Speaker 1 (00:00): Lauren Hixenbaugh

Welcome to Living Beyond Cancer. I'm Lauren Hixenbaugh, your host for today's episode. Living Beyond Cancer is a series of podcasts created for cancer patients, survivors, and their caregivers. This series is brought to you by the WVU Cancer Institute's Cancer Prevention and Control, in collaboration with the West Virginia Cancer Coalition Mountains of Hope. And I'm really happy to introduce our guest for today, Dr. Ryan Heitmann and Brittany Jarrett. We're excited about this topic that we're bringing to you today, and I'm going to start out with just letting the guests introduce themselves and telling them, telling our guests about yourself as well as your roles.

Speaker 2: Brittany Jarrett

Perfect. Well, my name is Brittany Jarrett and I'm a women's health nurse practitioner here at the Center for Reproductive Medicine with WVU. Previously, before that position, I was an infusion nurse here at Mary Randolph Cancer Center. I live here in Morgantown, West Virginia. I've been a lifelong West Virginia resident and I'm really excited to be here today.

Speaker 3 (01:01): Ryan Heitmann, DO

All right. My name's Ryan Heitmann. I'm the director for the Division of Reproductive Endocrinology and Infertility, and then also the medical director for the Center for Reproductive Medicine here at WVU. I've been at WVU here for now about three and a half years. I came here from Puyallup, Washington where I spent some time in the Army, did my obstetrics and gynecology training, and then fellowship training through the Army and different places in Seattle and Washington, DC and then ended up here in West Virginia about three and a half years ago. So excited to be here and, and serve the people of this great state.

Speaker 1 (01:37):Lauren Hixenbaugh

Well, we're glad to have you both here. So today we're gonna talk about a topic that is near and dear to my heart, and I know a lot of other people have been asking for this particular topic. Do you want to kind of tell folks what we're talking about today?

Speaker 3 (01:50):Ryan Heitmann,DO

Yeah, so we're gonna talk a little bit about fertility preservation. Um, you know, cancer is something that nobody ever, ever plans on, and sometimes you don't have the opportunity to think about what that means for your future. And, and sometimes your patients are young enough or that's not even something that's on their mind in terms of, you know, conception and, and family planning and, and things. And so, um, in the, in the rush of everything that they're getting with their diagnosis and treatment plan, it's just, it's just something that sometimes will fall off to the wayside and just trying to bring about awareness and, and talk about the options that are available for the future.

Speaker 2 (02:32):Brittany Jarrett

Yeah, and I agree, um, just wanting to point out too, why it's so important is 10% of all new cancer diagnoses across the state or an individual's 45 years and younger. And so that's obviously your prime, you know, reproductive years. So we find that this is very important and something that a lot of individuals just don't have knowledge about. So we're hoping to start the conversation to really empower patients, loved ones and, you know, people across the state to be able to be advocates for themselves for their healthcare and also hopefully, which we will discuss a little bit later, but also

advocate for increased lobbying efforts, um, and options available for the people of our state and then also, you know, nationwide.

Speaker 1: Lauren Hixenbaugh

Sure. I mean, when we've talked with lots of survivors throughout the podcast, one of the things they consistently say is that when they went in and they found out they had this diagnosis, they're just so overwhelmed with all the information. And I can see how this type of thing might get missed, especially with an extremely young patient who's not even breaching that conversation. So I'm glad that we're talking about this. I guess where we start is where do patients start?

Speaker 2: Brittany Jarrett

Right, exactly. And I just wanna speak to that too, with having, you know, firsthand experience administering chemotherapy and working with these patients. When I was working as an RN at the cancer center, I've seen how quickly they get thrown into a diagnosis. And again, like you said, you know, first and foremost we're wanting to get treatment started and to do the things that we need to for life sustaining measures. And this is something, unfortunately that does fall to the wayside, but it is so important because so many of the interventions that we have to offer need to be done on the front end of things, or at least the education needs to be completed. And so we're really hoping by starting this conversation that we can hopefully get the education into the hands of the right people so that this can be something that's looked at as a priority as a new diagnosis. Um, especially when many times we have a very short timeframe to intervene.

Speaker 1: Lauren Hixenbaugh

Sure. So let's talk about where people start.

