Developments in Personalized Medicine and New Options in Breast Cancer Treatment

In this era of personalized medicine the standard “one dose fits all” approach to cancer care has been ineffective leading to treatment failures. Personalized medicine is a new healthcare paradigm that allows physicians to choose treatment methodology optimally based on person’s genetic or protein profiles. Our breast cancer panel is talking to Dr. Jame Abraham of Cleveland Clinic to learn about the developments in personalized medicine in breast cancer treatment. The panel will also discuss research in this field and new options available for breast cancer treatment.

Full Transcript:

Shweta Mishra – Good evening, everyone, and welcome to CureTalks. I am Shweta Mishra, your host, joining you from India; and this is CureTalks’ 122nd episode. In this era of personalized medicine, the standard one-dose-fits-all approach to cancer care has been ineffective, leading to treatment failures. Personalized medicine is a new healthcare paradigm that allows physicians to choose treatments optimally based on a person’s genetic or protein profile. Today, we are talking to Dr. Jame Abraham of Cleveland Clinic to learn about the latest developments in personalized medicine in breast cancer and options available for breast cancer treatment. Our expert today, Dr. Jame Abraham, is the Director of Breast Oncology Program at Taussig Cancer Institute and Co-director of the Cleveland Clinic Comprehensive Breast Cancer Program. Dr. Abraham is also a Professor of Medicine at Cleveland Clinic Lerner College of Medicine. As Director of the Cleveland Clinic Breast Oncology Program, Dr. Abraham leads several national and local clinical trials to find better treatment options for early stage, metastatic, triple-negative, and HER-2 positive breast cancer patients. He is the Vice Chair of the Research Review Committee for the National Surgical Adjuvant Breast and Bowel Project, NSABP, and a member of the scientific advisory board. He is the national Principal Investigator of the NSABP FB-10 clinical trials for HER-2 positive metastatic breast cancer.

My co-host for today’s show is Beverly McKee. Beverly, also known as breast cancer warrior, is an author, blogger, and an inspirational speaker and she has been featured on various websites, TV, and radio shows for her unique insight into emotional aspects of dealing with breast cancer. A licensed therapist by training, Beverly has dedicated her life to creating hope for those who have been touched by breast cancer. Beverly amazed her doctors by planning her 40-year breast cancer survivor celebration.

Shweta Mishra – Terry formed this IBC Network Foundation, a 501c3 to encourage education and fund research and hope always is her motto. So, let me now invite Dr. Abraham to speak on the topic and share his views with our listeners. So, Dr. Abraham, how common has personalized medicine become in breast cancer treatment?

Dr. Jame Abraham – Again, thank you for the opportunity. This is… Its an honor for me to talk to the listeners about breast cancer and new things happening in breast cancer, and its an honor for me to be with this esteemed panel with Beverly and Heidi and Terry. So, breast cancer…, if you look at all cancers, breast cancer really leads its way in coming up with new approaches and new treatments. So, we’ve been focusing on personalized approach for cancer treatment or breast cancer treatment for some time. So, when I say some time, we even…, even the breast cancer is one diagnosis, over the past 20 or 30 years, we clearly knew that one diagnosis of breast cancer can be comprised of many different subtypes. So, we use certain markers such as estrogen receptor or HER-2 to distinguish patients in different classes. So, estrogen receptor positive or HER-2 positive or triple negative and thereon have ER, PR, or HER-2. So, there are the three different subclasses of different types of breast cancer that clearly help us in making decisions based upon the tumor characteristics. So, that’s one of…, if I can say one of the early developments of personalized

medicine and we've been always doing in the past 20 to 30 years of…, we've been doing similar approach for a patient with the diagnosis of cancer. So, in addition, you know, cancer treatment is always personalized. So, when I…, I was seeing many patients this morning, including new patients, and I tell them if I take two different patients or three different patients, there are many factors that come into decision making about how we are going to come up with a treatment plan and the first thing is the patient, what exactly the patient wants and what's the patient's health status, then we…., and what is the patient's priority, what exactly she is, you know, expecting from this. Then, second, we will look at the tumor and third, we look at the goals of treatment. So, its a highly personalized approach when we prescribe or come up with a treatment plan for breast cancer.

Shweta Mishra – Okay. Thank you for your comments, doctor. I will now hand over to Beverly to take over the panel discussion. Beverly, you are on air.

Beverly McKee – Yes, I am. Thank you so much. Its a pleasure to be here and, Dr. Abraham, I know that I speak for all of us when I say, thank you for your time and your willingness to share your extensive information with us. We all appreciate it so much, and I was doing a little bit of research about just kind of how you handle your patients and one of the things that I watched a video by you and you mentioned that treatment planning kind of involves the picture of the whole person. So, you like to get to know your patients and I know that that's so important when it comes to treatment in general as well as just the personalized medicine and I…, I wanted just to ask about clinical trial options and your perspective about the best time to do clinical trials because I think you have some opinions on that and that kind of falls into the whole personalized medicine as well.

