Fertility Preservation for Young Adult Cancer Survivors with Suleika Jaouad

While cancer is a complex and heartbreaking disease at any point in one's life, being diagnosed in one's twenties and thirties can disrupt major milestones: new career, financial independence, FERTILITY. Fertility preservation is often not introduced to young adult cancer patients until its too late. It is important to know your options before your chemotherapy or radiation starts, and we are talking with young adult cancer survivors and expert to learn more about available recourse.

Full Transcript:

Priya Menon : Good evening, everyone. Hello and welcome to Cure Talk. I am Priya Menon, Scientific Media Editor at Cure Talk, joining you from India; and I welcome all of you this evening to a discussion on fertility preservation for young adult cancer survivors. This is our 82nd episode, and we are talking about preserving fertility if you have been diagnosed with cancer in your 20s or 30s. It is important to know your options before your chemotherapy or radiation starts; and to do so, we have with us two very distinguished panelists. Suleika Jaouad, an Emmy Award winner New York Times columnist, cancer ninja, and a health advocate. Suleika was diagnosed with acute myeloid leukemia at the very young age of 22 years. We also have with us Dr. Andrea Reh, reproductive endocrinologist at Dominion Fertility in Arlington. She completed her fellowship in reproductive endocrinology and infertility at the New York University Fertility Center with the NYU School of Medicine in New York City. Welcome to Cure Talk. My co-host for the evening is Matt Goldman. Matt is a multiple myeloma survivor and chronicles his myeloma journey on his blog "Matt Vs Myeloma." I would like to remind our listeners that towards the end of the discussion, we will be answering questions sent in via email by our listeners. If you want to ask your question live, please press 1 on your keypad to let us know and we will bring you on air to ask them. We all know cancer diagnosis can be heartbreaking and if you are in your 20s, 30s, more so and this can now affect career plans, financial independence, and fertility. Fertility preservation is often not introduced to young adult cancer patients; and in the coming hour, we will try to learn more about avenues and options available for preserving your fertility in young adults who are diagnosed with cancer. With that, its over to Matt. Matt, you are on air.

Matt Goldmann : Hi! Thanks, Priya, and thanks, doctor, and thanks, Suleika for participating. I think we have got a lot of stuff to cover, so I am just going to jump right into it. I have got a few questions for…, for you, doctor. First, beginning from the…, the basics, will cancer treatment affect fertility and are there… I know every cancer is different, but are there ways to treat cancer without compromising fertility?

Dr. Andrea Reh : – Umm… Yes. Thank you, Matt, and thank you, Priya and Suleika. I think what we know is that whether the cancer treatment will affect fertility will often depend upon what type of cancer a person has and what the proposed treatment really might be. We know the big offender really is chemotherapy, and chemo has the potential to render a man or a woman temporarily or even permanently infertile. Chemo works because it targets rapidly growing cells and when we want to fight cancer, that's what we want to do, is stop those rapidly growing cells, but unfortunately that also takes out sperm and eggs alike and for women this can mean this speeds up their biological clock and even leads to temporary or even permanent menopause and there can be other treatments like surgery that can impact fertility if they involve the removal or compromise certain reproductive organ systems. Radiation also has the potential to affect fertility, but again that's going to depend on the target organ and the patient's overall treatment plan, but there may be alternative ways to treat the cancer without compromising the patient's fertility, keeping in mind the primary goal is, of course, to get rid of the cancer first.

Matt Goldmann : Thanks. What are some of the more common cancers that…, that might affect a person in

his or her reproductive age, the 20s and 30s?

Dr. Andrea Reh : – Sure. I think what we see in young adults, they may experience similar cancers to older adults as well, but they also see… We see breast cancer, non-Hodgkin's and Hodgkin's lymphoma, melanoma, sarcomas. There can be gynecological cancers of the female system like cervical cancer or ovarian cancer, testicular cancer in men, colorectal cancer, other types of leukemia as well, as well as brain and spinal cord tumors.

Matt Goldmann : So, quite a few different ones.

Dr. Andrea Reh : Absolutely.

Matt Goldmann : Yeah. If the patient hasn't taken steps to preserve fertility before cancer, before their diagnosis, I guess, how do you evaluate opportunities for drug holidays if a patient expresses interest in conception?

