



Social Egg Freezing, All You Should Know

Social egg freezing less commonly known as non-medical egg freezing is being increasingly seen as a secure way of delaying childbearing by more and more women, especially in the US. But is it safe for all women? Who should be opting for it? What do the specialists think about it? In late 2012, the American Society for Reproductive Medicine (ASRM) and the Society for Assisted Reproductive Technology (SART) lifted their “experimental” label for egg freezing, but both cautioned against egg freezing, owing to limited data on safety, efficacy and emotional risks involved. We are talking to reproductive endocrinologist Dr. Aimee Eyvazzadeh and sociologist Dr. Kylie Baldwin to know the current status of social egg freezing in the United States and United Kingdom along with egg freezing perspective by Valerie Landis of Eggsperience and Shalene Petricek of Nest Egg Fertility.

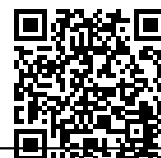
Full Transcript: Shweta Mishra – Good evening and welcome to CureTalks. I am Shweta Mishra, your host, joining you from India; and I want to wish everyone out there a very happy new year 2017 on behalf of our team at CureTalks. We have a big announcement to make today; and we are excited that CureTalks now has a channel on Roku TV, and all our episodes can now be accessed on television too.

This evening on CureTalks’ 117th episode, we are going to discuss social egg freezing. Human egg freezing is a process in which a woman’s eggs are extracted from the ovary, frozen and stored. These frozen eggs can be thawed, fertilized, and transferred to the uterus as embryos when the woman is ready to become pregnant. Egg freezing is called social egg freezing when this procedure is used by young women for non-medical reasons to delay motherhood until they find the right partner or until they find the right convenient time to start a family. On the basis of good evidence that fertilization and pregnancy rates are similar to IVF with fresh eggs compared to frozen eggs for young women and that using frozen eggs does not add to the burden of abnormality and developmental deficit in the born offspring, in late 2012, the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology lifted their experimental label for egg freezing, but at the same time both cautioned against egg freezing owing to the limited data on safety, efficacy, and emotional risks involved.

Shweta Mishra – In the next hour, we are going to talk all about who should be opting for social egg freezing, what are the risks involved, what are the guarantees, and what are the success rates, and so on with our very eminent guests and experts, Dr. Aimee and Dr. Kylie Baldwin. Dr. Aimee, also known as The Egg Whisperer, is one of America’s most famous fertility doctors. She is a Harvard-educated, post-certified OB/GYN, specializing in reproductive endocrinology and infertility, but it’s her egg freezing parties that put her in the limelight. She has been featured in magazines like People, Marie Claire and has been featured on Today Show, Good Morning America, CBS Morning, and Fox Network. Dr. Aimee’s role is to teach everyone about how to get ahead of infertility.

Dr. Kylie Baldwin is a medical sociologist, specializing in reproductive ageing and infertility extension technologies such as social egg freezing. She is a senior lecturer in sociology with reproduction research group at De Montfort University and recently completed her research study which explored women’s use and experience of social egg freezing in the UK and USA. Dr. Baldwin’s research has received widespread attention and has been featured and discussed on BBC, Radio 4 as well as in The Guardian, The Telegraph, The Times, and The Independent. She is also the convener of British Sociological Association’s Human Reproduction Study Group.

I welcome you both to CureTalks, Dr. Aimee and Dr. Baldwin; and on the panel, we have with us today Shalene Petricek who with 17 years of experience in the biotech industry is not only an industry veteran but also a client, having preserved her own fertility through cryopreservation before most people even knew about it. The recipient of several excellence awards in her previous career, Shalene started Nest Egg Fertility



with the intention of creating the experience she wishes she had had. Today, she is a leading expert in the field of infertility, frequently consulted by media outlets such as HLN, CNN, Los Angeles Times, and Sunday Night Australia. My co-host for today's show is Valerie Landis who has been working in the field of women's healthcare and infertility for the last decade where she merged her medical career and fertility passion and founded educational website, eggsperience.com. Valerie has traveled to build partnerships with fertility clinics all across Europe and US; and she also writes for websites like BabiesAfter35, EggChill, Frozen Please, etc.; and she also speaks openly about her personal egg freezing experience to provide fact-based information for..., to help women act progressively today. I welcome you both, Shalene and Valerie; and I extend a..., I extend a hearty welcome to all our listeners and I would like to remind them that we will be discussing questions sent in via email at the end of the show. So, you can email your questions to priya@trialx.com; and if you want to ask a question live, please press 1 on your keypads and we'll bring you on air to ask them or you can also post your question on the CureTalks' website as you listen to the show.

Shweta Mishra – So, let's begin with you, Dr. Aimee. It seems like the medical fraternity is still divided on the issue and many leading fertility experts still think that social egg freezing means providing false hopes and the regulatory agencies are not doing enough to paint a clear picture on what the success rates for these young women should be. In the light of controversial nature of social egg freezing, could you please comment on this and provide us with some clarity on the current status on what the authorities think about it, the social egg freezing status in US?

Dr. Aimee Eyvazzadeh – Hi, Shweta! Thank you for having me on. You know, I just want to point out, when we say egg freezing and we use the word "controversial," I just think to myself, do we ever use the word "sperm freezing" and "controversial" in the same sentence? I mean, sperm freezing has been around for decades, but we don't talk about giving men an opportunity to, let's say, father a pregnancy when their sperms have run out with a sperm donor and the whole concept of sperm freezing is not something that we use the controversial term with. So, when I think of egg freezing and the controversial nature, for me, I think, look, we are giving women a chance for pregnancy, an option that they may not have in the future and I think what authorities like me and fertility experts want to make sure that patients know is that you don't..., you can't bank on these eggs turning into a pregnancy in the future and you said something very important about what the chances are for pregnancy with their egg and how patients need to.... Its very important that patients need to know, there are very useful online calculators and I tell my patients to go to them and maybe I'll post them on my website right after this radio show. So, what I do is I show a patient, you know, I tell them, you know, this is your antral follicle count right now, this is your age. I put it into the online calculator. It will actually give me a pregnancy rate. So, for example, at 36 years old if you want to freeze your egg, let's say, you have 10 eggs, your chance of pregnancy and I am always very conservative with my estimate, is about 20% with those eggs. Right? So, let's say, at 40 you want to try and get pregnant with IVF, your chances might be, let's say, I am just going to throw out a number and say 10%. So, if you used your 36-year-old eggs when you are 40, you are giving yourself twice the chance of pregnancy. So, for some people, some people would say, oh, that's so low, but I think there is a misunderstanding about human biology and how efficient human beings are when it comes to getting pregnant. We are very inefficient. We are not cats, rats, or rabbits. Right? We are... Each egg does not turn into a pregnancy. Every egg has a chance for pregnancy.