Dr. Jame Abraham – You are absolutely right, Beverly. So, as…, its extreme… One of the first things I do is, when I walk into a room, the first thing I need to learn is whom I am talking to. Am I talking to a 42-year-old mother who has two kids in middle school, who has an ailing mother, or who is trying to get through a nursing school in her late career. So, I think its extremely important for me to know whom we are talking to and then we need to know what are the priorities and what are the fears and what are the hopes of the person I am talking to. Then, I can come up with… Then, that will give me a better understanding, better background to come up with the treatment. So, talking about clinical trial, we talk about clinical trial at any stage of the cancer. As you know really well, we do a clinical trial for prevention, a clinical trial for state 0 or DCIS in the non-invasive stage, or stage 1 and 2, or stage 3, and stage 4. So, I am really glad you are asking this question because lot of times people think clinical trial is a last option, but clinical trial is never a last option. Clinical trial is actually the gold standard of cancer treatment and it should be offered…, if its available, it should be offered to any stage of the patient.

Beverly McKee – That makes sense and I think a lot of us do think that clinical trials are kind of just after we've done everything else, we can look at them. So, I think its good to clarify that for the audience and I think I'd like to turn it over to Heidi. Do you have a question for Dr. Abraham?

Heidi Floyd – And thank you…, thank you so much for joining. My question is, if someone was interested in participating in a clinical trial, is there…, other than the governmental website which is just myriad, there are so many out there, are there other avenues that they can turn to to find out how to engage themselves in the clinical trial?

Dr. Jame Abraham – Its…, its a really good question, Heidi, and I am actually looking at your bio and I really admire people like you who went through all this tough time and then surviving, you know, this tough disease and again I salute all of you for that.

Heidi Floyd – Thank you.

Dr. Jame Abraham – So… You're welcome and before coming up here, I was talking to a 21-year-old patient. So, its a long journey for… I clearly know that its a long, long journey for anyone with a diagnosis of cancer and breast cancer. So, clinical trial, how do we access clinical trial and so, you can, of course, look at

the cancer.gov or clinicaltrials.gov. So, that's a good…. That's the National Cancer Institute…, US National Cancer Institute website, which any clinical trial done in the country will be registered through that site. That actually gives a good place to start with, but its a confusing place too. If you type in breast cancer, you will have 15,000 different clinical trials and then the question is, how do we pick from that. So…, and as you know, there are different types of clinical trials. There could be a phase 1 or phase 2 or phase 3 or even phase 4. So, then, depending upon the stage of the patients and what treatments they had before and the type of breast cancer, they can try to narrow it down, but its…, it can be a daunting process. So, I think one good option is talking to your doctor, talking to your… So, when I see a patient, usually I tell them, these are the trials we have here at Cleveland Clinic and these are the trials which are available elsewhere. So, I think your doctor who should be your advocate should be able to kind of help you in sorting from these thousands of different options out there and come up with the right trial.

Heidi Floyd – Thank you so much.

Dr. Jame Abraham – Sure.

Beverly McKee – Thank you for that question.

Heidi Floyd – Beverly, let me go ahead… Oh, sorry, if you want to go ahead…

Beverly McKee – Yeah. Go ahead. Thank you. Go ahead. You know, let's go to Terry and see what Terry has to ask and then we'll kind of come back around. We'll do the round table kind of thing.

Heidi Floyd – Perfect!

Terry Arnold – Okay. Thank you and again everyone's given the same thank you, so I'll just echo that quickly. I really appreciate the time that everyone has given to this and I think precision medicine is really important. I am really thrilled to hear that Dr. Abraham is a leading front on that. What I like to always bring into the conversation is inflammatory breast cancer. Its less common and it typically strikes younger women and I think its really interesting that Dr. Abraham said he likes to focus on the whole woman because often these women are quite young or they might be pregnant or have young children and they have a lot of special concerns about their future fertility and other things like that and the diagnosis process is even unique. So, I don't know if you might like to outline some things that you would think would be important in a personalized treatment plan for a woman presenting with inflammatory breast cancer so that audience can be educated about why that may be a little bit different.

Dr. Jame Abraham – Right and thank you, Terry. Thank you for that question. So, inflammatory breast cancer, as Terry is alluding, its one of the rare forms of breast cancer, but one of the most aggressive forms of breast cancer. So, usually patients will come with a story, saying I had some redness of the breast, I had it for a week or two, I thought its an infection, I went and saw the family doctor. He put me on some antibiotic. I took it for six weeks, but the redness is getting worse and now I have little more and kind of thickening of the skin and its not getting any better and that's the time the family doctor says, oh, let's send you to a surgeon and then she gets more pictures, like mammograms or ultrasound or MRI. So, that may show a lesion or a tumor underneath the skin, but the most important thing is a surgeon doing a biopsy or the radiologist doing a biopsy of that redness or a lesion underneath that skin. So, when they do the biopsy, means taking out a piece of tissue and then looked at under the microscope, that will show the cancer and then in addition to showing the so called invasive ductal which is the most common type of breast cancer, it will show what we call as dermal lymphatic invasion of the tumor into the lymphatic space. So, that's kind of the classical picture of an inflammatory breast cancer, the redness of the breast, persistent redness which is not getting better with the conventional antibiotic treatment, eventually undergoing a biopsy which is confirming the diagnosis of cancer, with potential dermal lymphatic invasion and then as Terry mentioned, many times this triple-negative breast cancer tends to be… The inflammatory breast cancer tend to be triple negative. Triple negative means estrogen receptor, progesterone receptor, and HER-2 negative or sometimes it could be HER-2 positive, so that those are fairly aggressive types of breast cancer. Let me pause. Looks like I am

talking too fast. Let me see… Terry, if you have any questions so far what I said…?