Dr. Andrea Reh : This is a great question. Not everyone has the opportunity to pursue fertility preservation before cancer treatment; and typically, I would have to say that the opportunity to stop and take a drug holiday is usually a decision that's made between the patient and their oncologist and often again is going to depend on what type of cancer they have, how old they are, and what their overall prognosis is, but I can say that the most common situation I have seen in my practice are breast cancer survivors who often are in their 30s and, you know, they have completed their treatment, but they want to stop something like tamoxifen earlier than say the 5 or 10 years that may be recommended and these are often very critical reproductive years for women. A few years can really make a difference in terms of their fertility and so what I would do is work together with them and their oncologist in this decision process and try to evaluate their fertility at this point in time and then offer advice and options about what their chances of pregnancy would be if they tried now versus waiting in a few years, but, you know, I really can't emphasize enough that we are certainly a team and these cases always require a multidisciplinary approach.

Matt Goldmann : Umm… And it is solely the oncologist who…, who may consult with the patient before they begin treatment about fertility issues or is…., or is there some other specialist brought into the discussion or is that kind of the patient's choice?

Dr. Andrea Reh : Ah, that's another good question. I think the oncologists really serve as the frontline; and really since 2006, there have been some clear recommendations from the American Society of Clinical Oncology that oncologists really should be addressing the issues of infertility before patients start treatment and if possible to really refer these patients on to reproductive specialists. Anyhow the oncologist has so many different facets of their patient's treatment plan that they have to coordinate that they really often don't have the time to discuss fertility to the extent that is necessary and really that's where I come in. I mean as the fertility specialist, this is…, this is what I do all day and we are always happy to meet with patients for consultation and spend time so they understand their options and, you know, the earlier the better too because it gives us time to really provide them with the widest array of options. For example, you know, if they were to go through egg freezing, it may take two or three weeks at a minimum, you know, but there also can be other people involved besides myself and the oncologist and the surgical oncologist. Sometimes we also have the patient speak to maternal fetal medicine specialists. These are obstetricians who specialize in high-risk pregnancies. We also may have to meet with genetic counselors as well as some psychosocial support teams as well, so like I said, a team approach.

Matt Goldmann : Uhmm… Okay. Thanks. Suleika, I have a few questions for you. First of all, I just want to say I read your latest article in the Times and congratulations on your full remission. That's awesome!

Suleika Jaouad : Oh, thank you. Thank you. Yes, its been an eventful day. I actually just flew in from India, so I am probably more on Priya's time than I am on New York's time right now.

Matt Goldmann : Okay. So, you were diagnosed when you were 22. Did your medical team discuss fertility issues with you?

Suleika Jaouad : I have the utmost respect for my medical team. They are incredible people who are brilliant and who are really dedicated to getting me healthy, but unfortunately fertility was not something that was discussed with me at all. I found out a few days after my diagnosis when I started to google the side effects to the chemotherapy treatment I was scheduled to undergo in less than a week and for me, the shock of imagining that I was going to be infertile was in some ways greater than the shock of actually receiving a cancer diagnosis. I had a shot at being cured, but infertility is so permanent and at age 22, I hadn't even begun to think about starting a family one day. That wasn't something that was on my radar, and it felt like a major breach of trust with my doctors earlier on in the conversation. I couldn't help but wonder what else they weren't telling me.

Matt Goldmann : So, when you…, when you did little of your own research and…, and you had that realization, how difficult or how challenging was it for you to bring the issue up with your doctors or with your team?

Suleika Jaouad : I brought it up immediately with them the next day and their concern was that because of the aggressive nature of my disease, I get half the time to take those two or three weeks off before entering the hospital to begin treatment. So, once I really explained to them how important this was to me, they ended up agreeing in the end to carve out two weeks for me to undergo egg preservation treatments and…

Matt Goldmann : Before you… Before you started your treatment, they gave you those…

Suleika Jaouad : Before I started my treatment and there was some risk involved to my decision, but for me preserving my ability to be a mother one day really felt like a lifeline to an already uncertain future.

Matt Goldmann : And did they offer any other options besides that given kind of the immediate…, the immediate need for you to start treatment?

Suleika Jaouad : At the time…, this was in 2012, they didn't offer me other options. I know I have heard from friends who have recently been diagnosed about other options that they have been able to pursue, but for me that was really the only option. What surprised me though was that getting the okay from my doctors to get the fertility treatment wasn't the only hurdle I had. Unfortunately, in the United States most insurance companies don't cover fertility preservation treatments for cancer patients and those treatments can cause upwards from 20,000 dollars, which is a heavy bill to tack on before you have even begun your cancer treatment.

Matt Goldmann : Right. So, I guess, going back to you, doctor, what are…, what are some of the options available for both men and women for fertility preservation and…, and touching on Suleika's point, what are some of the options given the financial cost of…, of fertility preservation?