Shweta Mishra – Right.

Dr. Aimee Eyvazzadeh – So, I really liked that you asked that question.

Shweta Mishra – Okay. Sure. Thank you for your comment, Dr. Aimee. Let's move on to Dr. Baldwin. How would you describe the status in UK, Dr. Baldwin? What do the available data show us?

Dr. Kylie Baldwin – So, egg freezing has been available in the UK since about the year 2000, but its only really been since the increasing use of the new vitrification method of egg freezing that its really been kind of seen as a more viable technology that women may want to use if they want to preserve their fertility, but its only really in the last five years or so that egg freezing, as we talk about social reasons, has been something



that people have been aware of and I think this was to a degree linked to the ASRM ruling in 2012 which deemed egg freezing no longer experimental and that was when it kind of really entered the UK a technology to be talked about and to be considered for some women, but still in the UK, we don't know the numbers of women who are freezing their eggs for social reasons and it was only this year that the facility regulator released data on the numbers of women undergoing egg freezing, but at this stage that data was still not...., can't be examined to identify how many women are doing it for these non-medical reasons and how many women are doing it for social reasons. The anecdotal evidence does suggest there is a rise in the numbers of women who are seeking to undergo egg freezing and actually undergoing the process. So, we don't... We still don't have the numbers on how many women are doing that. Of course, in the UK context as well, its not available on the NHS and its just being currently through private clinics. So, at the moment, in the UK, I think the..., the mood is such around, its perhaps one of cautious optimism towards this technology that perhaps may offer some women the opportunities to become mothers later on in life.

Shweta Mishra – Sure. Sure. Well, so cautious optimism it is for UK, right? So, yeah, at this...

Dr. Kylie Baldwin – Yes.

Shweta Mishra – ...point, let me invite in Valerie Landis who is very enthusiastic about this whole issue of social egg freezing and she is an egg freezer herself. Valerie, are you there?

Valerie Landis – Yes. Hi! Welcome! Thanks, everyone, for being part of the show. Its so exciting to have such a great panel of people that are so passionate about egg freezing. So, thank you, all, for being a part of the show. Dr. Aimee, you know, you said really great things just little bit earlier about how we still compare sperm freezing as cautious, but, and so why should we refer to egg freezing as being cautious. So, who benefits most from egg freezing in your mind for non-medical reasons? What's that page look like?

Dr. Aimee Eyvazzadeh – Yeah. So, the thing is that you don't really know if you are doing it for non-medical reasons, right? I mean, if you think about it, let's say, you are a 25-year-old woman and fertility aware. You've taken, let's say, a fertility health history and let's just say, no one in your family has had any problems conceiving. There is still a chance that you can have a problem conceiving when you are ready to have a baby. So, let's say, you freeze your eggs... What I am trying to bring up is, just the word "social egg freezing" means you are doing it as if you probably don't even need it, but you don't really know if you are going to need it until you need it. So, I tell people, I joke with them, I say, "Look, I want everyone to have three or four kids." I am kidding, of course. I want everyone to have the family size that they always envision. So, let's say, that 25-year-old ends up wanting to have...., or she happens to have her first baby at 39. Well, at 39, she has, you know...., its really hard to get pregnant over the age of even 37, but at 39, she is now using her eggs for medical reason, right? So, she might have frozen her eggs for social reasons when she was 25, but at 39 she can now not only have one baby because her eggs were so fresh, so to speak, at 25, she can then potentially have the family size that she initially envisioned with those eggs from 25. So, that's one patient.

Dr. Aimee Eyvazzadeh – The other patient is the patient who is starting her family at 36. So, at 36, let's say she gets her AMH level drawn, its 1.1. Its on the lower end of what's considered, let's say, fertile. She is still considered fertile but is in the lower range of fertile. She gets pregnant, no problem, but now two to three years later, she comes back for her second baby and now its a different situation. So, if she had frozen her eggs first, then she would have given herself potentially a higher chance for pregnancy and she wouldn't have to go through the heartache of fertility treatment. Other patients for non-medical reasons would be someone, I mean, let's just take the military, for example. Women who have to put their lives on hold, who have to go and put themselves in danger as well as expose themselves to environmental risk factors that, you know, they may not even realize for years to come. So...., you know...., we've heard a lot in the news about how the VA is offering egg freezing to women in the near future, if not right now.

Valerie Landis – It's a really great point! You know, the average of first-time moms is rising over the last recent years, and women are waiting longer for many different reasons to start their families. So, can you



explain or maybe expand upon, you know, some of the cost savings that a woman could essentially incur from freezing her eggs at a younger age than all the fertility treatments that she could spend in when she is older?

Dr. Aimee Eyvazzadeh – Okay. So, it's overwhelming to think that a 25-year-old, let's say, has 10,000 dollars to freeze a set of eggs and the cost of taking an egg to an embryo is approximately..., it's close to 25,000. So, hopefully, over time, those costs will go down with changing technologies, but right now that is the average amount of money a woman should be prepared to spend if she wants to take her egg to a pregnancy. So, now let's fast forward. You are having trouble conceiving and you need to do six IVF cycles to achieve your family size goals of two children. Well, now you are spending close to easily maybe 100,000 dollars plus and then let's say it doesn't work, then you are looking at using an egg donor and a cycle with egg donation depending on whether you use banked egg or fresh egg, you are looking at spending up to 40,000 dollars, if not more. So, you can see that you are saving yourself money and potential heartache by freezing your eggs when they are fresh versus waiting until the edge of your reproductive window and hopefully having as little emotional issues associated with not having or giving yourself the option. So, what I'll say is most of my patients who come to see me over the age of 40, almost all of them wish they had frozen their eggs and they say, "I wish I did it. Why didn't I do it? Why didn't I do it?" and the thing is, we all know that that doesn't mean that those eggs would have turned into a pregnancy, but just knowing that they had that chance at least they would have given themselves that chance at that time.