Terry Arnold – No. I think you've done an excellent job of explaining this and one of the reasons I was quite excited to be on the panel, other than the fact I appreciate how generous the hosts have been in finding before is the fact that this is personalized medicine and that you outlined an unusual diagnosis and you've outlined very well, minimum in stories, of it being thought as possible infection, which does make sense in the unique diagnosis of having to go past maybe a mammogram or ultrasound to get to that biopsy or an MRI and also to the breakdown of the disease, where again is it triple negative or is it HER-2 positive and how that can make it more aggressive. Can you, in some ways to make it kind of interesting case from a doctor point of view, of getting to really practice personalized medicine in a highly engaged way, that could be an interesting change for doctor and also something a patient can know to get to someone like you who is an expert to make sure they get what they really need. So, you signed it beautifully.

Dr. Jame Abraham – Thank you. Thank you. So…, as Terry was saying, once you know the subtype that this is triple negative or HER-2 positive, then we can guide the treatment based upon those features. In triple negative, we tend to use more of chemo and today I was seeing, you know, a patient who has a 3-cm tumor, multiple lymph nodes positive. So, we were talking about one of the clinical trials using…, looking at the role of carboplatin in that setting. Its a national trial and so in addition to the standard chemo using carboplatin and there are trials looking at immunotherapy, there are trials looking at other medicines such as PARP inhibitors in this triple-negative setting and then HER-2 positive, of course, has HER-2 targeted medicines such as trastuzumab and pertuzumab and many different new medicines.

Terry Arnold – I would like to add one thing since you mentioned clinical trials and I'll give it another turn is that the foundation that I run, the IBC Network Foundation, we really wanted to help support clinical trials. So, we have an app that explained the disease and there is a section there that specifically outlines trials that are available that will allow IBC because sometimes when you have advanced disease, its harder to get into a trial and so any time we hope to share things that you are doing, but if someone is looking and I know your doctor can be a great advocate, but sometimes there are other advocacy places that can help you network into a trial as well. To have people look at the app, its available on iTunes or Google Play. Its a free download and they can learn little more.

Dr. Jame Abraham – I must say, I just looked at your tweets and your website, this is really impressive, really impressive.

Terry Arnold – I am glad.

Dr. Jame Abraham – I will use that and I'll… Yeah. Right. Right. Yeah.

Terry Arnold – I appreciate it because one of the things that was important to us to not have people be afraid of clinical trials. We need that, that's our future. So, anyway…. So, I'd love to give someone else a turn now but thank you, Sir.

Dr. Jame Abraham – Welcome. Thank you.

Beverly McKee – Thank you, Terry, so much. Its Beverly again and, Dr. Abraham, I wanted to ask about followup treatment. Today, we have tamoxifen. We have the aromatase inhibitors. Is there anything related to personalized medicine for those who are kind of past their treatment but now trying to prevent a recurrence?

Dr. Jame Abraham – Right. So, that's a good question, Beverly. You are right. About…, let's just say about 5% of patients diagnosed with metastatic disease at the time of diagnosis and unfortunately, no, if you look at the overall number, 95% of the patients diagnosed in its nonmetastatic or early stage and 80% its early stage, 15% about stage 3, and 5% metastatic and that speaks to the work people like all of you are doing, you know, advocacy and promoting early detection, making more awareness and screening, but, you know, I

am from India, so in India or other parts of the world where we don't have access to this level of awareness or screening, about 30% to 40% of patients present in metastatic or recurrent setting and then even in western world, about 30% of nonmetastatic patients or early-stage patients eventually will develop recurrence or metastatic disease. So, that's the question Beverly is asking, what type of treatments we have available in those settings. So, again in that setting, we really try to apply a personalized approach. We usually, let's just say, if I see a patient with a history of breast cancer 10 years back and now coming with a new lymph node or back pain and then we do scans, then we do biopsy. So, take a piece of tissue and then looked at under the microscope and confirm the diagnosis and then we look for these features, ER positive or HER-2 positive or triple negative. If its estrogen receptor positive, as Beverly was mentioning, we can use an anti-estrogen. In addition, we have a new class of drugs, what we call as CDK4/6 inhibitors and there are two drugs approved by FDA, palbociclib and that's by Pfizer and there's another drug, ribociclib, that's by Novartis. Both of these two drugs, CDK4/6 drugs, are approved by FDA. Those are highly active medicines. That's probably one of the most promising developments in estrogen receptor-positive metastatic breast cancer.

