Using Testosterone Therapy After Prostate Cancer Surgery Transcript

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Introduction and guest background

Hello, everyone. Welcome once again to the Prostate Cancer Summit. I am your host, Doctor Geo Espinosa, and it is my great pleasure to introduce to you Doctor Helen Bernie, who is a board certified world renowned urologist.

She's an assistant professor of urology, the director of the Male Sexual and Reproductive Medicine Program and Andrology Fellowship director at Indiana University.

She completed her urology, urology residency training in the University of Rochester and completed her two year fellowship in male sexual and reproductive medicine at Memorial Sloan Kettering.

And while Cornell Medical College and New York City to back, we didn't get to connect when she was here. She's an early career, early career editor of the Journal of Urology and an editorial board member of, for the Urology Times.

Doctor Burney serves on the board of directors at numerous committees for The Sims, and that's the North American Sexual medicine organization and is the scientific chair of this year's Sims na fall meeting.

She's also on the I assume that's another sexual international sexual organization organization, medical organization, young Research Researchers Committee and one of the young Urologists of the year award from the American Urological Association this year.

And I would personally tell you that Doctor Burney is indeed a rock star and an excellent male reproductive doctor, all related to andrology, male sexual health, male sexual health after andrology.

And you would say, well, how can a female know so much? It does help when you have three sons and a husband as well, not only in her training. Doctor Verney, thank you.

Thank you for being with us, on this summit. Thank you so, so much. It's such an exciting time to talk with you again. So we had a very good conversation, on my podcast on testosterone and prostate cancer.

We had several conversations with when we met in Indiana at one of the conferences, and, we certainly hit it off. And I was so excited to meet you and to know the work that you do, great work that you do, and you just have a little bit of a different take.

And of course, everything you do is science based. So it's not like you're kind of seeing some hoopla, or even your biases or opinion. Everything you say has a scientific backbone to it.

Maybe our conversation today, we can talk about everything that relates to quality of life in men. After a prostate cancer diagnosis, there are two things that come to mind.

We won't touch incontinence, after something that happens after, let's say, prostate surgery. But we'll talk about primarily two things testosterone and erectile function.

So let's start here. What is the connection? People are still confused. You would say, well, why are they confused? Well, because they're still confused.

I get questions every day. What is the connection of testosterone, if any. And prostate cancer. Take it away now. Really? Good question. So this whole idea that testosterone is bad or that it's like throwing gasoline, you know, on fire for prostate cancer actually originated from a study back in 1941 by Charles Huggins that involved three patients, okay, a total of three patients.

And only one. Did they actually show or say that by giving them testosterone therapy, you saw a rise in acid phosphatase. Okay. So one patient is where this whole premise came from, despite the fact that we can talk later of all the data that that now contradicts that and shows that it's not an acid phosphatase was the PSA of the time.

Yes. Yes. Correct. It was how we measured for any prostate cancer growth. So so testosterone therapy does not. And testosterone in general does not increase or cause prostate cancer.

So PSA or prostate specific antigen is an androgen dependent molecule. So you need testosterone to make PSA. And your prostate your prostate has cells just like any organ in the body.

Those cells secrete PSA or prostate specific antigen.

Testosterone and prostate cancer myths

So the more cells you have, which oftentimes happens in cancer multiplication of cells, the greater the PSA is okay. So PSA is androgen dependent. You have to have testosterone to make PSA.

So if you have very low levels of testosterone then your PSA may be falsely low. And you think that you're in the clear but you may not be. So you know, this is where this comes from, is that when you give someone testosterone and all of a sudden you see this PSA spike, people think, oh, this causes prostate cancer.

It's not that it calls prostate cancer, it's that you have low testosterone. And so your PSA was falsely low. And then we gave you testosterone. And now it's able to make more PSA.

And you see a spike. So so there's many hypotheses and theories about this. But what we do know about low testosterone is that low testosterone causes higher rates of prostate cancer.

Men have low testosterone levels, have higher rates of prostate cancer. They have more advanced prostate cancer, tumor grade stage and volume compared to men who have normal testosterone levels.

We know that large observational studies have shown that men taking testosterone therapy do not have increased risks of developing prostate cancer in comparison to the general population, and we know that even in these large longitudinal studies that have over 10,000 men, there is no association between androgen levels.

So testosterone levels and prostate cancer risk. So it's really just all this misinformation from one study back in 1941 and one study and one patient.