Speaker 2: Brittany Jarrett

Yeah, perfect. Um, so I think the initial, you know, kind of first conversation that happens, of course is with their initial diagnosis and depending on the diagnosis, which we're gonna talk more about, is kind of depending on where we start with this process. Um, we do rely, you know, heavily on the primary treatment team to, you know, initiate that conversation and then get us linked up with patients. Of course, our office is here in Morgantown, West Virginia, so that is where we kind of practice out of. But patients will start hopefully with their primary team bringing this conversation up and getting a referral, um, sent over for us. So we can talk here, I think a little bit about males versus females and kind of where each I think group, um, in that case starts with their journey, if that's okay here.

Speaker 1: Lauren Hixenbaugh

Yeah.

Speaker 2: Brittany Jarrett

Um, so I wanna speak a little bit about the male side of things in male preservation. Um, just to start with, because it is one of the more straightforward interventions when you look at males versus females. And so where a male might start in their fertility preservation journey might be very different

from where a female will would start. Um, we know that many different things obviously can affect future fertility. So whether that be that you're going for chemotherapy as an intervention, radiation therapy as an intervention, or maybe it's just surgical intervention that's gonna affect your future fertility, um, that is initially where we want to, you know, start the conversation. For males, you know, we hope that the primary team talks with the male population about their options, and number one option for them is going to be cryo-preservation of sperm. And what that looks like for the patient side of things is once we get a referral placed for cryo-preservation, we bring that patient into the center for reproductive medicine and there they start the process hopefully of being able to cryopreserve. So, they are able hopefully, to get to us before treatment is started. Also just a little bit of a backstory to kind of talk about timeline of things is that we know the process of sperm creation takes about three months. And so we want to obviously get sperm frozen before any kind of radiation, chemo or surgery is done. For male clients though, that can be a very easy transition. Once the referral happens, they can come to us and they can collect multiple different sperm collections to then be frozen for future purposes. Something also that I wanna note as well as we know, just as we were saying, that there's not always time for us to intervene prior to therapies being started. So with knowing that sperm takes three months to create in the body, there are certain situations where we can also cryopreserve even if the first dose of chemo has already been administered. So just knowing timeline-wise, that we don't necessarily have to get initial things done right off the bat. That's obviously our hope, but just wanting people to know that there are different options.

Speaker 1: Lauren Hixenbaugh

So, can you tell folks what cryopreservation is?

Speaker 2: Brittany Jarrett

Yes. Perfect. So cryopreservation is just a fancy word for freezing of specimens, basically, and we're gonna be talking about that a lot in the female population too. For males, the specimens we would talk about freezing would be sperm, of course. And so for them, the collection process is very simple.They collect at our office, they can collect multiple times within a, a short timeframe, which would also allow them to have multiple different specimens frozen in time for them to be able to utilize hopefully after treatment has been concluded. Really there's no pre-work up that has to be done for these patients, except we do require some lab work that's required for FDA needs for just freezing bodily fluids basically. But otherwise, there's not a whole lot of limitations as to who can freeze, especially in male population because we know the reproductive lifespan for males are much longer than females. And so there's a wide age variety that we can offer this service to. Like I said, they can collect multiple times and they can even at times collect after treatment has started. And so once we, you know, create this kind of lot of specimens that have been frozen, they will remain frozen at our facility for an undetermined amount of time. Currently, current research shows that sperm can be frozen pretty much indefinitely. I think there's cases of up to, you know, 50 years of sperm being frozen and still being able to utilize it with live birth as the result. So that's something that can be done at our facility and remain there until that individual is ready to reassess what their, you know, reproductive goals might be. On the flip side of that, we know that we don't have a whole ton of great data on specific chemos or exactly what fertility is gonna look like for males after different treatments. So there's always the possibility that even after treatment, you might be left with having adequate sperm to be able to reproduce in the future. So another part of this conversation is letting individuals know that yes, freezing is an option and that's what we would like you to do, so that you have that to rely back on. But we also have services at our clinic that you can come back after your surveillance period is completed after your treatment, and you

can have a sperm analysis done, and then we can look and see do we even need to keep the samples that have been frozen? Do you have adequate sperm at this point in time that you can destroy your current specimens and kind of go on and live your life and not have to be tied to using the specimens? You know, in our facility. On the flip side, you might note that really at the end of everything there is no sperm function and that you are only gonna have the options available to what's frozen at our facility. Um, and that's where you would land back with us or any other reproductive medicine clinic, and we'd be able to talk to you about your options of using those frozen specimens. So of course, you would be looking at using something like in vitro fertilization or intrauterine insemination as options to utilize that sperm, you know, moving forward.