Dr. Andrea Reh : Great! Great question and certainly an inspiring story from Suleika about being…, being your own advocate and, you know, that ultimately a lot of this is a discussion, you know, a discussion in between patient and doctor and weighing risks as well and certainly just to echo what she said, I mean a very common thing that we hear from patients is that its not just the cancer diagnosis. Its being told that they may be infertile and that for a lot of patients, like Suleika said, that's even worse than the cancer itself, but getting back to your question, I think, you know, for men it is always much simpler. Sperm banking really is still the cornerstone of treatment options for men. Its…, its simple and usually even just one sample can be aliquoted into multiple vials, which gives the man multiple attempts at pregnancy in the future and that can be either through thawing that sperm and undergoing inseminations with his partner or IVF and the sperm really survived the freezing and thawing process quite well. So, there's really no considerable impact on the freezing process in terms of the chances of that being fertile afterwards. You know, for women, there are several different options now. Suleika talked about egg banking and this is certainly really gaining

momentum. The experimental label has been lifted as of 2012 and it really remains the best option for single women or for couples who really want to avoid the psychological burden of creating embryos, particularly in the setting of a life-threatening disease, but the problem with egg…, egg freezing over the years is that the eggs for lack of a better description, are really prone to freezer burn and they really have not survived the thawing process very well. So, we haven't really done a lot of egg freezing until recently. There have been improvements in the freezing techniques with vitrification and now we see excellent thaw survival and embryo development which translates into good pregnancy rates for patients So… So, that's becoming a lot more popular option, but traditionally embryo banking, you know, that has been another time-tested technique. Its been used in regular IVF for several decades now and embryos themselves survive the freezing and thawing process much better and the success rates are much more predictable because they are typically based on the woman's age at the time of freezing and this is usually the best option for couples that are already in a committed relationship and beyond that for women, I think we…, we are starting to see more use of, what's called, medical suppression with medications like Lupron. This is an injection that a woman can take before she undergoes chemotherapy which basically puts her into like a hormonal menopause and its been debated back and forth about whether this is beneficial, but a recent article actually just came out in the New England Journal Of Medicine last week that did show that for breast cancer patients who had Lupron, that they had a lower incidence of ovarian failure, more of them got pregnant and there was a…, actually a higher overall survival. So, there looks like there is some promising options becoming for Lupron as well and there are some experimental options as well. You are usually best done in a research or university setting and this would include things like testicular tissue freezing, ovarian tissue freezing, or even in vitro maturation. These are for patients who typically are younger, you know, before…, before puberty.

Matt Goldmann : And this might be a dumb question. What makes eggs more sensitive to freezer burn than sperm or even stem cells, for example?

Dr. Andrea Reh : Umm… That's a good question. I mean, I think the eggs… The eggs typically have a higher water content, so the freezing…, the old freezing techniques, the slow freezing techniques were unsuccessful at preventing ice crystals from forming, which really were damaging to the eggs, but compositions of sperm tolerate that very well.

Suleika Jaouad : And, doctor, do you mind if I chime in with a question?

Dr. Andrea Reh : Absolutely.

Suleika Jaouad : One thing that I have thought about and I know that a lot of other young adults think about is that typically when people freeze eggs, they use them within a year or two or three years. When you are looking at teenagers or women in their early 20s for freezing eggs, who conceivably may not use them for another decade, does that increase the risk of freezer burn or have there been any studies that show the difference between success rates between short and long term use of those eggs?

Dr. Andrea Reh : Its a good question. I think what we are seeing certainly with embryo banking, which has been around a lot longer, that the duration of freezing does not seem to impact the results and so we would…, and that's what we have seen with sperm banking as well and I would assume the same is for the egg freezing. The…, the risks with egg freezing are really at the time of the freeze and at the time of the thaw, but once they are frozen, they sort of remain in that dormant state and they can, you know, with embryo freezing, we have certainly seen patients go greater than 10 years, you know, with…, with good results.

Matt Goldmann : And if a patient doesn't have a chance to…, to do fertility patient before they start treatment like, for example, add the two-week window, but if somebody doesn't have a window to do that and they…, so they are in their active treatment and at some point they do want that drug holiday while they are still being actively treated, what…, what kind of tests need to be done to know if the sperm or the eggs would even be viable? Is there any sort of genetic screening or what's looked at?