Beverly McKee – That's good news for anybody struggling with metastatic cancer and that's of course something…., and I know, Heidi, you know what, there was actually a question you were going to ask and I don't know if that answers your question or if you want to follow up on that or if you have another question for the doctor?

Heidi Floyd – Actually, I do, yes. Thank you. Let me jump to it here because I wanted to make sure that I had the right verbiage as I speak about our community. Sorry about that. Sorry, can you hear me? I think I jumped off.

Dr. Jame Abraham – Yes.

Heidi Floyd – So, the metastatic breast cancer community is much like the triple-negative, sometimes we feel neglected or unacknowledged, but I know that there is a new kind of paradigm change that you are working on in your particular sphere, the personalized medicine. Can you speak a little bit more to us or walk through what this new paradigm change would mean to specifically the metastatic community?

Dr. Jame Abraham – Right. So, there are, let me just talk about the three subsets and then I'll talk little more about where this is going in the future. So, as I said, you know, any patient with the diagnosis of cancer should be considered for a clinical trial and as we talked before, if we don't do clinical trials, we are going to be just stuck in the past or stuck in the present. We are not going to move forward. The only… Cancer is still a tough diagnosis like, you know, all of you are examples, living proof of that. Its a tough diagnosis. The only way we can make the pain and suffering from cancer less for the future is by finding new and better treatment. So, in ER-positive patients, the most exciting trials are happening in this CDK4/6 arena.

Heidi Floyd – Great!

Dr. Jame Abraham – Yeah. In HER-2 positive, there are novel HER-2 targeted agents and some of the trials we are doing, we are using a drug neratinib in combination with T-DM1, that's another HER-2 targeted drug and we are trying to see if that can add or augment the effect of T-DM1, the neratinib and we are actually presenting our data at the American Association of Cancer Research meeting this weekend in DC and then in triple negative, which is one of the most aggressive forms, we are doing a trial, looking at if the tumor has any specific protein, what we call as GPNB and there is an antibody-drug conjugate, another new drug, to target that protein and then in addition when we talk about other personalized medicine, we try to look at if the patient has BRCA mutation or if they carry any gene. Then, there are specific medicine which can target the gene mutation and then in addition we also do look at the Next Generation sequencing and see if that can help us in finding a new treatment for the person who is in our clinic.

Heidi Floyd – Thank you so much.

Dr. Jame Abraham – You're welcome.

Beverly McKee – That's great…, great information. That's such a hopeful future when I hear you talk about all those clinical trials. Terry, we have been hearing a lot from Dr. Abraham. Do you have any another question for him today?

Terry Arnold – Well, actually I do and he answered a lot of what I was going to ask about. He brought up about how often it is triple negative. I hear numbers about inflammatory as anywhere from the conservative number of 30%, also triple negative maybe even as much as 40%, which means we are getting double whammied with two aggressive diseases and he mentioned the BRCA, so he's really covering things well and since we all seem very passionate about clinical trials, I wanted to kind of comment and get his feedback on when he sees with his patients because I think there are a couple things that get in the way, especially with a younger person being part of a clinical trial. I think sometimes maybe with an older person, there might be some fear of past experiences of just cancer treatment in general being terrifying, but what I see a lot with the younger people is lack of travel resources and I really want to encourage people to look at, you know, the lazarus project or various things are talk to your counselors to not let lack of travel opportunity keep you from a clinical trial and Dr. Abraham, do you find that that comes into play in your practice or do you feel that that is not a true obstacle for someone now who is needing clinical trials?

Dr. Jame Abraham – Terry, you are right. Those are all really good points, you know, so if I see a young patient who is working full time and who has little kids, they may say, you know, I don't have that extra time to come for more blood draws or more scans. So, that's a challenge and then… So, it can go either way. Sometimes the young people are more excited as we talked before, more hopeful for the future and they are willing to contribute, but at the same time, you know, I really respect their time and their priorities. So, they may have challenges, but people like you, you know, if you continue to advocate and then promote and I am sure we should be able to capture the patients who have the time and willingness to do this. So, one really good example is, if you look at, you know, cancer overall fortunately over the past 30 or 40 years, we made tremendous progress in pediatric cancers, in kid…, cancer for the kids. So, and if you look at the number of people going on clinical trial in pediatric systems, almost 80% to 90% of kids enroll in some form of clinical trial. If you look at… So, from…, you know, in 1950s, the five-year survival rate for some of the leukemias in children were like 5% to 10%. Now, its up to 90%. So, that huge shift happened because 80% to 90% of kids enrolled in clinical trials and if you look at adults, in the US, its about 5% to 7% of adults go on a clinical trial and majority don't go on clinical trial. So, that's due to many different things. I may not…, I don't think I can blame anybody and you kind of mentioned its due to multiple factors.

Terry Arnold – Those numbers are shockingly encouraging and discouraging. Its encouraging to me to see the advances in children cancer. It is also very telling this level participation. So, I am just going to have to now try harder to make sure that I can let people know about resources that can help offset travel expenses and things like that because there are some amazing resources out there and in that way we can maybe get those numbers out for the adults because that is truly personalized medicine.