Speaker 1: Lauren Hixenbaugh

And would those be the same type of, um, that would be the same results for female as well? Right. So go, go ahead. I'll let you answer that.

Speaker 2: Brittany Jarrett

Yeah, so potentially females get a little bit more complex, especially in regards to what kind of treatment you're getting in return to fertility. Um, so it can differ a little bit, but, but same kind of concept that we'll talk more in detail about, of reevaluation of fertility after completion of treatment. I will say, you know, I think the male side of things is much more straightforward, unfortunately, but yes, the females do have similar options as far as depending on what their treatment is.

Speaker 1: Lauren Hixenbaugh

And you said multiple specimens a couple different times. Yeah, so does that mean for folks that they're gonna go back in a couple of different times or they're going to have multiple specimens from the one time they go in?

Speaker 2: Brittany Jarrett

Yeah, that's a great question. So we obviously, whenever we're freezing a specimen, it usually is gonna be only quality enough to use for one intervention at a time, whether that be in vitro fertilization or IUI. So each collection that you get is really gonna be kind of one shot at whatever that intervention might be. So to collect multiple times, we know also there has to be a little bit of an abstinence period between collections so that we give sperm a chance to kind revitalize and get back into an appropriate sample. So what that looks like for patients might be coming in and collecting on a Monday and a Thursday, and then a Monday the following week. So we obviously work with the timeframe we are given, and sometimes we only have a couple days, that might also look like one or two collections before treatment start, and then a collection or two after treatment start. It's really up to patients, the feasibility, um, on our end of things, patients do pay just a yearly cryo-storage fee. So that's just a $400 payment a year that allows us to maintain the specimens, but it's just one flat fee, so it doesn't matter how many times the collection is done. So we highly encourage multiple collections if it can be done just to give patients the best chance of success moving forward.

Speaker 1: Lauren Hixenbaugh

Great. Yeah. Great information.

Speaker 3 (13:19): Ryan Heitmann, DO

So I think moving onto, to the female preservation side as Brittany said, it's a little bit more complicated. We are up sometimes against some, some time clocks in windows and things, but even just to take a little bit of a step back and, and kind of bring up, well, what is fertility preservation? What does that mean? As patients may research or find things online, you'll see things like elective fertility preservation, and that's very common and has been probably for, you know, the last couple decades. And this is done for various reasons of just delaying childbearing, maybe for career progression and things like that. And now with those techniques and things that have been refined and perfected, it's moved into the, you know, we can do these preservation techniques before cancer diagnosis. And that's really helped these patients who, who have these diagnoses, you know, as, as treatments for cancer have evolved over the last few decades and become much more successful, patients are living longer, you know, previously maybe not living into a long enough to where they could think about having children and now they are. You know, just looking at, um, some statistics from the NIH in, in 2022, it was reported there are 18.1 million cancer survivors in the United States. And by 2032, that's gonna go up to over 22 million. Uh, and the most common survivable cancer is breast cancer. And it was at 22% of all cancer survivors are breast cancer. That's the most common cancer that we'll see in the clinic. So it's, it's very pertinent to have these conversations now with these patients because they're living longer. And so we can talk to them about the options of preserving their fertility, and that can be with just preserving their eggs. Um, so before they're ever fertilized or, um, anything like that, you can preserve embryos, which is an egg that's been fertilized by a sperm and now has the potential to develop into a fetus or, or baby. And then there are still research opportunities and techniques looking into freezing of, of actual ovarian tissue. And this is, is really important in our younger population who maybe haven't gone through puberty yet because their, their eggs are still very, uh, I'll call it sleepy. They haven't developed and, and you can't really get their eggs out when they're, when they're younger. And so can we freeze their ovarian tissue, transplant it back into a different place in their body later in the future and still get, you know, viable good eggs from that in the future. That's still a little bit, um, experimental and on the research realm, but it is developing and progressing. So in the future, we'll probably also have options and techniques for those things.

