're in a certain risk. And then you say, well, here's some lifestyle modifications, right.

That you can do based on science. You know, I do a lot of, a review of their literature on, on everything prostate cancer, including exercise and, and diet.

I find that nutrition science is just very difficult to to derive information where you can say, well, no, I can do this. Why? Because it's just very difficult.

It's a lot of variables involved. These are observational studies for the most part. So for example, the meat studies that say, well, meats are bad for prostate cancer, it's typically processed meats.

And when you look at other variables, people typically the typical meat eater has a poor healthy lifestyle or together. When you look at meat eater to eat more vegetables, that's just a whole different trajectory in terms of their risk of everything and anything.

So how would they kind of figure, although, you know, all of that. So so that's actually why we modeled. So just like you, we survey the literature very broadly, and then we put everything together.

Right? So we're able to in a data set of 500,000 people, see what those who eat, you know, a lot of vegetables and a lot of meat compared to those who eat, you know, not many vegetables and a lot of meat.

So we can jointly model the impact of all these things. So what's the impact of red meat consumption? Controlling for your risk of your vegetable consumption, your fruit consumption, your processed meat consumption.

And, you know, 23 different variables. So we can jointly model these things together and see well given everything else, what is what is it changing in one variable?

How is that associated with the incidence of prostate cancer. And that's why I think it's important as you're I totally agree with you. Nutritional science is very challenging, because it's mostly observational studies, a lot of confounding, confounding meaning, you know, one variable associated with another, you don't really see that other one.

So you just kind of attribute everything to that one variable. So we actually account for a lot of that through our modeling and a very, very large, extensive data set, and our machine learning methods to kind of come up with that.

So, you know, I think you hit the nail on the head and the challenge of doing this where it's it's been hard for other people to do this. And so we've been actually been able to do that.

And it's been, very gratifying to see that. Well, you know, I have a small involvement with catch bio. We had meetings with, with Neel, as well, and the CEO, he's CEO, co-founder, I guess, at this point and, it's lovely to see what what's happening with catch bio.

And again, I'm not in ignorance is bliss type of person I want to know. And then I want to take some action as necessary and as needed. Final thoughts on, screening catch bio and how do we learn more?

Yeah, I think, you know, bigger picture. Just the idea of knowing your cancer risk is, I think, super important, right. And especially to motivate, you know, lifestyle changes because I think, you know, whenever people are relatively young, you know, 20s, 30s, you're like, oh, I'm invincible.

Nothing bad's can happen. But really, like 40% of our people are going to get cancer in their lifetimes, right? So we're actually able to quantify your individual risk of cancer over the entire lifetime and show you, hey, if you actually make this change at this age, how much that delta is going to be, right?

So if you look at your lifetime risk, let's say you want to eat more vegetables, right? My, my one year risk is going to go from like 0.1 to like a 0.05, let's say a very tiny change.

But your lifetime risk can actually change, you know, from 30% to 15%, right? If you magnified over the course of a lifetime. And so I really want to emphasize that, you know, joining early understanding of risk early can allow you to make changes early in life and really see bigger picture impacts on your cancer risk.

And beyond that, this helps you also understand your individualized risk, and whether you need to get screened or whether you want to be screened at an earlier ages in a more aggressive time interval, to really catch things early, because that's where things I think make a big difference.

So, that's I think I encourage everyone to at least get informed, about that and join catch. We will I mean, just tactically, I think we'll we're going to launch pretty soon.

And I think if you mentioned doctor talks or if you connect with Doctor Hawkes, we can actually help you bypass the waitlist, get you in early because, as an early adopter, I think a lot of people like you, Doctor Geo or, who watch are probably at that mindset.

So happy to extend that, to you and your, your followers. I appreciate it. Doctor Neel Butala from the University of Colorado and, one of the, co-founders of catch bio.

Thanks so much, Neel, for coming on. And, teaching us about this, I think is going to be a very important tool is going to be a game changer, I think, in the field where it's interesting when you said this is actually pre PSA, like this is way this is to tell you, hey, go, go get your PSA done.

This is I would have never even thought of that. So I really appreciate that. From a prostate cancer perspective and even from an overall cancer perspective I can't wait. Thanks so much.

Thanks. Yeah. Thank you, everyone, for, tuning in again. We're ahead of the game here with the information, with the tools that are available with, the, the information and the experts that are on for this for this summit.

Thanks again for watching. And stay tuned because there's just a lot more to come. Doctor Geo here, signing off. I'll talk to you next time.