



Young Survival Coalition and Bright Pink Present
Protect Yourself: What Young Women Need to Know about Genetics and Breast/Ovarian Cancer
November 18, 2009

Speakers:

Kenneth Offit, MD, MPH
Zsofia K. Stadler, MD
Amber Trivedi, MS
Jamie Pleva

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OPERATOR: Ladies and gentlemen, thank you for standing by, and welcome to the *Protect Yourself: What Young Women Need to Know about Genetics and Breast/Ovarian Cancer* conference call. During the presentation, all participants will be in a listen-only mode. Afterwards, we will conduct a question and answer session. At that time, if you have a question, please press the one followed by the four on your telephone. If at any time during the conference you need to reach an operator, please press star zero. As a reminder, this conference is being recorded Wednesday, November 18, 2009.

I would now like to turn the conference over to Melissa Snyder from Young Survival Coalition.

MELISSA SNYDER: Hello, everyone. Good evening and welcome to our teleconference, *Protect Yourself: What Young Women Need to Know about Genetics and Breast and Ovarian Cancer*. This conference is hosted by Bright Pink and Young Survival Coalition. My name is Melissa Snyder. I am the Program Manager for YSC, and I will be moderating our call tonight along with Lindsay Avner, who is the Founder and Executive Director of Bright Pink.

YSC and Bright Pink are so excited to be working together on this teleconference, which is actually our first major national collaboration. We have a wonderful group of speakers lined up for the call tonight: Dr. Kenneth Offit and Dr. Zsofia Stadler from Memorial Sloan-Kettering Cancer Center, Amber Trivedi from Informed Medical Decisions and Jamie Pleva, who is a young breast cancer survivor and activist.

Before we start, I would like to just remind you once again that tonight's call is being recorded. A transcript and audio file will be made available on the YSC and Bright Pink websites. So if you don't know those already, that's www.youngsurvival.org and www.brightpink.org. YSC and Bright Pink also offer many other programs and services for young breast cancer survivors

and those at high risk for developing breast or ovarian cancer. If you'd like to find out more, please do check out our websites.

It is now my pleasure to introduce our first set of speakers, Dr. Kenneth Offit and Dr. Zsafia Stadler from Memorial Sloan-Kettering Cancer Center, who are going to provide you with an overview and some research updates on genetics and breast and ovarian cancer. Dr. Offit received his MD and MPH in 1982 from the Harvard Medical School and the Harvard School of Public Health. He received training in medical oncology and cancer genetics at Memorial Sloan-Kettering Cancer Center, where he is the Chief of the Clinical Genetics Service.

Dr. Offit is a Professor of Medicine and Public Health at the Weill College of Medicine at Cornell University, Vice-Chairman of the Memorial Sloan-Kettering Cancer Center program in Cancer Prevention and Population Research and the Vice-Chairman for Academic Affairs in the Department of Medicine. In 1996, his research group first described and characterized the most common genetic mutation associated with breast and ovarian cancer in Ashkenazi Jews. His group was also the first to prospectively measure the impact of preventative ovarian surgery in individuals carrying BRCA mutations. Dr. Offit has received numerous awards for his textbook, *Clinical Cancer Genetics*, and has received a career research recognition award from the American Cancer Society.

Dr. Zsafia Stadler is an Assistant Attending Physician in the Clinical Genetics Service at Memorial Sloan-Kettering Cancer Center and specializes in the care of patients who may have an inherited predisposition to cancer. Dr. Stadler received her MD at Weill Medical College of Cornell University. She completed her residency in internal medicine at the Brigham and Women's Hospital and her fellowship in hematology/oncology at Beth Israel Deaconess Medical Center in Boston.

Dr. Stadler's research interests focus on the identification of genetic changes that may explain cancer susceptibility in young patients with cancer and on the area of emerging models for genomic-based cancer risk assessment. She is currently conducting a family-based study in patients with early-onset breast, colon or testicular cancer that looks for new genetic changes that may help to explain the cause of cancer in these patients.

Doctors Offit and Stadler, I will turn the call over to you now.

KENNETH OFFIT, MD, MPH: Well thanks very much to Melissa for inviting us onto this call, also to Sarah and to Stacy and all their friends. What we are going to do today is just lead off with a little basic orientation. I'm going to speak to you for a few minutes about hereditary breast cancer and an update of where we are with BRCA genes and some of the newer genes, and then Dr. Stadler is going to talk to you about the very cutting edge, which are the genomic tests for breast and other cancers and a research study that is ongoing.