Yeah. So yeah, I mean, so that's a long time to be confused and to, deprive men of such an important molecule. So there is no association between testosterone and the development of prostate cancer.

Is there an association between testosterone and the progression of prostate cancer once you're diagnosed? So again, no. So we used to think like someone was on testosterone therapy.

They get diagnosed with prostate cancer. Oh no. We're going to hold your testosterone now. And now you've got to get your treatment. And now you can never have testosterone again.

That's not true. Again. We see that men that have low testosterone levels actually have higher rates of progression and shorter time to progression, or what we call biochemical recurrence, which is when PSA levels rise again after a definitive therapy like a radical prostatectomy or radiation therapy.

So, again, there's this whole misunderstanding about it. We, we've done several studies. And when I was a fellow, we did a great study at Memorial Sloan Kettering, where we looked at all of these patients under John Mulhall.

Doctor? Yes, under the John Morley, one of the best, one of the best in the business. Yeah. I feel so lucky to train under him. And we did this study of men with prostate cancer, and we broke them into low, intermediate and high

risk prostate cancer.

Those that had low testosterone that weren't treated, those that had normal testosterone, and then those that had low testosterone that we did treat with testosterone therapy and when we even just took high risk patients, okay, when we're just looking at of that group, high risk patients.

So that means patients that either after the radical prostatectomy, they had positive lymph nodes, positive seminal vesicles, positive margins or, you know, Gleason eight and above, prostate cancer.

We found that even when you give guys that have high risk prostate cancer after they've had a radical prostatectomy, testosterone therapy, that looking at those guys that had testosterone versus those that did not, the ones that had prostate cancer with low testosterone had higher rates of biochemical recurrence and progression.

And if you looked at the whole all comers, there was no difference. The group that had testosterone therapy, which you would think if it was true that testosterone causes prostate cancer, they would spike, right?

They would definitely recur. We actually found that there was no increased time to or progression. And again, this is a group of patients that, you know, high risk.

We expect a lot of these patients at some point in time to recur. It's not a question of if they're going to. It's a question of when. And by giving them testosterone, it didn't change that outcome.

And we're having a lot of data now showing the same thought that testosterone does not increase progression of prostate cancer or caused by a chemical occurrence any greater than normal and in fact, protective effect.

All right. Well, another question that, I'm pretending I'm someone from the internet or a patient. Well, doctor Bernie, that sounds great, but I did read that if I if my testosterone is high or if I'm doing TRT, then I'm at a higher risk of cardiovascular disease.

Great question. So luckily we can finally put an end to that too. And that actually came out of two studies back in 2015 and 16, Biden and Feingold. One was in Jama New England Journal Medicine, where they said that giving testosterone therapy caused cardiovascular events.

Well, we luckily now had this wonderful trial that came out last year. I think it was in June or July of 2023, called the Trevose Trial. And that was a trial that came out New England Journal of Medicine, where they took over 5000 men who already had high risk cardiovascular health.

Right. So these were guys that already either had, cardiovascular risk factor or had had some cardiac event, and they broke them up into two groups, one with a placebo.

So a placebo means like a sugar gel or like a fake medicine. Right. So they got something that was not testosterone and that shouldn't impact them in any way.

And then they had a group where they get testosterone gel and they follow these patients for over 22 months, and they found that there was no increased incidence of what we call mace major adverse cardiovascular events in the group that got testosterone therapy versus the group that didn't.

And I think it was like 7% and the testosterone group and 7.3% in the placebo group. And so again, we've now put this to rest with using the best level evidence data we have, right?

A level four randomized controlled trial, double blind, placebo controlled everything that you want. And it showed there was no difference in cardiovascular events in the men treated versus not treated, and guys that already had cardiovascular risk factors.

So you know again it's just misinformation now where people can can get off here is they think, well, you know, I

heard that high testosterone caused me to have a blood clot.

That's a little different. That's why whenever we prescribe testosterone therapy, we monitor patients or monitor them with routine labs because we're checking a lot of things.

But one of those things is inadequate or a marker of your blood thickness in our body and in patients that have obstructive sleep apnea that's undiagnosed, right.

Snoring at night, that they're not getting looked at or treated. And men that are, you know, tobacco smokers or history of, COPD, chronic obstructive pulmonary disease and other things.

It can cause you to have elevated hematocrit levels. So when someone takes testosterone, if it's too high, you can sometimes have elevated hematocrit levels.