Speaker 2 (16:06):Brittany Jarrett

I think too, this would be a natural kind of interjection that whenever we're talking about female fertility preservation, I think it's important for individuals to have a little bit basic understanding of the menstrual cycle and how the different options kind of affect that menstrual cycle. As females, we know we're all born with all the eggs that we're ever gonna have for our lifespan. So you don't increase those numbers of eggs. You're kind of shot at fertility is what you are set with at the beginning of life. And when we're looking at different preservation options, we're intervening kind of on different cycles of, of the menstrual cycle. Um, in brief, your menstrual cycle is kind of broken into three parts. The initial phase of your menstrual cycle begins right with the start of your period. A whole group of follicles, so follicles on your ovaries are what house our eggs, which is then what we can hopefully fertilize and create an embryo or a baby from. So, an initial group of follicles come up in your body on your ovaries, one of them hopefully is then selected, that becomes a dominant follicle. It grows large. And then about partway through your cycle, that follicle releases an egg. And that is what we know as ovulation and female ovulation. Once ovulation occurs, that egg is released and there's a very short window of time into which sperm can then meet that egg and fertilize it. Um, you're looking at a short one to two day

window for that to be able to happen. After ovulation occurs, you move into what we call the luteal phase, which occurs after ovulation. And during that time, either fertilization of an egg will happen or hormone levels will begin to drop, and you'll begin to have a period and beginning of another cycle. And so whenever we are talking about egg preservation or embryo preservation, we are going to be doing interventions that are, um, intervening or stimulating different, different points of that cycle. And I can let Dr. Hyman speak more to that because he is gonna be our guru for all IVF things.

Speaker 3 (18:15):Ryan Heitmann, DO

Yeah. So with that menstrual cycle and knowing how it works and, and trying to, to stimulate those eggs to, to grow and develop for the longest time, the, the thought process was that, you know, you had to time everything to where the, the natural development of, of eggs happen. Um, and that still is probably the most common technique that we use is, is giving patients medications to stimulate their ovaries to produce many eggs at one time, but doing it kind of in the natural timeline of the normal menstrual cycle. There are new techniques and protocols and research looking at doing, um, what is called luteal face stimulation. So kind of starting in the, in the back half the menstrual cycle. And, and there's been good studies showing that that results from that type of a stimulation yields just as good results. And so that's really helped, um, us with our timelines shorten them. So maybe we're not delaying either the start of preservation or more importantly, the start of treatment. You know, we commonly will tell patients we have these therapies to offer, but still our number one goal is the patient's overall health and survivability. If, if they're not a surviving and, and here in five or six or seven years to use those eggs, it doesn't matter to us because we want, we want them to be around to come back and, and use their eggs or embryos.

Speaker 2: Brittany Jarrett

Right.

Speaker 3: Ryan Heitmann, DO

So typically when we, we do these stimulations, um, we are giving patients injections of hormones, and these are the same hormones that their brain naturally sends down to their ovary. Um, and that's follicle stimulating hormone and, and luteinizing hormone. And, and again, those just are used kind of in a, in conjunction with each other to, to develop those follicles, to get the egg inside to grow. That process takes, on average about 10 to 12 days. Um, but it's, it's very highly individualized. Some patients go a little bit faster, some take a little bit longer. And our biggest hope is, is for quality of those eggs instead of overall quantity. And so we'll, we'll kind of work at the pace of whatever the body is responding to. Once those eggs are developed to the point of where they'll be what we call mature or able to be fertilized, then we will go in surgically and retrieve all those eggs, get them out of the ovary. We do that in a little, uh, operating room that we have at the Center for Reproductive Medicine. It's done with the use of transvaginal ultrasound. So we're able to, to watch the procedure under ultrasound. And, um, it's, it's very, very safe. Um, it takes about 15 to 20 minutes on average, and, uh, patients are asleep. That's the other big question we get. You're asleep. Patients, patients are asleep, they always worry about that. So you don't feel anything. It's, it's a little conscious sedation, so you're still breathing on your own. You don't have to be intubated fully. But we do have, um, we work with anesthesiologists that come over and, and provide that anesthesia for us, that sedation. Um, we get the eggs out, um, and they're put in a little test tube that's passed off to the lab, which is connected to the OR. And then our embryologists will look under the microscope and they'll get the eggs out and, and can put them in a local tradition. Then we'll freeze or cryopreserve all the, the mature eggs. So again, that procedure takes