Valerie Landis – Yeah. That makes a lot of sense. I mean you consider egg freezing almost a preventative-type medicine. You could take advantage now when you are younger or at least educate yourself to know the risk factors when you are older and so that leads me up to Dr. Baldwin. I know you did a lot of research with your sociology work and some of the social reasons that women are freezing. Can you expand on a little bit what your research told you or you found?

Dr. Kylie Baldwin – Yes. So, I interviewed certain women who had frozen their eggs for what they identified as social reasons and for them, it was this..., this shared sense of there being some kind of barrier to motherhood, which at the time that they went to freeze their eggs, there was some kind of a barrier, the barrier in the sense it wasn't yet the right time for them to pursue motherhood and this is most often due to the fact that most of my participants were single and a small number of them, about five of them, who were in relationships. There was this sense that the relationship they were in perhaps wasn't the right relationship in which to become a mother or there were concerns about the potential for the relationships to break down but also some of the women, they were in relationships with men who were giving off the impressions subtly or less so that they didn't want to become fathers and so it was very much about them wanting to become a mother and in some cases for many years prior to freezing their eggs but them not yet being at the right time and place with the right partner who they thought would be a good father for their children and this is why many of these women tend to egg freezing and so they would hopefully be able to pursue the family type and experience motherhood that they desired later on in life when their fertility may have already declined.

Valerie Landis – Wow! That's some great data! Are there any gaps between..., like what the public perception versus the academic perception with regarding to egg freezing?

Dr. Kylie Baldwin – Yeah, I mean to... I mean we talk about egg freezing a lot, you know. There is egg freezing for social reasons and egg freezing for medical reason. I think that's why it's important to think about that distinction and actually, you know, we think that... My research has found that around about 20% of women I spoke to spontaneously disclosed that there was some kind of underlying medical issue that actually influenced their decision to freeze their eggs, what they identified as social reasons and so these were things such as them experiencing underlying fertility or health problems, things such as polycystic ovaries, endometriosis, or having a risk of premature menopause and cancer in the family and so these medical issues very much did shape their decisions about engaging with egg freezing, which makes us rethink, you know. There is, perhaps, this line between egg freezing for medical reasons and egg freezing for social reasons isn't..., you know, publicized enough, than we first anticipated and we hear a lot in the media about, certainly in the UK and perhaps as well in the US, you'd know better than me, that women are



engaging in egg freezing for these career reasons so they can spend further time pursuing higher educational qualifications, advanced degrees, you know, developing their place in the work place, these sorts of things and this is..., this is the reason why some..., some elements in the media are suggesting that women are freezing their eggs; however, some of the women I spoke to that, you know, career reasons had nothing or very little really to do with their decision to freeze eggs. It was much more related to find that they were not in the relationship with the right male partner and all they say is they were not yet ready to pursue motherhood for reasons related to their relationship status or their housing status and it was much... It wasn't really linked very much at all really to these career reasons, but, that's, of course, not to say that women aren't engaging in egg freezing for career reasons or that there was any reason why they shouldn't necessarily, but that we hear this a lot about women freezing eggs for career reasons, but this really wasn't blown out in the data I have collected.

Valerie Landis – Very interesting research! Shalene, you were an avid egg freezer, did it a couple of times and actually started Nest Egg Fertility because of that. Can you expand a little bit about your journey and how egg freezing started to become part of your life?

Shalene Petricek – Hi! Absolutely! So, my egg freezing journey started nearly 10 years ago and it was a pretty emotional one, financially confusing, the way some of the clinics priced the information and it was still kind of considered taboo at the time. No one really discussed about it, and social egg freezing certainly didn't exist. So, as you can imagine, the information and education were completely lacking. Egg freezing was really reserved for women with cancer; and even with my background in biotechnology, it was really still difficult for me to navigate my way through every aspect of the process. I was given a lot of misinformation along the way; and ultimately, I even had a year in between pulling the trigger and actually doing it to my initial consultation where I was first told that wouldn't even be a possibility. So, ultimately, I started Nest Egg Fertility No. 1 so I could just help women understand that their biological evolution really hasn't caught up with their social evolution; and just because we see celebrities having babies over the age of 40, it doesn't mean that its going to be a possibility for everyone. In fact, its probably less of a chance. So, I really wanted to get women talking about their biological timeline, but I also wanted to create the kind of experience that I wish I had had and by doing that and creating the company and wanting to create transparent packages so women would understand financially what they were dealing with and some of the emotional factors that come into play that really surprise you along the way, so really just through the education and creating a journey that I wish I had had.

Valerie Landis – That's great! We definitely appreciate programs like Nest Egg Fertility helping create good access for women and education which seems to be improving. When you are working with your egg freezing patients and helping them through the cycle, what are some of the most common factors that you are discussing with them?

Shalene Petricek – Well, I think I first start off by saying that this is a very personal choice and its not going to be a path for everyone. You know, there are many paths to motherhood and this is just one. Its..., its giving yourself the best chance with the technology available that we have for a biological child, but its certainly not a guarantee and its not the only path. I also want them to understand the emotional factors that come up. Many of the women that come to my clinic..., my agency, are, you know, approaching an age where they haven't found the right partner. I think Dr. Baldwin discovered that through her research that the majority of the women that are coming through just aren't in a place where they have found that suitable partner. So, it brings up a lot of emotional factors. So, I try to prepare them for that and prepare them that, you know, they are giving themselves the best opportunity with the technology that's available now and lastly that, you know, really, a woman's fertility is a precious resource that's limited to just a few years. So, if you can't proceed with, you know, having your family in that moment in time, you know, social egg freezing as its being called here today or preserving your fertility for a later time is really a great option for these women.

Valerie Landis – Great! That's an awesome point. Once again, I think we are all very much aligned with talking about how egg freezing can really help women extend their fertility, maybe not guarantee it, but give yourself better options for the future. Shalene, did you have a couple of questions for the experts that you



wanted to ask maybe Dr. Aimee and Dr. Baldwin?

Shalene Petricek – Sure. I have a question. Dr. Aimee, in October of 2016, you mentioned that ASRM recommended that any woman considering to have a baby after the age of 35 should consider freezing her eggs, but at the time the ASRM didn't state the ideal age to consider freezing. What do you think the ideal time is to freeze and is there an age that you would not recommend this procedure?