And that in itself can predispose someone to developing a DVT or deep venous thrombosis like a clot in the leg or lungs. But it's interesting because a lot of the, well, the way when I say high testosterone, I mean by any means necessary, whether it's nothing and just naturally or taking herbals or doing exercises or TRT or gels or topicals or injections, some of the treatments currently I believe in, you're the expert.

Correct me if I'm wrong. Maybe the injections have a higher risk of high hematocrit, but I don't know the pills, not as much. Or You're absolutely right.

Absolutely correct. Injectables are intramuscular. Tend to have a higher incidence of having an elevated hematocrit. Right. Meanwhile, there's been no, no study that I've ever seen that, that even a high hematocrit after TRT caused actual, some sort of thrombotic, event.

It's just, theory, good theory. You got to be careful. But there's been no events that I know of or studies or even case reports published on that, that I know of.

No good studies have shown or looked at that. All right. So the adverse trial, that's a serious trial. And so then I'm wondering what you know about that trial is going to is it going to be ongoing and answer all sorts of questions eventually, including as it relates to prostate cancer.

So most of the things we're, most a lot of the studies have been a little bit observational. What we did TRT nothing happened.

Cardiovascular safety and TRT monitoring

This is a actually randomized study. So will we get the actual answers from a randomized study on prostate cancer on at some point. You know they did do some analyzes.

Sub analyzes is like when a study is concluded and over they looked at other things and they actually did look at that as well. They looked to see if and these men that got testosterone therapy, was there a higher or greater incidence of men developing prostate cancer?

And the answer was no. So again, another study showing it. Now, you know, the caveat is that this study wasn't designed to look at that. But they had all the information.

They had the men they had, the age they had the placebo versus the men that had testosterone therapy. And they also had the knowledge of, were you diagnosed with prostate cancer?

Yes or no? And when you looked at the newly diagnosed prostate cancer, it was the same in both arms. So it was I think it was 11 in the placebo group and 12 in the, testosterone group.

So again, not statistically significant. And no difference. And I'm curious because all the studies that we see in data

right there, so consistent at this point, I'm curious of your approach in and we spoke about this at on my podcast.

And you know, I have a lot of these conversations with patients of the physicians, and it gets a little tricky. Now we're talking more advanced courses.

They're either on on ADT or we're on androgen deprivation therapy where they get chemically castrated, quality of life diminished. And so what's the right approach with these men?

You know, not. Well, you know, while there are no studies to say yes, absolutely. Or this or that, there are no studies that I know of. But at the end of the day, you and I, we're in the trenches.

We we're in the trenches seeing the patient study, you know, see, whatever year here we are. And some of them saying, look, I need my testosterone back.

I mean, look, I don't care if I die in three months if I had three good months. So what's your conversation with patients with the more advanced cases where they have a history of ADT or on ADT, how do you go about that.

So those are actually the patients to me that are the most bothered by not having testosterone therapy are the ones that have known what it's like to have zero testosterone or what we call castrate levels below 50 because they're so symptomatic they feel awful.

They don't even feel like themselves. I have their partners come in and they're like, this isn't the man. I'm married. I mean, like, he's he's not the same person. He's depressed.

He has hot flashes, night sweats, irritable, irritable. He's depressed. He's not interested in sex at all. You know, all of these things. So when I have them come in and they're coming to talk to me, number one, I let them know that our best guidelines, the American Urological Association guidelines, show that there's two things that I need to make sure that I tell every patient, and that's one, that there's a lack of evidence relating testosterone therapy to the development of prostate cancer, which we know because one study. Right.

And number two, that there's no long term safety data on the risks and benefits of someone taking testosterone therapy that has a history of prostate cancer.

So I explained to them similar that I did to you a minute ago. Like I say, you know, testosterone PSA is androgen dependent, so you need testosterone to make PSA.

So, you know, if you have some Ninja cell PSA that's somewhere in that body, it's going to eventually multiply. And it's going to grow and it's going to show up.

And if your if your testosterone levels very low, it's going to take a long time for that PSA to show up and get high enough to where it triggers as, oh wait, hey, he's on surveillance.

We need to check something out. We need to get some imaging or further workup. But if you keep normal testosterone levels, then we're going to be able to catch something quicker and be able to talk about treatment and go from there.

You know, I have I have several patients that actually have metastatic prostate cancer. Okay. So it's already metastatic. They've already done prostate, radical prostatectomy.

They've already had a recurrence. They already had salvage therapy with radiation and Lupron or ADT like you're talking about. And they are now like you know, a doc I feel horrible.