Dr. Andrea Reh : That's a good question. So, I think you are saying while…, while someone's still in

treatment, I think it would depend what the treatment is. I think while they are still in active chemotherapy, it would be, you know, its not typically when we would undergo egg freezing, but it would be a discussion with, you know, the oncologist to see if there would be a window of time that, you know, could be carved out. Sometimes…, you know, and totally I have noticed in these situations the women may not respond to the medications that we give them as well because the ovaries are in such a dormant state and I think you asked…, touched upon some genetic screening as well and how to assess fertility. So, I mean typically, you know, to assess fertility for…, for men, again it…, it always just kind of blows down to a simple semen analysis, you know, and then if that's abnormal and they are at a juncture where they are looking to preserve fertility, you know, we often would handle these cases in conjunction with a urologist, particularly one that may subspecialize in infertility and as for women to assess fertility we are looking at usually a combination of tests and this would include typically a pelvic sonogram to look at the ovaries that gives us our best view of the ovaries without having to look at them through surgery and that's very simple to do and then we would also combine that information with some basic hormone tests which are just blood tests that we would draw and use that data to sort of extrapolate how many eggs are there in the ovary at that time and whether, you know, that can be translated into their fertility.

Matt Goldmann : Uhmm… And is there any…, is there any way to do any screening for chances of birth defects in trying to minimize that?

Dr. Andrea Reh : Absolutely! So, I think, you know, we talk a lot about genetic screening now and screening to…, to really all of our patients, not just those that are undergoing cancer treatment and there are multiple options really for…, for women and for couples and there are options before conception and after conception. So, before trying to get pregnant, a woman can typically undergo some screening to identify genes that they may be carriers for. So, this would, you know, include things like cystic fibrosis or…, or sickle cell disease, but particularly for a patient with cancer, this may include genetic testing for, say, something like the breast cancer gene, the BRCA gene, or other conditions that may be linked, genetically linked to that patient's condition and its important to identify these conditions before conception because if we can determine that, we may change the way we approach their family planning because we have the option to do something called PGD and that means preimplantation genetic diagnosis, which basically means we can take an embryo and test that embryo and determine whether it has that particular disease and then choose not to put that embryo back into a woman so that she would not carry that gene on…, pass that gene on to her child. So, that's been very important development in our field, but even for, you know, women without a particular genetic condition who may be a cancer survivor, we can still screen embryos before we put them in her to become pregnant to look for different chromosomal imbalances, for things like Down's syndrome, that this will identify more common causes of infertility and miscarriage and…, and frankly we are seeing a lot of this being used as a broader application in all patients seeking fertility treatment now too, but I think, you know, unfortunately regardless of whether any genetic screening is done before pregnancy, we still tell those women to undergo their routine screening through their obstetrician when they are pregnant because there's really no one particular test that rules everything out, but it is truly amazing what we can determine before pregnancy at this point and we encourage our patients to undergo as much of that as we can.

Matt Goldmann : Uhmm…. And is there a trend or are there efforts to temper drugs so they maybe don't permanently impact fertility and are there different classes of…, of cancer-treating drugs that may be safer than others?

Dr. Andrea Reh : Absolutely! You know I have to be honest, I am not familiar with the…, what's coming down the pike at…, at pharmaceutical companies, but I think this certainly is becoming an area of more active research and we are starting to look more at long-term fertility outcomes after treatment. For a number of years, cancer research was focused on, and rightfully so, focused on survival and…, and eradicating cancer as obviously this is always still our number 1 goal, but as we are getting better at fighting cancer, we are able to focus more on long-term quality of life outcomes as well and so we are starting to see more studies that measure fertility and markers of fertility and pregnancy after treatment. So, we are getting a lot more information now about the drugs that we have. You know, we know that some of the big offenders for…, for men and for women are typically the alkylating agents and some of the heavier doses or radiation and some

of the newer medications that we are seeing that are more, I would say, elegant targeting certain antibodies or targeting certain receptors, those, on the other hand, tend to be a lot safer, similarly with directive hormone therapies or even more gene therapies. So…, so I do think we are seeing a lot more progress in this area.

Matt Goldmann : Okay. Thanks. Umm… Suleika, you… you touched on it, but maybe you could talk a little bit more about how you…, you made that decision to…, to opt for fertility preservation before you started your treatment.