Dr. Aimee Eyvazzadeh – Yes. So, everyone's ideal time is different. I have had patients who have run out of eggs and they are 25 years old and they are looking at using an egg donor. I have had patients who have been able to achieve pregnancy at 45 with their own eggs, even 46. Okay? So, my goal in educating women about their fertility levels is so that every 20-year-old woman or so when you go in for your first Pap smear, you actually get your hormone levels checked to see if you are someone who should consider egg freezing and I am very excited about a very new test. Its so new that... I mean, people are just hearing about it now and its called Fertilome, like genome, but Fertilome, and it looks at fertility genes or I should say infertility genes that put you at high risk for primary ovarian insufficiency which is basically early menopause, endometriosis, decreased ovarian reserve, PCOS, recurrent implantation failure, and recurrent pregnancy loss. So, imagine, if, let's say, you find out that you have the high-risk genes in your 20s. Even if your hormone levels are really, really good in your 20s, maybe you are someone who should consider egg freezing and maybe not just one cycle of egg freezing depending on how many eggs you get. Let's say you are someone who is in their early 20s, who is checking their levels and you see that you don't carry any of these high-risk genes because we know that a lot of these things are in our genome and up until now we didn't know what separated one woman who has an AMH of 5 from another woman who has an AMH of 5, who you can't get good embryos from one but you can from the other. So, now we basically have a personalized genetic signature, the opportunity to tell women what their genome is telling us about their future fertility and I think this is super exciting because then I think women can make more informed choice or decision about whether they should egg freeze or not.

Shweta Mishra – Hi, Shalene! I... Yeah. I just..., I am just curious about this Fertilome thing, Dr. Aimee. Can you..., can you discuss a bit about the cost involved in that test or something?

Dr. Aimee Eyvazzadeh – Yes. For now and I just want to point out that I am not sponsored by the company, I am not paid by the company.

Shweta Mishra – Sure.

Dr. Aimee Eyvazzadeh – Since I started, you know, my practice, my goal is always to research and find the latest and greatest tools that I can offer patients because we all want to know the why. We all want to know why things aren't working out, especially when you are a fertility patient and so its one blood test, its basically one tube of blood, 4 mL. It takes about two weeks to get the results back. Right now, the cost is 1900 dollars. It is not covered by insurance...

Shweta Mishra – Okay.

Dr. Aimee Eyvazzadeh – ...but imagine the cost savings, you know, if you think about it. Let's say you do the test. It can potentially guide your future decision making and hopefully save your money and heartache in the future.

Shweta Mishra – Sure. Yeah, exactly. Thank you so much for your answer. Yeah, Shalene. Shalene, please go ahead.

Shalene Petricek – Hi! That's amazing. That's the first I have heard of that. I have a question for you. You know, you've been such a pioneer through educating women on their fertility and I wanted to know as a pioneer through your egg freezing parties, what social changes have been seen? Do you think that there has been progress with a woman's understanding of her own fertility timeline or do you think that we still are sort



of in the infancy stages of education?

Dr. Aimee Eyvazzadeh – I think we've come a long way, but every time a celebrity like Janet Jackson comes out and says that she is pregnant at 50, I realize that we still have a long way to go. So, I think more than ever women are getting their fertility levels checked. Just because you are getting your fertility levels checked doesn't mean that, you know, you are then making the decision to do something about it, but I think that just telling women that their hormone levels that you can do or check give you the opportunity to perhaps, I use a hashtag, #getaheadofinfertility. I think women...., more and more women, are doing it. So, I think that we have made huge advances in terms of being able to educate women about what to ask for when they go in for their doctor's appointments and not only that, I think Ob/Gyns are doing a great job talking to women about their fertility and they are doing it earlier.

Valerie Landis – Yes. That's great and such important work. Dr. Baldwin, you touched upon this earlier and you have a lot of research that talks about the misguided perception that women were putting their careers first when thinking about freezing their eggs and your research demonstrated that many of the women were choosing to freeze their eggs due to not finding the right partner. Can you expand a little bit more upon that as to what you found in your research?

Dr. Kylie Baldwin – Yeah. So to say, it was very much about finding the right partner, but it was also more than that. It was that they wanted to find not just the right partner, the right, you know, potential husband, or, you know, long-time partner, but they wanted to find the right father for their children, particularly, some of these women were looking for a father who they felt would kind of live up to cultural ideals of what sociologists refer to new fatherhood, someone who was going to be hands-on in the parenting process, who would be engaged and who was just equally committed to parenthood as the woman was herself. There were also some further findings that were perhaps somewhat unanticipated. So, two things really. First of all, women I spoke to, they'd..., they'd..., some of them had known about egg freezing for several months before they went to see..., referred themselves to a clinician through their GP, but also in some cases they'd known about egg freezing for several years. Its been something that had been on their radar, as they would say, one way or another since some cases quite some extended period of time and it was something they had considered, but for many of these women, they didn't want to freeze their eggs. They wanted to pursue motherhood with the right partner straight way but wasn't available to them and many of them had hopes that they would find the right partner as the partner who they thought would be a good father for their children, but it had been once the likeliness of them finding this partner, developing relationship, and get into the time and place in that relationship they wanted to to pursue motherhood.

Dr. Kylie Baldwin – It was when the story itself felt like it was perhaps closing a bit, that's when these women actually turned to egg freezing and to make use of the technology. So, its something that women..., some women had quite an ambivalent relationship, where there was something they didn't want to have to turn to, but they did when their fertility was coming closer towards an end, but also when I went into this research, you know, it was about five years ago I started this project now with this assumption that the women who freeze eggs really wanted to become mothers and actually identified some ambivalence not only about how were their feelings towards egg freezing technology but also ambivalence about motherhood. So, for some of the women in my sample, round about 20%, they were not entirely sure that did want to become mothers, but instead their ideas about motherhood seemed to be significantly contingent on relationships with future male partners and the women would say, "You know, I think like to become a mother, I am not entirely sure, but I am not ready to close that door as such." They wanted to keep the option of motherhood open, just in case they did think there was something they wanted to do, but also if they entered into relationship with a male partner, they wanted to offer it to that partner. One of the quotes from the women I interviewed, she says that she doesn't want to turn up to the party with nothing to offer and she hoped that her future partner would see the gift with purchase that she kind of joked about it, that she wanted to be able to go into future relationships, offering the possibility for parenthood and so with these kind of additional findings, this ambivalence and kind of reticence in some cases to engage with egg freezing which perhaps accounts the older-than-ideal-age women are making use of this technology but also ambivalence about motherhood. They weren't entirely sure. Some of these women, they did want to become mothers and they



desired about motherhood but very much contingent on what her future partner may want or not want in the future.