And at some point you have to make recognize that this is a patient. And physicians shared decision making that we can't be paternalistic and say, you know, I'm not going to do this because of X, Y, or Z.

No data shows that we're harming patients. And these patients are devastated. They're awful. You have to have some kind of thought of, you know, death with dignity and like, how do you want someone to have for the rest of their five, ten, 15 years of life?

Is it quality of life or is it quantity of life? You know, and most of my patients would say, you know, I want to have great quality. I want it's awesome. I want to feel good.

I want to do the things that I'm used to doing. I want have a great relationship with my wife or my husband, my partner. And so I had these talks with them.

I explained the risks with them, and I say, if you would like to be on testosterone, I am happy to prescribe that to you. And I let them know that it's considered lifelong and that we're going to check labs every three months.

We're going to be very careful, we're going to be very cautious. And I do that. And if something starts to rise, I usually get a repeat PSA with other labs.

One month later to see if it's just a fluke and it goes back down. And if it continues to progressively rise, then we all have a discussion with their urologic oncologist, with their medical oncologist or radiation oncologist, radiation therapist.

And we talk about what do we want to do. And I have a guy that I've been treating for over three years from that attack, prostate cancer. And his PSA just very barely keeps slowly rising over the years.

And every time he comes in to see me, he's like, doc, if I die tomorrow, I'm going to die a happy man. I feel amazing. I can walk across this parking lot that I never used to be able to walk across to see you without feeling tired and exhausted.

My partner and I are having our best sex life yet, you know, like I never thought this was possible. And so I think we really don't do enough due diligence to recognize how much we're hurting men by not offering this.

There's safe ways to monitor and follow people with testosterone therapy, and it dramatically improved your quality of life. Not to mention, we know that low testosterone, aside from all the horrible symptoms of that happen with it and being on ADT similar.

Advanced prostate cancer and shared decision-making

We know that low testosterone predisposes guys to osteoporosis or brittle bones so they could fall and break their hip. We know that it predisposes them to diabetes metabolic syndrome and can actually cause cardiovascular risk.

So we're actually harming their health in many ways by not making sure that men have normal hormone levels. But when they if they die and when they die, what's the cause?

Is it a cardiovascular event? Is it a stroke? Is it, you know, related to the metabolic dysfunction that occurs? Or is it the prostate cancer? Right. That's the million dollar question.

I have a provocative thought here. So we know that testosterone acts as a molecule itself, does not promote prostate cancer development or progression.

So so the issue seems to be is not the testosterone itself is the androgen receptor. That's that may be signaling prostate cancer to progress the receptor, not the androgen.

But if I deplete my body of testosterone, wouldn't these cells be like, hey, what's happening here? Maybe I need more receptors, maybe I need more receptors to get more testosterone.

But the body doesn't know why there's no testosterone, and the body's going to do anything possible to try to grab

more testosterone. And all they can do now is.

Oh, well, maybe it's a receptor issue. Can that perpetuate the scenario a little bit? This is and I do understand this is a provocative question, but I have to ask, you know, so that that kind of goes along with a lot of the data from Samuel den me to John Isaacs from Johns Hopkins, where they looked at that bipolar androgen therapy. Right.

The rationale for giving men these rapid cycles of super physiologic androgen and then castrating them, and then taking off and showing that you can use this in men that have castrate resistant prostate cancer, to help treat it.

What that is, is it's where you take, you know, intermittent androgen withdrawal and men with prostate cancer to these lower serum testosterone levels.

And then once this maximum PSA response is observed, then the medical castration therapy is discontinued. And then you just wait and you follow the patient until their PSA rises again.

But you know, the the major problem with this approach, or when you kind of think about it this way, is that, you know, most men who are receiving castration therapy, they don't rapidly return back to these, you gonadal or normal levels of serum testosterone once you stop the therapy, right?

Typically it can take months or years, or some men never even get back up to normal levels. So, you know, just as prostate cancer cells have time to adapt to these intracellular androgen receptor levels, to the castrate level of serum testosterone, these cells also have an adequate time to re adapt to these androgen receptor levels in response, you know, to his low increase in serum testosterone that can occur over months.

So, you know, this is really the same mechanism that happens with any hormone or metabolic calcium and other things that we need in our body. In fact, there's really this awesome study that I just read recently that came out of Duke, and they were looking at similar to this, and they actually found that at certain levels of low testosterone, at the receptors actually trigger prostate cancer growth and that normal to elevated levels, it actually stops the receptors for prostate cancer.