Suleika Jaouad : I think it became pretty clear to me earlier on that my goal for myself wasn't just to be cured but to have a certain quality of life. I say this a lot in different lectures that I give that I really believe that health is about adding life to years and not just years to life. That was something that was really important to me. I have always wanted to be a mother. I have always imagined myself having a big family one day and its very clear to me that that was something that I wanted to do. To go back to the issue of the financial barrier that a lot of patients face when making that decision, I was fortunate to be connected to several resources by my doctors and a social worker, primarily Fertile Hope which gives grants to help cover the cost of egg and embryo freezing for cancer patients and then once I had done that, I was connected to something called Verna's Purse that helps cover the cost of long-term egg freezing, which can be very expensive. So, I have about 11 eggs somewhere in a freezer in Minnesota which can be kind of surreal to think about …but it does give me a lot of comfort to know that they are there and that I will at least have the option of trying to have children of my own one day even if the egg freezing doesn't necessarily work. And really what it taught me, I think most of all, was that I couldn't just be a passive patient. I needed to educate myself and to inform myself and to advocate for myself because no matter how brilliant and well intentioned my medical team was, they didn't always know what was important to me and what was my priority. Every patient is different and it was a lesson for me in speaking up and asking questions and doing my own research.

Matt Goldmann : Uhmm… I guess a question for you but maybe also the doctor, was there any talk or discussion about if your fertility was going to be impacted? Any discussion of adoption opportunity for you in the future or is that something you should or could consider?

Suleika Jaouad : Unfortunately, adoption is still a big challenge for cancer patients, so lot of adoption agencies won't adopt out to individuals who have a history of cancer, no matter how far out they are from their treatments. Its something that I don't know a lot about. I know there are a few adoption agencies in the US that focus specifically on working with cancer patients to help them adopt children, but that's something that I think has come as a surprise to friends of mine who didn't freeze eggs or embryos and then went to try and adopt and weren't able to do so because of their medical history. Yeah.

Matt Goldmann : Interesting. Doctor, is there any sort of, it sounds like…, that maybe with the conversations that you have with your patients in your research maybe is a little bit unique, that its not common for oncologists to have this conversation with newly diagnosed patients. Is there any change in.., in how doctors are being trained or their interaction with patients where this was becoming more of a common discussion point?

Dr. Andrea Reh : Absolutely! I think that we are seeing both in the reproductive endocrinology and fertility fields, there is a big interest in research for fertility preservation and we are starting to talk with oncologists more about that as well. Oncologists as well are becoming more educated in this process and…, or if nothing else, just referring to us on a more regular basis to discuss this with their patients. You know, we recognize that for them, they have a lot of other things to talk about and…, and given that this is more our field, you know, they…, they are…, they will typically refer to us so that we can explore those options with the patients and since 2006, its actually been recommended now that they have this conversation and document that there is a possibility or what the possibilities of infertility would be based on that patient's treatment plan and allow the patient that option to have a consultation if it may be. So… And, certainly, I think, you know, whenever I meet with these couples or when I meet with women, you know, its important to consider all the

options and…, and like Suleika talked about adoption, I mean certainly that can be a challenging route as well with no guarantee and a time delay and…, and many costs, but there are other options too and certainly if…, if egg banking or embryo banking is not an option before and…, and cancer treatment has already occurred, then women can choose to even look down routes using an egg donor, in other words eggs from another woman, whether that be an anonymous woman or a family member or even a donor embryo, which would be an embryo already created through the process of IVF, which could then be, you know, carried in a pregnancy or if its felt that that woman would not be able to carry a pregnancy for different reasons, whether it be unsafe or not possible, she could use what's called a gestational carrier or someone to…, to carry that pregnancy too, so… So, there is certainly a number of options available today and I do think that we are talking more and more with patients about it, but certainly there's a lot of room for improvement still to go.

Matt Goldmann : Uhmm… Thanks. Suleika, I mean you are obviously in a…, in a pretty good place right now in terms of your cancer, but was there ever a time when you were really in the…, in the middle of it all that you thought maybe I shouldn't have delayed treatment or do you think delaying treatment for a couple weeks to…, to do fertility preservation impacted your outcome at all?

Suleika Jaouad : Umm… Honestly, that's not something that ever really crossed my mind. The first two months of my treatment certainly after my bone marrow transplant felt very touch and go, but I think if anything, knowing that I had those eggs gave me a sense of hope for the future and its a grim decision. What was really difficult for me was the decision between eggs and embryos and I was in a relationship at the time that I am no longer in and I had…, we had felt very strongly that we wanted to go the embryo route and the social worker very strongly cautioned us against that because I was so young and because we were in a new relationship, but I think that's a really difficult and personal choice. Now looking back, of course, I feel relieved that I didn't create embryos and now I can understand the many different ways, legal and personal, that that can become complicated, but I still think its a really difficult situation to be presented with because when you are taking that time and delaying treatment, you obviously want to go the route that's most likely to be successful, but there are so many other things to weigh when making that decision.