Valerie Landis – That's such great work and I think its just, you know, opening the conversation for so many women to, you know, realize that, you know, the relationships are obviously guiding them towards egg freezing, but through your work, there are obvious cultural differences between countries as well as different ideologies that drive social behavior. Based on my experience working with the different women in this field and what I have seen in the media, there appears to be greater judgment towards women delaying motherhood in the UK versus the US. I am just curious to know if any of your research reflects this general perception that I have seen and if so, have you seen those differences also reflected in social egg freezing?

Dr. Kylie Baldwin – That's Interesting! I mean, my research didn't gather data examining the public perception of egg freezing or public perception of delayed motherhood or older motherhood and we still don't have any data in the UK context on what people think about egg freezing, but I would say depends, you are right, that there is, you know, quite a degree of judgment in the UK level that women who delay motherhood and are older mothers and older mothers are sometimes presented in certain elements of the press as quite cold, selfish, uncaring individuals who have chosen to delay motherhood until they are older, but the problem with this, of course, is that, you know, research shows time and time again that, my research showed this too, that in many cases women do not actively choose to push off, to delay, to avoid motherhood until they are older. There are many cases, they just don't feel able to pursue motherhood until an older age due to things such as the lack of a partner or a romantic partner dragging their heels with regards to parenthood and all other concerns about the stability in employment or their housing situation and there is this negativity towards older mothers in the UK context. I think its interesting perhaps to see that it is less so in American context, but I don't think I could have been sure why that may be, but I think its interesting that perhaps we don't see this negativity towards older fathers. I mean, we have famous rock stars like Mick Jagger who keep fathering children into 70s, but he is not subjected to same level of criticism as older women are. I mean, I think, you know, there is this judgment towards older mothers because there is this perception women are choosing to delay and I think very much needs to be unpicked and to be thought about more critically. There are many cases where women aren't choosing to delay, but I think...

Valerie Landis – Absolutely!

Dr. Kylie Baldwin – ...this assumption of delay..., this assumption that women are choosing to undergo risky fertility treatments, who are choosing to undergo and experience the risks of older motherhood, which is why they are criticized as such and somewhat unfairly, if it wasn't a decision women chose to make as such.

Valerie Landis – Absolutely! Absolutely! Thank you so much.

Shweta Mishra – Valerie, do you have any more questions?

Valerie Landis – Yeah. You know, I just have another question for both Dr. Aimee and Dr. Baldwin. Dr. Aimee, you know, we talked about some of the science and a little bit Dr. Baldwin also pointed out out and can you explain the differences between some of the newer technology with vitrification versus some of the challenges with the older technology of slow freeze. Well, I think it would be very important to discuss, you know, why social freezing is now more of a viable option for women than in your past?

Dr. Aimee Eyvazzadeh – Okay. I can start with that. So, no one uses slow egg freezing any more in the US when it comes to egg freezing. So, vitrification is just the way of the future and will never go back. With vitrification, the eggs are more stable. We have a huge experience with vitrification because we have vitrifying embryos for so much longer. The beauty of freezing an egg, vitrifying it and then thawing it for injection of sperm later is that when you thaw the egg, survival rate in the lab that I use are close to 100%. So, 98% of the eggs that you freeze, you are going to recover them. So, with the older technology and unfortunately lot of the media..., the articles that you read in the media, they mislead people into thinking that you are going to lose all your eggs once you thaw them, survival rate 0.2%, pregnancy rates are so low now,



but the truth is that's actually not the case. So, if you freeze 10 eggs, most of the time you will get close to 10 eggs thawed for you depending on the lab that you use. So, when you are choosing an IVF lab, this is exactly what you should ask them is, what is your survival rate of egg..., of frozen egg.

Valerie Landis – That's really great data. I mean, just thinking about like when you go to a clinic, making sure that you are comfortable with that doctor, in that lab and do not be afraid to ask what their rates are and how they..., what technology they use in making sure that they have the latest and greatest kind of like you were saying too. Dr. Baldwin, in your professional opinion, what do you think is involved in some of those challenges with cryopreservation, like with financial and emotional and... Are women having a lot of emotional support from their family members who they talk to at all about, you know, those choices why they are freezing and how they have come to that conclusion?

Dr. Kylie Baldwin – Yeah, I mean I definitely would like to talk about, you know, the emotional aspects of my present experience, but I also just pick from what Aimee has been talking about with regards to success rates. So, of course, I am in a UK context and things are different in the UK with regards to the, you know, fertility regulator, how long egg freezing is being offered, but one of the problems which we really face when in the UK context is clarity, transparency, and openness really in every sense about the success rates of egg freezing in the UK. You know, I said in the beginning of the show that we know the UK is approaching egg freezing with cautious optimism and I would say it really is quite cautious because we know the data..., the published data about the success rates of egg freezing have predominantly come from places such as the US which have been doing it for longer, places like Italy as well, but in the UK, you know, this technology has not been offered for a long period of time and clinics were having to rely on published data from specialist clinics in the US and, you know, perhaps ones like your's, Aimee, but we are not sure yet and there is no data to suggest that UK clinics can replicate those same high levels of success rates, you know, successful thawings and you know the fertility clinic in your local town and city.

Dr. Kylie Baldwin – So, this is a real problem in the UK context because women aren't able to get accurate data on the likeliness of egg freezing success, but also they are not able to get it broken down by age and as we know, as women get older, the likeliness of about success rate with egg freezing is going to go down as they get older. Unfortunately, women are still freezing their eggs, you know, like the clinicians would say is too old an age. This is the problem itself, but to return to your actual question about the, you know, the emotional aspect of egg freezing, this is something good, really was significant as many of my participants, I mean as I said before, many of these women were quite ambivalent about undergoing egg freezing. They didn't want to do it. They wanted to be pursuing motherhood straight away. So, there was a degree of emotional anguish around egg freezing, first of all about paying for the procedure because it is, you know, so quite expensive and exclusion where only some groups of women are going to be able to access it, but also once that was dealt with there was still the emotional aspect of going through what is often referred to as half an IVF cycle but without that partner to do it with like a woman would do usually if she were going through IVF with a partner and so this was challenging for many of these women because as they said to me, you know, they weren't where they expected they would be at their life. They had anticipated they would become mothers by the age that they were then and so going through a process of injecting themselves with fertility hormones, the trauma, and the wait that women find is quite a daunting procedure.