Dr. Jame Abraham – You are absolutely right. You are absolutely right. Women, again I salute, you know, people like you, those who are championing, you know, for that. We are in a building. We sit here and we work in this…, in our little clinic or hospital, but you have much more access to a bigger world and we really, really appreciate the work all of you are doing.

Beverly McKee – Would like to echo that sentiment, Terry. Thank you so much for all that you are doing to help make sure people know that they can get to those clinical trials because its really important and I kind of want to circle back around to Heidi. Heidi, do you have another question for the doctor?

Heidi Floyd – I do. Thank you. I…, I also… I am so thankful I have directed so many people to the various websites, including your's, Terry. So, I just love that we are all trying to work in this together even though we have very different diagnosis. Dr. Abraham, when I learned that we are going to be doing this…, this talk together, I read back some of your papers that you have authored and one of them discussed the crucial

need for medical education in all the developing nations kind of around the world and as you are crafting this new personalized medicine, how quickly do you think this can become a reality outside our borders and I understand that it ties in.., it dovetails nicely with the clinical trials, like if we get more people involved in clinical trials, then we can reach out to the developing world, to our fellow patients in other locations. Other than the clinical trials, what else will it take, what else can we do to help you?

Dr. Jame Abraham – I really appreciate that question. As I said, I am from India, so, which is what we call as a transition economy. So, if you look at places like India, Nigeria, China, that's…, that's going through a huge transition from the time of poverty to so called emerging markets of Brazil or Russia. So, when the economy changes, the lifestyle changes. So, from…., let's just say, 40 years back, you know, people from this part of the world used to die from infections, which is more common, you know, which is a disease of poverty. Now, when the economy improves and life expectancy increases, lifestyle changes and then the incidence of cancer goes up. So, now, like 60% to 70% of new cancer diagnosis in the world is going to happen in the so called emerging markets or in the developing world, which is going through the so called transition economy from a poverty to an affluent economy. So, again, I am really fortunate to work in US which has a very mature cancer care approach, you know, from screening through care of the patient to survivorship and extremely robust research opportunities, but if I just talk about some of the countries like India, China, or Pakistan, or Nigeria, so called emerging markets…, the biggest challenge for them is manpower, manpower and human resources. How do they tackle the noncommunicable disease, which is cancer and heart disease and diabetes and so that's a huge problem.

Dr. Jame Abraham – So, WHO and United Nations, they put lot of effort in making sure the governments in emerging markets put money in building that human capital. So, that's the first thing. So, then what can people like us do or like me who plays a very small role in this thing. So, we help in dissemination of information. So, we have many different ways of exchanging information, means we bring doctors from various parts of the world and they train or they work with us and in Cleveland Clinic as a very robust international exchange program, we do that and then we bring doctors and train people and they go back and then act as agents of change and many places have extremely highly qualified doctors, smart doctors and smart infrastructure, but they can always use more. Then, when we look at clinical trial, that's another challenge. Most of these medicines are approved based upon clinical trials done in the western world. Its not tested in different ethnic groups which may have really different metabolism, how we handle drugs at different…, you know, I am different from all of you on the line and so we have different ways of handling the drug, so I think its extremely important for the entire world to be engaged in clinical trial, but if we have misconception and bias about clinical trials in the US, just think about what's happening in India and Nigeria. its tremendous misconception and obstacles to open or conduct a clinical trial.

Beverly McKee – Thank you so much for that answer and that question, Heidi, and Terry, I want to come back over to you. Do you have another question for the doctor or do we need to look at some of our listeners' questions today?

Terry Arnold – Oh, I'd love to hear from the listeners, but I do have a question. He alluded to it because I have recently spent a lot of time in Japan where they are trying to bring advocacy forward and Japan has obviously a very sophisticated and lovely culture, but the system is very hi-tech and the individual kind of takes a backseat to the overall community and that made me wonder what is the mindset of India. Is…, is there something about just the way the culture is set up in a way that might make it a little difficult to kind of go forward and maybe we can even bring some away to kind of break those barriers down or even encourage to grow and then learn from that. So, I'd like to know if you have a comment about what you see globally?

Dr. Jame Abraham – So, when we look at a society as…, we are kind of talking, like here there is a culture and infrastructure to have this conversation and then…, and that comes from the policy makers. So, I think starting from the policy makers or leaders of the country or those who are making health policy decisions, it has to come from them and that's one, and second, the doctors and let us say if its a cancer doctor or a heart doctor, they need to be trained about clinical trial and third, having a strong advocacy group. So, all of

you, you know, the advocacy groups in US play a key role in increasing awareness and four, the patients. So, it comes with…, it starts with policy, educating the doctors, so that, you know, kind of comes with the medical curriculum, the advocacy groups, and the patients, and of course the infrastructure of conducting clinical trials. So, again, there are certain parts of, as you said, the world like Japan or Europe or certain parts in India and Russia, Nigeria, they are really catching up or at the same level as the western world, but vast majority of the population don't have access to the cutting edge trials.