So I think more and more, we're eventually going to finally get some data that actually pinpoints. And we can say here we now have shown it with these mechanisms.

We don't have it right now. But but you know, testosterone therapy in and of itself, helping men have normal levels of testosterone in their body is not going to create prostate cancer, and it's not going to make it grow.

Excellent. The other, quality of life issue that many men after prostate cancer confront with is, some sort of sexual dysfunction. And for the most part, is erectile dysfunction.

Absolutely. What's your process with, with these men? And is testosterone part of that process right from the beginning. How like how do you approach it right now? Absolutely.

So for man to get a natural erection, you need five things. You need to have a healthy hormone milieu, which is testosterone. You need to have healthy nerves.

You need to have healthy arteries to take blood into the penis, healthy veins to trap it and close it when it's in the penis. And you have to have healthy erectile tissue.

So a problem in any one of these can lead to erectile dysfunction. You need testosterone in order to have erections, but testosterone itself does not treat Ed right.

If someone has erectile dysfunction and their testosterone levels are at least above 209, which is what data would show, is that that number that can indicate testosterone and, impacting erectile function, then we know it's something else.

So when guys come to see me that are scheduled to have a radical prostatectomy, or they're coming to see me because they're about to get radiation therapy, I talk to them about what are the risk factors and what's going to happen to them after this procedure.

And I tell them that every man is going to take a hit to their erections, every guy, no matter what. Now, why is that? Well, because here's our prostate.

And along our prostate are the nerves all along the side that are erectile nerves. So even in the best nerve sparing surgery, we still have to peel those nerves off, pull them away while we remove the seminal vessels in the prostate to cure your prostate cancer.

So, again, even in the best nerve sparing, there's that traction injury. That stunning injury and nerves take anywhere from 12 to 24 months to recover.

So in the meantime, we need to keep that erectile tissue healthy. And I hate to say it, but it is. Think of it like a use it or lose it phenomenon. If you're not getting healthy, good strong erections and blood flow into that penis, then you're going to start to get penile fibrosis.

And the actual term is smooth muscle collagen ization.

Erectile dysfunction and penile rehabilitation

You get fibrosis and atrophy of the penis. So then 12 to 24 months from now when your nerves wake up and you're ready to go, you no longer have healthy tissue for the nerves to act on for you to get a good erection.

So after I explained that, I talked to them about starting something called penile rehab. Penile rehab is a program that we put patients on if we can, before they had their surgery, but at least if not after their surgery, to help them keep and maintain their erectile function, keep it, maintain their erectile health tissue so that when their nerves wake up, they can hopefully go back as close to baseline as possible of their erectile function.

And then we meet with them frequently. And we can certainly talk a lot about all about my process, how I do it. But but I think any patient that's about to undergo a radical prostatectomy, you need to meet with a sexual medicine urologist who offers penile rehab that's going to sit down with you, talk to you about the process, what they're going to do and follow you every follow patients every three months after their radical prostatectomy.

And we follow up how they're doing, how are they doing on the side effects. Because it's not just erectile dysfunction, right? Men can get the climactic leakage of urine with orgasms.

They can have, they'll no longer be able to ejaculate. Right. That doesn't mean that they're no longer going to have an orgasm or a pleasurable feeling.

They just no longer will see fluid come out of the penis at the same time, which before men have pelvic surgery, they think of that as, you know, one thing that happens, but it's actually two separate physiologic events.

I let him know that 20% of guys may have increased intensity. Orgasms. Right. These lucky guys that they had better orgasms after their radical prostatectomy.

And it's just due to how the pelvic floor is healing. And on the counter to that, about 15% of guys will have this orgasmic or pain with orgasm. And again, it's just due to how the pelvic floor is healing after surgery.

And there's treatment options for all of those things. But someone that's really going to spend that time and talk about it with you and let you know what to expect so that you can go into this empowered and feeling confident that you know this is a marathon, right? This isn't a little race or sprint.

This is a marathon that we're going to get you cancer free and we're going to get you back to your sexual function

and that intimacy with your partner. Again, what's your approach?

We can dive. I mean, we had a few, quite a few presentations for this summit on certain processes, you know, Pde5 inhibitors. That's your cialis in levitra.

What to do, sit down, fill vacuum devices etc., etc., etc.. Let's dive right into penile prostheses. So I did a four part series on my podcast. I had a few and I'm just thrilled.

I mean, as a natural guy, that look, I have to admit, and this is not good and my wife is giving me grief. I even been rescheduling a colonoscopy because I just don't want anything in my body.