on average about 15 to 20 minutes. Then the patient wakes up and recovers for about an hour or an hour and a half in our little recovery room, and then is able to, to walk out the same day. Um, very little pain or discomfort. Not really any bleeding or anything. So it's a, it's a very well tolerated procedure that patients can do.

Speaker 1 (21:53):Lauren Hixenbaugh

So you've talked a little bit about the younger patients. Do you want to talk about the upper ages of patients? Is there kind of a natural we can no longer help with anything?

Speaker 2: Brittany Jarrett

Yeah, I mean, I'll speak to the male side. I know I, I kind of already spoke to that, but there really isn't necessarily an, an upper end for male reproduction. I mean, we know that males can go almost their entire lifespan with producing sperm. Um, now obviously quality and things might change with, with age and different comorbidities, but there really isn't a limit as long as a male is sperm producing, they're able to, to cryopreserve- females very different

Speaker 3 (22:32):Ryan Heitmann, DO

Yes. Unfortunately, there is a, a different time span. Um, you know, like Brittany said, women are born with the number of eggs that they'll ever have at the time of birth. Um, and so those eggs age, just along with the woman, so at 40 years old, those eggs are 40 years old. And the biggest determining factor in, in any of our infertility treatments is, is age and the natural process of aging and, and egg decline and egg quality decline and everything like that, kind of limits us on sometimes what we can do. Fertility starts to decline at about 35 and then really starts to decline after 38 to 40. And so unfortunately, someone may come to us at 45 or 48 years old, we may not have a good prognosis for fertility preservation of at least their own eggs. We'll, we'll talk to them about using donor eggs or donor embryos or, or other avenues. But sometimes those are also not things that patients wanna talk about or maybe they're, they're not interested in and, and something that they want to do for, for a wide variety of reasons.

Speaker 2 (23:43):Brittany Jarrett

Right. And as age increases, just to speak to back to the whole, you know, stimulation process of the ovaries as age increases, a lot of times we have more difficulty getting those ovaries and those eggs to develop as we want them to. Sure. So it's always a point of conversation with individuals, but that's always gonna be part of our counseling, is for them to have, you know, realistic expectations going into things about what their outcomes really are gonna be. Especially too, when we talk about eggs aging, you know, if you're, if you're talking to someone who's 42 versus someone who's 22, the 42-year-old is going to need many more eggs to be retrieved from them, to have an increase or an appropriate chance of having a healthy pregnancy and having an egg actually be able to be thawed and be of good quality. So you start looking at, you know, increased medications needed for stimulation and just the conversation changes. But I think it's always important that we still have those conversations with patients so they know what their options are.

Speaker 3 (24:48):Ryan Heitmann, DO

Yeah. I think it, if you take a step back too, people say, well, why do I have to freeze my eggs after cancer? What, what's the, what's the purpose? It's not always just an age thing, you know, when you're able to have kids, it's, it's the treatments that can be done for the cancer are sometimes damaging to

the ovary. Um, many of the, the chemotherapy drugs that are used are very successful in treating cancers, but they're not cancer specific all the time. They will damage all kinds of other tissues. And unfortunately the ovary is very sensitive. Um, and some of the best cancer chemotherapy drugs we have are the most ovarian damaging, unfortunately. Radiation can also damage that egg supply. And then there may be cancer treatments that involve removing the ovaries and the uterus. Um, and so then obviously they're not there in the future for use. Um, and so I think that's the baseline of why that fertility preservation is important. It's not just getting you through the treatment or your surveillance period or things like that. It actually could be doing damage to the actual eggs and ovaries themselves.