Matt Goldmann : All right. Its… Its impressive that you…, that you put…, that you were able to be your own advocate and put thought into it because it seems like when you are diagnosed its just kind of a whirlwind of stuff, right, and its a lot of fear and its like, oh, I need to get going right away on my treatment because you don't really know what's going on, but I am…, like I said, pretty impressive that you made those decisions early on.

Suleika Jaouad : I think for me it felt like the only concrete thing that I can wrap my head around. Cancer was something I knew very little about, none of my friends had gotten sick and fortunately no one in my family has had cancer, but motherhood and creating a family, that was something that I had always assumed would just be an option at the very least and a decision I can make for myself. So, I think in terms of advocating for myself, I didn't even really see it as advocacy. It was just a very strong guttural reaction that I had where I said, you know, I need to at the very least have a conversation about that with my doctors and I think that's something that's really important even when your medical team feels that you can't take those two or three weeks to do egg or embryo preservation, but I think its a human right to at least be informed of what may happen to your body

Dr. Andrea Reh : Absolutely and just to echo if I may, echo what…, what Suleika said, I think that its…, its…, when patients are given the cancer diagnosis, they have so many things on their plate typically, so many doctors' appointments in a very short period of time, so many, you know, things to consider let alone considering how serious the relationship might be in at the time, like…, like Suleika had talked about. It…, Its truly overwhelming and but I think that we owe it to patients to at least have that conversation and…, and let them know what their options are and I have some patients that have realized that there's just too much on my plate and I don't…, I don't want to devote any energy to my fertility right now, but I am really glad I at least understand and I can make an informed decision about that, but right now, I just need to focus on cancer and there are other patients who feel completely the opposite, who say, you know, this is more important to me than some theoretical risk to my prognosis and I would rather undergo some type of

preservation first and…, and so I think, you know, being able to have that conversation is helpful, no matter what the outcome is and what the patient decides, that they go into it feeling like they have some control in a…, in a situation that is very much out of their control at that time.

Matt Goldmann : Right and I think, doctor, that what you just said about a theoretical risk I think is really important because I think you don't really know what the risk is or isn't or what, you know, what your success is going to be with your treatment or not. So, I…, I do think that you are both important. You need to go with what's important to you and follow that path.

[Dr. Andrea Reh : Yeah, I think its… You know, certainly I…, I am not an oncologist and I defer…, defer that conversation about risk to them always, but a lot of it comes down to…, to patients too and, you know, some patients are willing to undertake that risk and say, you know, I would rather look back and know that I did this even if it has some consequence and other patients don't feel that way. They don't want to take any possible chance that may affect their prognosis. So, its really…, again that's a conversation between their oncologist, but…, but, you know, its still important for them to understand their options.

Matt Goldmann : Right. Okay. Umm… I think that's it for the questions that I have, but I am pretty sure Priya has a whole bunch of questions from some of the listeners or registered participants.

Priya Menon : – Thank you, Matt. I think that was a great discussion. Dr. Reh and Suleika, we have a list of questions that we have received from our listeners. I will just read through them and…, and we can get to each of them. Dr. Reh, the first one is for you. It is, can fertility treatment drugs and hormones adversely affect the cancer patient? If yes, what are those category of fertility drugs that a cancer patient, both male and female, should be aware of?

Dr. Andrea Reh : And this is a great question! I think this is something that all of our patients ask us about, but the short answer is no. The hormones that are necessary to undergo fertility preservation or IVF in general really have not been shown to increase the risk of cancer in any patients and this is very reassuring, whether it be cancer survivors or patients undergoing IVF in general. The studies on women conceiving after breast cancer also appear to be very reassuring and in some cases, they actually show a longer life expectancy with pregnancy than without, although its not clear in some cases whether this is because the woman who has a baby after surviving cancer may be generally a healthier group of…, of women overall and there have been some studies of women who have undergone fertility preservation and that also has not shown an increased risk of recurrence. So…, so, you know, studies, we are ongoing. Obviously, there is a lot more data needed, but it appears to be reassuring so far, but I think, you know, we do see is that particularly for breast cancer patients, especially those with hormonally responsive tumors or estrogen receptor-positive tumors, there certainly is this theoretical risk of increasing the risk of recurrence with any kind of exposure to estrogen and estrogen, we know, is a hormone that is inherent to fertility treatment and pregnancy and so even though the studies look reassuring because of this theoretical risk, we certainly always take that extra precaution with these women when they undergo fertility treatment and we administer a class of medication called aromatase inhibitors and these are medications that work by lowering estrogen levels and try to…, and keep those estrogen levels to…, to a minimum, but, you know, keeping that in mind, the period of time in which hormone levels are elevated is really less than a week during fertility treatment and…, and that's in contrast, of course, to potentially nine months of pregnancy and so I think if its felt that its safe for a woman to carry a pregnancy, then usually its…, its not such a stretch for the patient and their oncologist to undergo the hormonal treatment for an egg harvest, but, you know, in the cases where we feel like that is not a risk worth taking, women still have the option to use a gestational carrier, in other words someone else that would carry her pregnancy even though its her embryo if we feel like it is otherwise not safe.