Terry Arnold – Thank you!

Beverly McKee – I think its time for us to maybe talk about a question that's submitted by a listener. We can come back around to Heidi and Terry as well in just a moment, but one of the questions that our listeners ask is about personal characteristics like lifestyle factors and how are those thought to guide breast cancer treatment in the future?

Dr. Jame Abraham – So, that's a good question. Breast cancer is a lifestyle disease, so when we talk about certain lifestyle disease like diabetes or heart disease, which is a lifestyle disease, so as I was saying before, its a disease like the diet plays a role or exercise plays a role, or stress level plays a role. So, some of the things… In cancer survivors, I always talk about exercise. I tell them if exercise was a pill, probably its going to be a billion dollar pill and then I tell my patients that exercising 30 minutes a day, five days a week, just think that's like a pill you are taking everyday. You are on the treadmill or you are walking, that's a pill you are taking everyday with no side effects and you are not paying any price for that. So, lifestyle plays a huge role even in cancer survivors. Some of the exercise and exercise and diet can cut down the chance of recurrence by almost 30% to 50%. Sometimes we…, doctors don't have time, they don't talk about that. Sometimes we…, we are quick to write a prescription and, you know, write a prescription, walk out of the room, that's faster, but I think its extremely important to pay attention to lifestyle.

Heidi Floyd – May I jump in for just a moment and ask a followup?

Beverly McKee – Sure.

Heidi Floyd – This is Heidi. Thank you, doctor. I want to make sure that the listeners and everyone who reads the transcripts following this understands, could you please clarify that its not exclusively an environmental or lifestyle disease because some of us…. For example, I am a fourth generation cancer patient. Some of us, you know, we exercise, we eat right. Its not anything that we did or something that we are doing, our lifestyle. Its simply as how we were born. Could you please verify that for us?

Dr. Jame Abraham – Absolutely! So…, and thank you for bringing that up and thank you for clarifying that. So, I was seeing someone today and she said, I did everything right. I exercise, I ate right and she didn't even have a strong family history. So, 60% of patients we see are, you know, exactly the same way. Its not having a cancer and I hope I didn't mislead. Having a cancer is not someone's, you know, fault. Its not from what they did and so 60% of the time we don't have a reason for that, but 5% to 10% of the time, it could be due to an abnormal gene. So, we can't choose our genes too and so.., and as you said, there are many people who do exactly the right thing what they are asked to do, eat right, exercise, they still develop breast cancer. So, its… Thank you for clarifying that.

Heidi Floyd – Thank you. Thank you for that clarification.

Terry Arnold – That's a really interesting topic as I know for myself, I felt like I was doing everything right, but I am sure I could have done a better job, but nonetheless, I had the BRCA mutation which was a shock to me. I am actually one of the few people in my family to ever have cancer, but I feel my overall general good health led to me doing better afterwards and so I am kind of grateful for that. I think its an important clarification and again, another resource, sometimes when you tell a patient, you need to exercise, they can't, they are discouraged, they feel funny going into gym. The Livestrong organization has a thing, if you are a cancer patient, you get a free membership for limited amount of time, its I think few months. So, you

can test it out and that's a really cool research for patients, but back into the personal medicine thing, I would love to make an opportunity to discuss with Dr. Abraham thinks of liquid biopsies before we move on to some of the callers' questions because I think liquid biopsy is a hot topic and I think it will be good for him to address in the group today.

Dr. Jame Abraham – Thank you. So, liquid biopsy… So, what happens is…, let's just say somebody has breast cancer and let's just say that's come back, you know, the so called metastatic breast cancer and we always say we should repeat a biopsy so that that means we have to put a needle and then take a piece and send that for testing. So, again, that's a painful process and we wait for the test result to come. So, the reason we repeat the biopsy is for multiple reasons. One, to confirm the diagnosis. Second, the cancer can change or mutate. It can, you know, really form…, come to a different character. So, its important to make sure that it hasn't changed its character or protein expression. So, its important to get a pace, so its…, and then let's just say, if I am treating somebody with metastatic breast cancer for five years, its not easy for anyone to go through biopsies every time and every time when we do a scan, every time something, you know, happens. So, if we can draw the blood and look at the tumor cells in the blood and then come up with the same answer, its going to give us a real-time answer, less painful, and then that can potentially help us in guiding the treatment. So, that's the liquid biopsy.

Dr. Jame Abraham – There are many ways of collecting these tumor cells in the blood. So, that's in metastatic setting and then in…, let's just say somebody has a stage 1 cancer. So, the patients all are stage 2 or stage 3. Patients are always shocked to hear that we are not going to do a scan every three months or there is no magic way for us to find out what's going to happen in the coming years. So, then, let's just say, if we have a very sophisticated and sensitive and specific way of detecting microscopic cancer cells in the blood and drawing the blood and testing that and finding these microscopic cancer cells, that can be a game changer in how we follow, how we come up with treatment strategy for early-stage patients too. So, doing a liquid…., identifying or developing a good liquid biopsy technology can really change the way we treat, but that's still in development and many trials are going on in developing the proper liquid biopsy techniques.