Speaker 2 (25:54):Brittany Jarrett

Yeah. And I think that's an important kind of note to talk about. One of our other options that we have outside of fertility preservation in the terms of retrieving eggs or creating embryos or freezing sperm. One of the other options we have is something known as ovarian suppression therapy. Um, and that's with using GNRH antagonist or agonist, which is gonadotropin releasing hormone, which again is just another one of those hormones that we have in our body. The way that this option works and it's, it's something that we utilize quite frequently because we know there's many people that can't necessarily jump into cryo-preservation. They, whether they need to start treatment today, tomorrow, um, or whatever the case may be, but this might be an intervention that is more feasible for them. So just like we were saying that chemotherapies radiation, different things can be very toxic to our ovaries. Where ovarian suppression therapy comes into play is actually giving a monthly medication. Lupron is one that we use pretty frequently or Zoladex, um, and what it actually does is kind of shuts down that hormonal pathway to the ovaries. It reduces blood supply to the ovaries because they're not going to be menstruating ovulating. We're literally freezing them kind of in the, the menstrual cycle. Um, in other terms, you're kind of being put into a medical menopause, if you will. So ovaries are shut down. What we hope to do by that is by shutting everything down while these chemos are being infused into your body, we're also limiting potentially the effect that these chemos could be having because they're not able to reach the ovary quite as well because we have decreased blood flow, decreased kind of action in the ovaries, if you will. These interventions, this intervention specifically has been studied most in breast cancer patients. And a lot of times it's used as adjuvant therapy with their chemo and it's a medication they're already on for their disease. Um, but it's been studied in breast cancer patients mostly and also lymphoma patients. Um, but it's been studied well enough that it can kind of be used across the board at any premenopausal females. So how that looks, like I said, is you get a monthly injection of a medication, you're put into a medical menopause. Um, with that you get the side effects, unfortunately that you might see with menopause. So hot flashes, night sweats, irritability, and lack of having a period, which in some diagnoses can be helpful whenever you're fighting blood cancers that might leave you anemic or with other deficiencies in the body that having a period might make worse every month. So you're in this treatment, ideally we like to get it on board two weeks at least before the start of chemotherapy and then you would be on it monthly for the duration of your treatment, whatever that kind of looks like. Um, ideally we like to keep individuals on it for six months or less. Um, and we also try to coordinate this injection with their other treatments. So I have a very good relationship with the cancer center here in Morgantown. And so we try to order these injections to be done with the treatment they're already at the facility getting, so it's not extra appointments, they're not having to deal with it, it's just done. And it's something that's there and in place for them. Once they conclude treatment, we also cease our intervention of the monthly therapy and then we basically reassess what ovarian function looks like after that. And of course we're hoping to decrease the effects of whatever their treatment did. So ideally we stop that treatment and you get a resumption of a somewhat of a typical menstrual cycle. Now time to resuming of a menstrual cycle is gonna be very different individual

to individual and some people still might not have a return to fertility. But that is one intervention that we can do with individuals who might be starting inpatient chemo and really not have any ability to do anything. And again, this would only be for females, it's not an indication for male use, but this would be something that, you know, we do very frequently with the female population. Um, of course, one barrier that we run into, and I'm sure we'll talk about barriers here more too in the future, but the cost of medication, whenever it's being utilized as adjunct therapy, like for breast cancer patients, a lot of times it's included and covered under insurance because it's medical management of their onco, you know, oncologic disease. Whenever we're utilizing it just for the sake of fertility preservation, that is where we sometimes run into issues getting appropriate coverage. And it's not a cheap medication, unfortunately. Um, it's gonna be one of the lower cost interventions that you can do in the grand scheme of things. But that's still a barrier to care that we see, especially when we're trying to get this ordered within a couple days time.

Speaker 1: Lauren Hixenbaugh

Sure. And we will talk more about cost and other barriers associated with preservation. At this point I feel like we have such a plethora of things to continue to talk about. And the science behind this is amazing in how far we've come. So I'm really excited about it. I think because we have so much to talk about, it would be a natural break for us to make this a part two. So if you guys are available to continue to talk about this, we'll kind of end this particular podcast and then hopefully listeners will be as intrigued as we are and continue to listen to the part two of this.

Speaker 3: Ryan Heitmann, DO

Yeah, absolutely.

Speaker1: Lauren Hixenbaugh

Absolutely. Okay, great.