Priya Menon : Thank you, doctor. The next listener wants to ask, could you throw some light on what dose of radiation is appropriate in order not to cause harm to the reproductive parts? Is there a high risk and a low dosage in that sense?

Dr. Andrea Reh : Umm… Yes, good question! So, what we know is that, you know, radiation will…, can affect

fertility for men and women. It will depend on the total dose that's given and the target organ that's involved. For women and for men when it affects the ovaries or the testicles, it can lead to a decrease in the number of eggs or a cessation of sperm production. If in a woman, she has radiation to her uterus or her cervix, this may affect her ability to be pregnant later on, in other words to carry the pregnancy and we also know if there's radiation to the brain, this may block normal hormone production that's necessary for a woman to ovulate or for a man to produce sperm or testosterone. So, we do know that certain types of radiation, particularly abdominal or pelvic radiation, that exceeds 6 Gray units may present women or men with a very high risk of amenorrhea for women, that means they don't get their periods, or azoospermia, which means for men that they do not have any sperm and this is a condition they may not recover from. Similarly, the kind of radiation inherent to a stem cell transplant, a total body radiation, also carries a high risk of the radiation to the head or brain that exceeds 40 Gray units and certainly these are always in a spectrum. There's certainly no strict cutoff, but these are the doses at which, you know, we are told that the risk is much higher. Typically, this would be something…, this would be information, then we will work with radiation oncologists to determine what the total dose would be for those patients and as much as possible, you know, we will try to shield those reproductive organs before radiation.

Priya Menon : Thank you, doctor. Suleika, this one has just come in. I think you have just…, you have touched upon the cost of preserving fertility and how insurance doesn't cover it. So, the listener wants to ask, do you have to pay every year for supporting the egg freezing for you or is it just a one-time investment that they ask for?

Suleika Jaouad : Umm… That's a good…

Dr. Andrea Reh : Good question, yeah. I am sorry. I was just…

Suleika Jaouad : Oh, was that for you or for me?

Priya Menon : That's for Suleika.

Suleika Jaouad : Okay. So initially, I was storing my eggs at the clinic here in New York City where I did the egg preservation and it was very expensive, I think it was about 500 dollars every six months, which was prohibitive considering that I don't plan on using those eggs for several more years. Through this organization that I mentioned called Verna's Purse, its…, I believe its free. There might be a nominal fee of 75 dollars or 100. I am not sure of the exact fee, but its pretty much completely covered, which is incredible.

Priya Menon : Okay.

Dr. Andrea Reh : And I think if I can…, if I can…

Priya Menon : Yeah.

Dr. Andrea Reh : It is possible… Yeah, I think I…

Priya Menon : Please… Please share your thoughts.

Dr. Andrea Reh : – Suleika touched upon a great organization and that is Fertile Hope. Fertile Hope is now subsidiary of LIVESTRONG. Fertile Hope does provide a number of excellent resources for men and women that have been facing cancer and have concerns about fertility. Educational material is there. There are interactive tools there to learn more about the impact of the particular diagnosis and treatment on your fertility, but also most importantly they also provide some…, they can provide some direction in terms of finding a clinic that may be able to offer financial assistance or a discounted rate for egg freezing or embryo banking. In addition, you know, there are a number of pharmaceutical companies that will often provide a lot of the medications that are necessary for the egg freezing or embryo banking cycles for free and again it may be not all of the…, all of the medications, but the bulk of the medications necessary can be covered. So, its

certainly important to, you know, ask about these things if you are facing this type of treatment because it certainly can get prohibitively sensitive and typically the bulk of the cost is going to be the initial egg freeze and egg harvest, which is those, you know, two to three weeks' worth of medications and then the surgical procedure to remove the eggs which out of pocket could be as high as, you know, around 10,000 dollars or more depending on where you go but does not necessarily need to be that high depending on where you go and then as Suleika said, you know, there is a possibility for ongoing cryopreservation charges, you know, every six months or every year.