Beverly McKee – Thank you so much. It was a great question, Terry. Heidi, I know you at least one more question. Do you want to ask that to the doctor before we go on to another listener question?

Heidi Floyd – Sure, I'd love to. Thank you. I have been… I am kind of a fan of watching news, particularly in the arena of health and science and breast care and there have been so many recent developments that I find to be just breathtaking in their creative use. For example, they recently were able to take a spinach leaf and pump human blood through it and they, you know, make human tissue in that. There have been discussions of microchip implants to see if they can bring, you know, resuscitate dead nerves, looking toward the future, doctor, specifically in the breast cancer arena, what do you see as the next big… What's on the horizon for us groundbreaking wise, it will just take out breath away?

Dr. Jame Abraham – So, I guess the biggest thing is going to understanding probably two things – One, as I said, the cancer is a dynamic process. It changes every time, so understanding the cancer as it changes with a liquid biopsy, take the tissue or the cells out and then doing genomic profiling and looking within the cell, within the tumor, within the cell and understanding what exactly is the internal wiring of the cell, what actually is driving this cell, you know, which signal we can target and turn off without killing the normal cells. So, I think a better understanding of so called signals or genomic profiling of the tumor and then really specifying the treatment for that particular tumor without causing the so called collateral damage, you know, causing the entire body to have side effects from the treatment. I think that's going to be the holy grain for the future. I hope before… I hope in the next 5 to 10 years we will be able to come up with very specific targeted medicines to turn off the signals within the tumor even before the tumor starts spreading.

Heidi Floyd – Wonderful! We here…, out here in the patient advocacy community are cheering on, all of you, Indiana Jones is up there searching for the holy grail. We love you.

Dr. Jame Abraham – Thank you. Thank you. (Laughter) We love you too. Without your support, we won't

be able to survive.

Beverly McKee – We just had another question come in. What are some of the limitations of precision medicine in the context of breast cancer?

Dr. Jame Abraham – So, some of the common things we do, let's just say, you know, if I have a patient with a triple-negative breast cancer, there is no specific protein I can target. So, in those patients, we always do the so called Next Generation sequencing. So, we do the Next Generation sequencing, look at the specific signals within the tumor and when we do that today, we don't have enough drugs to target these signals. So, we don't know enough about what type of drugs we can find that…, what we can target that. So, first do the Next Generation sequencing test, then finding a clinical trial which is appropriate for those specific mutations, that's some of the precision medicine things we do in clinic and we have what we call as a genomic tumor board and after getting this genomic testing, we discuss within the genomic tumor board. So, that's one kind of happening now and more for the future and then another thing we commonly do in the clinic is, let's just say, if I am seeing a stage 1 or stage 2 estrogen receptor-positive patient, or even stage 3, mainly lymph node negative or HER-2 negative, we usually look at the tumor, usually we do the oncotype or 21-gene assay, there's another one MammaPrint that tell us what's the benefit of chemotherapy or what type of treatments we should use and what's the chance of recurrence in the next 10 years and so that's something which we are using in the clinic now.

Beverly McKee – Its absolutely fascinating and again so hopeful. I really feel like this whole radio interview is going to give hope to the women out there who are struggling, especially with metastatic breast cancer who have just been diagnosed and they are afraid. One question that I have for you is, I was diagnosed 4-1/2 years ago and I have gone through all of my treatment, now I am on the anti-estrogen medication, but is there anything that you can recommend in general for women who have kind of gone through that treatment process and now they are just hoping to prevent a recurrence. Is there any advice you will have somebody, there are millions of women in that situation?

Dr. Jame Abraham – Right. There are millions of women in that. I am so proud of you and I know you are doing well and so, some of the key things you can do. One, of course, follow your doctor's directions. When I say that, about 30% of patients who are taking the…, who are asked to take the anti-estrogen pill, stop taking that and again I don't want to blame the patients for doing that because of the side effects. So, its extremely important to take the medicine if you are having side effects, having an open conversation with the doctor and see what else they can do or what other medicines they can take, rather than stopping the medicine completely. So, adherence to the medicine or compliance to the medicine or prescription, that's extremely important. Second, regular followup with recommended tests, means if they recommended like a mammogram once a year, a bone density, a clinical exam, follow that. Third, make sure, if possible, maintain a healthy lifestyle, exercise and diet and then avoid smoking and moderate alcohol use. So, make sure they have a healthy lifestyle. So, those are the…, and then always ask the doctor, like what you are doing now, ask the doctor, what's next, what else is out there, so kind of keep up with…., be an engaged patient.

Beverly McKee – Thank you so much for that. We are wrapping up. We've got about 5 minutes left. Heidi, do you have any last questions for the doctor?

Heidi Floyd – I do. Its a little bit lighthearted, but I want to know… I know a lot of us out there, doctor, watch things like the Ken Burns PBS documentary about cancer and we are all looking forward to the Henrietta Lacks movie. Do you guys watch that too or is it just us?