Dr. Kylie Baldwin – I mean it was emotionally difficult for many of these women without then the added hormonal influence of just the drugs that they were taking. Many women I spoke to said that they, you know, they hadn't disclosed widely what they were doing because they didn't feel they wanted to, but they've perhaps told, you know, a small number of friends or family who were then supporting them and one woman said to me, she said that she just wouldn't have been able to do egg freezing without the support she got from her families and friends and she wouldn't recommend it to someone who didn't have a network as such to fall back on, to be supported in what is a, you know, physically exhausting, somewhat invasive and there was, you know, some risk to this process as well and so there were these difficulties, you know, paying for the procedure, undergoing it emotionally as well as physically for the women I spoke to.

Valerie Landis – Shalene, did you have similar thoughts on the emotional aspect when you were going



through egg freezing and have your thoughts on motherhood changed now that you have completed the procedure and have your eggs on ICE, have your views shifted or any takeaway advice that you would offer any future egg freezers?

Shalene Petricek – Definitely! I mean it was definitely an emotional process for me. I think when you are first starting a process, at least for me personally, there was so much angst around the unknown, from the physical part of it, having to give yourself the shot to being at a place in life where you don't have that partner that you want to do this with. I certainly was there and then it was just, you know, the scariest thought of, am I going to still be able to be a mother and am I still going to be able to have my own biological child. So, that's a bit of a mourning process of the unknown and not knowing if this is going to even be a possibility and I think now having nearly been a decade later, I have really evolved to a place where I have this understanding within myself that this is one path to motherhood and ultimately love is what makes a family and even though this process, I am still in the middle of it, you know, may not work out, you know, the way I hoped. I mean, there is a great chance that it will, but in the odd event that it does not work out, I can still be a mother and I think that's the biggest takeaway that I got through this whole process and, you know, I am left with no regret and there are no regrets that I have given myself the best opportunity, that I will, in the end, be able to be a mother and this is just one path and ultimately its love that makes a family.

Valerie Landis – That's very touching! Shalene, thanks for being so open about your own personal journey. I think now I am going to turn it back over to Shweta and we have some questions from online.

Shweta Mishra – Yeah, sure. Thank you so much, Valerie. We have a long list of questions from the listeners, almost about 20 questions, but I will not be able to discuss all of them, but yes, let's start with one. The first question says, what are the average number of eggs that can be harvested in one ovarian stimulation cycle and how many such cycles a woman has to undergo to produce sufficient number of eggs to increase the success rate? Dr. Aimee, you can address this.

Dr. Aimee Eyvazzadeh – Yes. So, everyone's potential number is different. I have patients who come in and say, "Hi, Dr. Aimee. I want you to freeze 20 eggs for me. I heard that's what you got usually when you do an egg freeze," and I say, "Actually, no. I don't know what your potential number is until I do an ultrasound." I look at the ultrasound. I take a look at the number of follicles and then I can predict the number of eggs that I could potentially get. So, let's say, if your follicle count is around 15 or so, that kind of gives you, you are kind of put into this "good prognosis category." So, if you have at least 15 follicles, chances are, hopefully, you will have a good egg in that batch. Your age has a lot to do with it as well, also your fertility hormone level. So, you know, when you see your doctor for the first time to talk about egg freezing, that's the best question you can ask them because you want to ask how many eggs are you going to get and at what point are you going to know if I have enough for me to reach my goals and everyone's goal is different. So, I can have one patient where I get six eggs from, she is 37 years old and I say to her, "You know what, I really want you to consider doing at least one or two more cycles." Or, I have a patient where I get 15 eggs from her, but physically when we look at the eggs, they are grainy, they have dark cytoplasm. They might have some other characteristics that make me worry that may be the percentage of eggs in this batch might be lower than we had thought going into it. So, even though I got a really nice number of eggs, she may want to also consider doing another cycle. Great question!

Shweta Mishra – Okay. Sure. Thank you! Another one asks, what do you think would be the ideal age for women with no problems to freeze her egg. I think we addressed this one, but then she...., the person asks further, what do you recommend the young woman getting tests done before using their eggs and determining how many eggs they have before recommending a certain age for egg freezing?

Dr. Aimee Eyvazzadeh – I mean, the thing is that I have patients that come to me and they say, "Aimee, so do you think I can wait three years?" and I say, "No, I can't. I am not a crystal ball. I can tell you that the diagnostic tests that I have done on you imply that its probably worth freezing your eggs. Okay? I cannot say and your eggs will turn into a pregnancy." So, I would say, if you are 32 years old or so, no health problems, you have done the FertiloMe test, you know, because you did it, you know, and there are no issues there,



you know, you might want to consider freezing your eggs. If you have access to a test like the Fertilome test earlier, then you can freeze them younger, but I think 32 is a really nice age to give you really good set of eggs without any other health issue.

Shweta Mishra – Okay. I am just curious.... Yeah, sure.

Shalene Petricek – And I think their birthday..., their birthdays is a nice time that you think about it. Like, I know, I froze my eggs on my 33rd birthday and it was literally because when your birthday happens, you have like a whole..., you think about the whole year that just took place and..., and so I think the early 30s or even late 20s is a good age too. I agree with Dr. Aimee.

Dr. Aimee Eyvazzadeh – Okay. I love that you just said that because you know what a lot of women do, they get their mammogram on their birthday. Its like their birthday present to themselves and everyone knows what a mammogram is, but if you take young women who in their 20s and say to them, “Do you know what a mammogram is?,” they are all going to say yes, but if you tell them, hey, how many of you, raise your hands, know what egg freezing is, maybe two of them will raise their hands. Women in their 20s just don’t know how to become fertility aware that you can get your levels checked and then we can do something like egg freezing.

Shweta Mishra – I am just curious. What were the women using... I mean what tests were you recommending before the Fertilome came to the market? I mean what tests were...

Dr. Aimee Eyvazzadeh – So, the tests I recommend are FSH, estradiol, and AMH and if there is anything, so let’s say the FSH comes back low and the estradiol is high, then I recommend repeat testing with the FSH, estradiol as well. If you come to see me in my office, I also take a very detailed fertility family history, not everyone knows when their mother went through menopause, like those are the kinds of questions that I ask.

Shweta Mishra – Okay.