Right. And I have to, I have to get over that. And certainly in my clinical practice, however, I was like, so what do you what would you do, doctor? Geo?

I'm not answering that because, well, my job is not to give you my bias as a patient. My job is to be objective, right? That's my job. You don't care. You shouldn't care about my biases.

Penile prostheses, you know, initials like. Oh, no. Come on, man, inserting this thing into the penis and this pump in the middle, the satisfactory rate is high.

And so I'm I'm all in it as it relates to advising patients, you know, after prostate cancer treatment, that nothing else is happening. Nothing else is working.

So what's your approach, with that process, when do you say, okay, this is the time? Is it a year later after prostate cancer treatment? What's your approach with with, penile prostheses and the surgery.

Now, a penile prosthesis is an amazing option for men to help them regain a spontaneous, natural way to have great erections again and have great intimacy with their partner.

So I really leave it up. Now, if someone was having great erections before surgery and they had a great nerve sparing surgery, I counseled them on that.

They have a really good chance of being able to regain their ability to have a natural erection, with or without erectile genic agents, like pills, like Viagra, cialis.

So that at all, if someone has had a non nerve sparing radical prostatectomy, they're a candidate for an implant at any point in time. If they do not want to do penile injections, which would be their option because pills don't work if you don't have healthy nerves.

So at any point time, I don't make anyone wait a year per se. You know, I think even our American urological Association guidelines came out and letting us know that, hey, men can be offered that at any point in time.

You don't have to anymore do this stepwise way where you have to do pills, vacuum injections, implant that. They can have it at any point in time and it will be a wonderful option, especially if you go to someone like myself and many others around the country that are high volume planers that do this often, and that you're going to have a really good result.

It's a quick same-day procedure. It takes about 45 minutes. You go home the same day, no drains, no Foley, and and it changes lives. It really does. How do you what do you do for, climax urea.

Where? You know, if you don't treat that, then all bets are off.

Penile prosthesis and incontinence options

Do you do artificial sphincters? And I've asked everyone, because I know one of the companies that you can kind

of get both. Urinary incontinence and erectile dysfunction.

Would you do both the, artificial sphincter and the penile implant now? Absolutely. So when someone has erectile dysfunction within contents, there's several things.

If they're not ready yet for an implant, then we have something called a Euro stop ring. It's a tension based band that can buy it online. It's like $27.

You slide it on the base of the penis and it's tension based, so it lifts up on the urethra and it prevents any leakage of urine. So it's a really good option along with behavioral things like voiding prior to sexual activity.

If they have really bad incontinence and you're thinking about getting an implant, we can also do something called a mini ju pet sling, and many do. Pet sling is is a little sling material or synthetic graft material that we use that basically at the same time that the implant is placed just over the urethra, so that every year the urine channel, the urethra so that every time you inflate the implant, it puts a compression and lifts and presses on the urethra so that you don't have leakage of urine.

And now that's not going to fix. If someone had leakage of urine at all times, you know, an incontinence when they call stand up. But it's going to prevent them from having any leakage of urine during sexual activity.

And a point when a lot of people don't, don't want to be leaking urine. Yeah, sure. This is great. Thank you so much for enlightening us on your approaches and on testosterone.

Actually, I think you're the first to kind of expand on that as it relates to prostate cancer on this summit. How can people learn more about you? Absolutely. So I'm all over social.

I love Twitter and Instagram at doctorhelenbernie. You can see me. And then I am a practicing physician at Indiana University. If anyone would know. Hoosiers, I know you're a tight girl, but, you know, you got to get you got to get some allegiance to the Hoosiers.

Come on, I mean, some. That's right, that's right. But boy, was that game great. The Georgetown in the game this week. That's right, that's right, that's right.

Big upset against Georgia. Yeah. Great. Well, Dr. Helen, Bernie, thank you so much for enlightening this audience on the importance of testosterone, erectile dysfunction and prostate cancer.

Thanks so much for having me on. Thanks so much for being on. Thank you everyone for watching the prostate cancer Summit. Another great we bringing it all in here, guys.

We are getting the best of the best. I'm not. I would not shortchange you. Doctor. Helen. Bernie. Top, top of the line as it relates to male reproductive and male sexual health and testosterone.

Andrology after, after prostate cancer. So thanks again for tuning in. Keep watching. We got more to come. Dr. Geo here. Signing off. Talk to you next time. Thanks so much for having me.