Dr. Jame Abraham – No. No. I am going to even tell you something else. There is another moving, Living Proof, I don't know if you watched that.

Heidi Floyd – I'll now start.

Dr. Jame Abraham – Yeah. That's actually a movie about the doctor who discovered trastuzumab or

Herceptin and he is a doctor at UCLA. Its actually a lifetime movie. You may even…

Heidi Floyd – We are kind of junior. Yes. Yes.

Dr. Jame Abraham – Right. Right. Right. I actually watched that with… I made my kids watch that movie. I said you should watch this movie. So, I do watch that. I read that book. I watch that movie and we are all excited about all these things.

Heidi Floyd – Actually, I have my little thoughts yet. Oh, sorry. Go ahead.

Terry Arnold – its not those science based as the other, but its a good movie about the discovery of the BRCA gene mutation and its very encouraging. It lets you also see how many years these researchers put into getting to this place of discovery and so I am going to do a quick one since we are about to wrap up out of time. Since you said what can we do, here I am, I am eight years out, triple-negative IBC, I am doing well, I am being compliant, doing what I can, but now the way I want to help pay for this is by funding research. So, I strongly encourage people to look at where they can put their dollar, to where it can go to funding for research so these doctors, they can continue their science because without their research and we have to have money to make that happen. We need them to be able to go forward and make those brilliant discoveries. Its going to get Heidi all excited, right?

Heidi Floyd – …and we love them. Its so exciting to watch the doctors, you know, do what they do because its not just for us, its for our children. Its for your children, doctor, who are watching it with you as they matter so much and we just can't thank you enough.

Dr. Jame Abraham – Oh, you're welcome. Thank you, though. This is the most exciting thing I did today. I am really so happy. (Laughter) Yay!

Shweta Mishra – Well, thank you so much for your… Yeah, sure, go ahead, Beverly. You had a question?

Beverly McKee – You know what? Nope. Go ahead. I was just going to ask Dr. Abraham if he had any last comments before we wrap things up?

Shweta Mishra – Yeah, I would like Dr. Abraham to comment on the recent clinical trials that are going on in breast cancer treatment right now before wrapping up if you can quickly comment on that?

Dr. Jame Abraham – Sure. Again…, again, depending upon where you are, which part of the world, in the US or outside or which part of US and then there are many different trials and ER positive or HER-2 positive or triple negative and again depends upon the stage of breast cancer, talk to your oncologist. There are many exciting trials and my…, my last comment is, I am really honored and humbled to be an oncologist. Its one of the most rewarding jobs I picked because I come to know people like Beverly and Heidi and Terry and they allow people like…, they allow me to walk into their life in one of the toughest moments in their lives and be part of that tough journey. So, its a really humbling experience and I really appreciate everything what all of you are doing to make pain and suffering from breast cancer less for the future.

Shweta Mishra – Thank you so much, doctor, and we appreciate all that you do for this community. So, yeah, it was really interesting talk that we had today with all the information that you shared along with the information on some great movies to watch. So, yeah, thank you so much, everyone, and, doctor, thank you for taking time out and sharing your expertise today and for a wonderful discussion today. Beverly, Heidi, and Terry, I am really…, thank you so much for your insightful questions and I am sorry that I kind of got muted when I was introducing you. So, I must tell our audience that Beverly has dedicated her life to creating hope for those who have been touched by breast cancer and she kind of amazed her doctors by planning her 40-year breast cancer survivor celebration which she has set in 2052 sometime on a beach on Sanibel Island, right, Beverly?

Beverly McKee – That is correct.

Dr. Jame Abraham – I'll be there, Beverly.

Beverly McKee – 2052, absolutely!

Shweta Mishra – Yes and same for Heidi. Heidi is a breast cancer survivor who was diagnosed while she was pregnant and now she works for creating hope for people who are going through the disease; and Terry, Terry has created this 501c3 Foundation to encourage fund and…, encourage education and funding for research in breast cancer and she has survived like six chemotherapy sessions, double mastectomy and daily radiation treatment for six weeks and that's a lot to go through, Terry. So, yeah, I just appreciate what all you do for this community and thank you so much for coming up on this talk and sharing your insights here and to the audience, I thank you so much for your support and we look forward to having you all join us for our next talk on precision medicine, identifying targeted cancer treatments with genomic testing on May 10th, 2017, 6 p.m. eastern time. So, listen to this talk to know more about what's the difference between genetic versus genomic testing, who should get tested and for what, for the pros and cons of testing, is gene testing affordable, what is an actionable mutation, how do actionable mutations impact treatment, and what is the different between…, and know more about immunotherapy and personalized medicine. More information on this show and other upcoming shows, visit our website, www.curetalks.com, or you can email priya@trialx.com and the link for today's show will be sent via email to all the participants. So, until the next show, thank you, everyone. Bye, bye.

Heidi Floyd – Thank you, Shweta.

Shweta Mishra – Thanks. Thanks. Bye.

Dr. Jame Abraham – Thank you. Bye, bye.

Terry Arnold – Thank you.