Dr. Aimee Eyvazzadeh – I also ask about inherited cancers because we know that IVF does not increase the risk of breast cancer. Okay. We know that, but there are certain people that may have a gene that makes them very sensitive to IVF medication and they should know ahead of time before they do an egg freeze, so I recommend an inherited cancer gene screen for over 22 genes to make sure that I am not putting anyone at risk for anything like ovarian cancer, breast cancer, and women who, let’s say, have one of these genes, you can still freeze your eggs, but your would use a very special protocol so you are not exposing yourself to risk.

Shweta Mishra – Okay. Sure. Okay. The next question asked, can you talk about the success rate for IVF for different age groups because the stats I have read suggest that the success rates for women who are below 35 are very low and given how expensive the process is, that’s serious consideration.

Dr. Aimee Eyvazzadeh – Yes. So, the success rates for IVF below 35 are quite high. The success rates for women over 35 are quite low because like I said earlier, that’s human biology. So, the rate of change in a slope, if you were to look at a graph for pregnancy rates over time, the slope changes quite dramatically after the age of 37 and then again very dramatically after the age of 42. So, its not that success rates for IVF with frozen egg, you know, changes, its because human beings are less fertile as we get older, but still your pregnancy rate with your set of frozen eggs at 37 is still going to be higher than your pregnancy rates with your own eggs, its always your eggs, but with fresh eggs, let’s says when you are 42.

Shweta Mishra – All right. The next one asks, what happens if the eggs are mishandled or misplaced and that is what happened to me. It was like flushing \$12,000 and a ton of heartache down the drain. That’s the question.



Dr. Aimee Eyvazzadeh – Got it. So, the question is, what happens if something happens to your eggs in the IVF lab and, you know, that's a kind of heartache. The chance that there will be a medical error that's in a lab that I am using is probably 1 in 1 million, where an egg is mishandled or misplaced, but what I have seen before, when I see patients who, let's say, have done cases in other places, there might be a misunderstanding that maybe not..., let's say you have 12 eggs and 10 survived the thaw, I have had patients tell me something happened to those two eggs and I say, no, that's just the nature of the..., that's just the nature of the technology, the survival rate is not 100%, but certainly that's horrible if someone did something and there was a medical error and, you know, the eggs were lost and not recovered and, you know, I can't speak of something as tragic as that but just know that those kinds of medical errors, the chance of that happening is exceedingly rare.

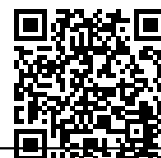
Shweta Mishra – Right. Okay. Great!

Shalene Petricek – I think it's a good thing to point out... I think it's a good thing to point out here too that there are a lot of checkpoints within the lab. I mean, I sell to these clinics on a regular basis, and they are very diligent about making sure they have two witness checks and that your DNA is matched with your identification and that always and seriously, embryologists lose sleep and don't even know what to do with themselves, whether they..., you know, they have that capacity of wanting to always double check things because they fear that that's what happens. So, I really think that there is a quality in the lab that were supporting them and that they have technology out there that can help avoid these type of issues. I wouldn't worry so much about that. I think it's really just important about picking the right clinic that you are comfortable at.

Shweta Mishra – Okay. Yeah. Thank you, Shalene. Thank you, Dr. Aimee. I think this one, the next one is for Dr. Baldwin. How can you anticipate awareness of social freezing be raised? Do you think raised awareness will equal increased accessibility? How do we ensure the two can happen nearly simultaneously? Will prices be reduced? There are so many questions. Do you think we will see egg freezing offered in more employee insurance packages?

Dr. Kylie Baldwin – So, I think, you know, that people..., women are becoming more aware of egg freezing now than they were just five years ago, but I think there is still lots of work that needs to be done, so that's how I would put it, and also making women aware of age-related fertility decline because studies show time and time again that women aren't always aware of age-related fertility decline and was told further about women today, but, of course, you know, men are, I would argue and are kind of essential to this and there is still a lack of understanding for men as male partners and as partners in about the realities of age-related fertility decline because, of course, they don't experience it as severely as women do. So, there is still work to be done perhaps with regards to informing women and men about the real issues of age-related fertility decline and then about the possibility of egg freezing, but, of course, you know, egg freezing isn't going to be viable for everyone. It's something that everyone's going to want to tend to given that there are other alternatives as well, of course, to pursue motherhood, three things, such as, you know, adoption, co-parenting and other things that is and with regards to do it, we are going to be seen more.

Dr. Kylie Baldwin – So, I think in the US context, it's very different than in the UK context. There is.... I think there is more..., more control and regulation of UK fertility clinics in offering relatively novel technologies such as egg freezing. I think, from my perception, it seems that egg freezing has kind of exploded over in the US and it hasn't had the same effect in the UK as such. As I said, it's approached much more with cautious optimism because it hasn't been practiced in the UK to the same extent as in the US with regards to experimental studies, but, of course, as I mentioned earlier on, there are issues and barriers to access this technology for women who are not as financially privileged or aren't in a, you know, stable or well-paid economic position and so perhaps there is, and I have seen this online in America, you know, steps towards making egg freezing more affordable, you know, flexible pain and pangs, and these sorts of things. In the UK, we have something called freeze-and-share. So, this is basically egg sharing. So, women who cannot afford to pay for the procedure themselves will undergo egg freezing..., an egg freezing cycle for free if they donate half of those eggs to another woman for use in fertility treatments and this is one way in which the UK



can drive up perhaps the numbers of women who are donating eggs, but, of course, this is problematic in and of itself because these women who donate eggs are exposing themselves to more risk because they are going to have to undergo the procedure perhaps two times or three times to get a sufficient number of eggs frozen for potential future use where if they just paid for themselves they would get back in one cycle.

Dr. Kylie Baldwin – So, there is perhaps work to be done in informing women about their fertility, but also we have to bear in mind, of course, that you can be completely informed about this information, but it doesn't necessarily mean that its going to make it any easier to make a decision about, well, no, I know that I am 35 and my AMH level isn't where I want it to be. You know, women can be informed of this information, but it doesn't mean that they can necessarily do anything about it that easily. They may not be able to afford egg freezing and they may have objections to it from whatever grounds, but also the decisions about parenthood are so..., are often so contingent on other people, on partners, on relationships with families and friends and these sorts of things. It is.... I think its very difficult sometimes to say yes, we will educate women and therefore they will be able to make the right reproductive decision. They will be able to draw on egg freezing if that's what they want to do, have a child straight away, but its just so complex and must be very difficult for women who have clear ideas about how they want to go about parenting, about how they want to mother but aren't in a position where they can do that with the male partner. So, education is really important, but also we have to bear in mind that people can be very, very educated by this information but still won't find it necessarily easy to implement or make a decision to either use egg freezing or do something else. So, I think these are some of the challenges being faced at the moment.