Priya Menon : Thank you, doctor. The next question is on ovarian transposition. The listener wants to…, wants you to explain little bit what ovarian transposition is and how it is used as an option for treating infertility in cancer?

Dr. Andrea Reh : Great! So, ovarian transpositioning means that for certain types of cancer when a woman is facing radiation to the pelvis, her radiation oncologist and her surgeon, usually a gynecological oncologist, will work together to come up with a plan to move the ovaries out of the way, out of the way of the radiation and then protect it from exposure and so this minimizes the direct impact of the radiation and there have been spontaneous pregnancies with them in this location. In some cases, they are too far out of the way and they need to be moved back into their original location for conception and in some cases, let's say the woman has a hysterectomy and she has her uterus removed, her ovaries may still be left inside. She can still undergo IVF and the eggs would be harvested again and then embryos created and then usually put into a gestational carrier, so…, so its kind of an example there that gives you an idea of the different…, a lot of different modalities that are used from surgical conservation, transposition of the ovaries, and then assistive reproductive technologies.

Priya Menon : Thank you, doctor. The next question is what is the minimum time that a cancer patient should wait to become pregnant after finishing cancer treatment and what is the timeline given to men for the same?

Dr. Andrea Reh : That's a good question and I…, I have to say that in…, in my suite, typically this is the discussion between the patient and their oncologist and usually I…, I will wait until I have the green light from them to help the patient pursue pregnancy. I…, I think broadly we would say probably two to three years, but I think this really varies on the patient and their prognosis and their overall fertility and cancer treatment plan, but, you know, its important to think of some creative option sometimes. For example, if a patient is using an egg donor or if she is using a gestational carrier, in other words someone else to carry the pregnancy, then its actually medically possible for a patient to become a parent even while they are still undergoing treatment. So, I am not saying that this is necessarily the…, the best way to go about it, but I am just saying there certainly are lots of options that they don't necessarily have to happen in tandem.

Priya Menon : And, yeah. We have another question which says in some cases of cancer, like prostate cancer and germ cell tumors, you may not get any viable sperms even before chemotherapy. So, what is the source of fertility preservation in such cases?

Dr. Andrea Reh : This is a good question and typically we would manage these cases with a urologist who has a focus in infertility and what the urologist could then do is in some cases recover sperm through testicular sperm extraction procedure or epididymal sperm aspiration. In other words, they are able to basically take a biopsy and extract sperm directly. Now, sometimes there may not be sperm there in these cases and sometimes they may just be at a low number and in these cases sometimes these samples can be frozen and later on the patient can still father a child through IVF with the use of a procedure called ICSI. What that means is the embryologist can isolate a single sperm and inject it directly into an egg, so… So, in these cases, certainly spontaneous pregnancy would not be possible, but there is still possibility to…, to father a child with…, with IVF.

Priya Menon : Thank you, Dr. Reh. I think we have covered almost all the questions. I have a last one for Suleika. Suleika, we have a question which says, your blogs show that you have taken your diagnosis very

sportively and have been an inspiration to many young survivors. Now that you are in remission, do you feel you are all set to go back to what you wanted to do?

Suleika Jaouad : So, this is a tough question and its something that I just read about today in my “Life, Interrupted” column in the New York Times and people like to think that you are done with cancer when you complete treatment and I think that for a lot of patients, they never feel done in the sense that their fears of recurrence or the emotional struggles or just coming to grip with the fact that you are not the same person that you were before your diagnosis can be incredibly difficult. That being said, I feel incredibly grateful for the life that I have now. People sometimes say that cancer is a blessing and I am not sure that I personally agree with that. I think that my life is a blessing in spite of cancer, but cancer helped me to see all those things in my life that I am grateful for, that I maybe took for granted before. So, I am not really sure what the future holds, but I am excited to find that out and I feel very grateful for the many other cancer survivors that I have met through this experience to continue to be their cornerstone of my support to them and the people who really are carrying me and help carry each other through not only the treatment part but the aftermath.

Priya Menon : That’s amazing spirit, Suleika. Wishing you the very best. It was amazing and great listening to both of you and thank you for being here with us today. Matt, thank you. You too have been such a great host and we will be having the talk, the broadcast of the talk, on curetalk.com by tomorrow; and listeners, for details of upcoming talks, please visit www.curetalk.com and thank you, everyone. It was great listening to you.

Suleika Jaouad : – Thank you, Priya.

Dr. Andrea Reh : Thank you. Thank you, Suleika and Matt and Priya.

Matt Goldmann : Yeah. Thanks, everybody.