Shweta Mishra – Okay. Sure and what about the employee insurance packages? I think its only big companies like the Facebook and Apple, they are..., yeah..., they are offering it, right?

Dr. Kylie Baldwin – Oh, yes. Sorry for that. Yeah. Well...

Shweta Mishra – Not many.

Dr. Kylie Baldwin – Yeah. Well, I think..., I think more companies are offering it than we think, because, I mean... I was just... I did an interview for the UK Radio 4 recently and that radio show was trying to get hold of UK companies that were offering egg freezing to their employees through private health care insurance and because of the cautious optimism around egg freezing in the UK, I think a lot of UK companies are being quite reticent to come out as such in saying they are offering this technology. When I think of the past because there has been wholesome support certainly, but, you know, perhaps it is usual for companies such as Facebook and Apple to offer egg freezing. There is still perhaps quite a degree of critical thinking and ideas towards this from sociologists, bioethicists, and these sort of people who kind of think, well..., and I would say, just the same that, you know, perhaps it is good that these companies were offering it to some of these women, but perhaps there were more things that these companies could be doing instead or alongside offering egg freezing, so I am talking by, you know, enhanced maternity packages, addressing things such as based around maternity discrimination which still exists in most, you know, across countries in the UK and the USA, trying to make the workplace a more family-friendly place for women and this is certainly most probably needed in places such as Silicon Valley where Facebook and Apple reside. So, egg freezing may be beneficial for employers to offer to their employees, but perhaps its important..., perhaps more important to offer things like say, such as, good maternity packages alongside this technology as well. Whether we will see more companies offering it in the USA, I am not so sure; in the UK, they may well be doing it, but then not coming clean about doing it because there is this concern that perhaps this isn't necessarily the best thing they could be doing. Perhaps there are other underlying factors that would be best addressed rather than just using the application of egg freezing as a sticky bandage as such.

Shweta Mishra – Okay. Thank you. Thank you, Dr. Baldwin. I think the next question, Shalene, you can take it. What criteria should I look for in finding the best source for freezing my eggs? I worry about using a clinic that can freeze eggs but have no data on reserves for warming the eggs. So, Dr. Aimee or Shalene, whoever would like to comment.



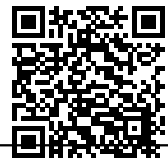
Shalene Petricek – I mean from an agency perspective, I think we can just help guide them to the clinics that we know, might cater to whatever their needs are. For example, if a woman is of advanced age, we might be more inclined to send her to a physician that works with different protocols that are geared towards women of advanced age, but in terms of the clinic data, I think that would be something more for Dr. Aimee.

Dr. Aimee Eyvazzadeh – Yes. I mean, so when I tell patients to go to, you want to go to a clinic that's really excited to freeze your eggs. You want to go somewhere where you are feeling welcome and they feel like they are the best at doing what you are asking them to do. So, if you have a clinic that's like, oh, yeah, we just started freezing eggs, you know, recently, you know, maybe that..., you want to rethink that, but you want to be in an embryology lab that is doing a lot of egg freezes because the more they do, obviously the more experience they are going to have and the better they are going to be at it and you won't necessarily know what their survival rate is. That's not true. So, statistics are hard when it comes to egg freezing because not every..., people don't come back right away, right? So, we don't necessarily know a lot about what the chances are with, you know, all the patients who have seen, let's say, 39 and what's going to happen because they haven't necessarily come back yet, but there are a lot of clinics that have been freezing eggs for, let's say, 10 years now and they will have that kind of data. My oldest frozen egg baby is turning 6 years old this year. Okay? So, that's my oldest frozen egg baby. I have been in practice here for 8 years. So, that should tell you a little bit about my experience with egg freezing.

Shweta Mishra – Okay. Thank you. Thank you, Dr. Aimee. Valerie, do you have any last questions for anybody to answer or comment?

Valerie Landis – I just... I just have some last comments. I think this discussion was such a..., such a broad one and touched on so many great issues on how egg freezing has changed over the years and, you know, I do think that more employers, just going back to Dr. Baldwin's question, that more employers are offering this and they are just being a little bit more quiet about it. The media made such an uproar when Apple and Facebook offered it and said, oh, they are doing it for career reasons. I mean, I remember the magazine article that came out, Freeze Your Career, you know, it got some negative backlash and I think that, you know, while we are not freezing our eggs or the typical egg freezer is not freezing our eggs just because of the career but more so because of how relationships and dating have changed over the last couple years. I think a few are offering and there are programs or companies like Nest Egg that are offering access to egg freezing and challenging those norms and challenging the prices with the clinic, just making access easier for women. So, I would just encourage any woman that is thinking about egg freezing, ask your employer for benefits or a package if they don't offer it, challenge the social norms, even go to your clinic and say, hey, what discounts are available or what drug or medication can I get rebates. There are tons of resources online and that's part of the reason why I started eggsperience.com is to give you that insight from an insider's point of view, non biased, third party point of view where you can learn those things and so I just want to encourage women to do your research and know all the factors involved and don't take no for an answer. You are your biggest advocate. So, take charge and don't be afraid to ask questions or ask for help or ask for discounts. So, you have to be your own advocate for your future.

Shweta Mishra – Okay. Thank you! Thank you so much, Valerie. That was a great advice to everybody out there; and Dr. Aimee, Dr. Baldwin, thank you so much for finding out time from your busy schedules to talk to us today and clarify details on this controversial issue of social egg freezing. It was a very informative discussion and I hope it will serve as a useful resource for women..., to help women choose more decisively about their futures. Valerie, thank you for co-hosting with me and for your insightful questions and, Shalene, thank you for sharing your experiences of using this procedure at the time when it was just beginning to be talked about and for your great questions too. Audience, I thank you for your support and we look forward to having you all join us for our next CureTalk on myeloma 2016 year end review and outlook for 2017. More information on this show and other upcoming shows, you can visit our website, www.curetalks.com or you can email priya@trialx.com. I would love to hear your feedback about CureTalks and fertility and reproduction, and I would welcome your suggestions on fertility topics that you feel should be covered on this portal. Please email your suggestions on shweta@trialx.com. The link for today's show will be sent in via



email to all the participants and until then, thank you and bye, bye Everybody, bye bye.

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