Just to lead it off, it is striking when we think back, and I think back 15 years ago, almost exactly to this date, that the BRCA1 gene had been identified, which was in the fall of that year 15 years ago. It's kind of amazing. Following that, we had the commercialization or the offering of this testing for general consumption by families, so it was 1994 that all of this happened, and it

happened very quickly.

The genes for BRCA1 and BRCA2 were identified largely based on the families in Utah due to the Mormon genealogies that had been accumulated. We were some of the early authors on those papers, and I described the mutation that was seen on Ashkenazi Jewish individuals, which is to this date the most common mutation of the BRCA genes on the planet, which is somewhat ironic since the Ashkenazi Jews are a very small group of individuals on the planet. There is some interesting story that we won't have time to get into as to why a group like that would have an overrepresentation of certain BRCA mutations. In the non-Jewish population, probably only 5-10 percent of breast cancer is strictly hereditary, whereas in the Jewish Ashkenazi, Eastern European Jewish population, it's probably 30 percent or 35 percent of early-onset breast cancer being due to these two genes, BRCA1 and BRCA2.

If you're listening on the phone and you know all about this, you'll be bored. If not, you know that the telltales for BRCA testing are having an early onset of breast cancer, particularly before the age of 35, having multiple breast cancers in a family, bilateral breast cancer, having a close relative that's had an ovarian cancer or a fallopian tube cancer. Sometimes stomach cancer is in a family but it's really ovarian cancer. Pancreatic cancer in the family is also a telltale for this. We're recently learning that certain types of breast cancers that are so-called triple-negative breast cancers appear to be those that have BRCA1 mutations. Finally, this Ashkenazi Jewish ancestry increases our concern if we have a family history of breast or ovarian cancer.

You know how it works and you'll be hearing later in the call from Amber, who's going to talk to you about the genetic counseling, when that is done, and you'll have the details of that. The testing is performed and it can result in the finding of a mutation, finding not of the mutation, or the finding of a variation, which is something complicated that you'll never hear about but which we're at least mentioning here because in fact the outcome for that finding of the variation, which is a normal variation most often, can occur from 5-10 percent of the time.

So we do the testing. We generally want to begin testing in a family with somebody who's had breast cancer. So the most basic message here for you in listening is that if you have a family history of breast cancer you want to begin the testing with somebody who has had breast cancer. That's a common misconception, for the daughters to come in without bringing the mothers who had breast cancer. If there's an individual in the family who's deceased who had breast cancer, we can also do the testing in special circumstances on material from a deceased individual. For example, if that individual is of Ashkenazi ancestry, we can actually get DNA from the tumor block which is in a pathology department from an individual who is no longer alive. That's something I think only we can do at Sloan-Kettering and it's quite an amazing feat, but most people don't realize we can do that. It's something to keep in mind if you have a relative who's passed away. You establish the mutation in that relative, and then you can be tested to see if you have that same mutation.

If the mutation is found, the screening now consists of mammography at an early age. We'll try to stay clear of the mammography controversy in the papers today. This does not apply to high-risk women. We do magnetic resonance imaging. We generally begin the scans at age 25 and we do them annually and there's no argument about that. That was not in the controversy. We can

do preventative breast surgery. That's done about 30 percent of the time. Most women will elect to have the screening. There are strong pros and cons to doing the surgery. It does appear to be 100 percent protective, but it is the most dramatic intervention, obviously. However, the majority of women will elect to do a preventive ovarian surgery, which is done laparoscopically. We think almost all women with BRCA mutations should have that surgery after childbearing is complete. In one of the newer aspects of this, which you may or may not be aware, if you're having the mutation and you decide to have children—say that you're an unaffected woman in her 30s who has a BRCA mutation—we can do manipulation called preimplantation genetics, which is a type of in vitro fertilization with testing so that the embryo is guaranteed not to have the mutation that the mother had, which you may not know about but that is something that can be done in large cancer centers.

For the men, there is also the growing awareness, and we've kind of pushed a lot of this research, that the men carrying the BRCA mutation—so you can get a mutation from either your mother or your father. So if your father's mother or if your father's sister had breast cancer at an early age, your father could be carrying the mutation, and he's more likely to get prostate cancer. In fact, we've recently shown that prostate cancer has a very special characteristic to it under the microscope that we can even begin to recognize, the same way that these breast cancers tend to look special under the microscope.

Those are really the major sort of elements that are the nuts and bolts of our BRCA testing. I think that the availability of this testing now is fairly widespread. I want to sort of segue to a little bit more of the research. I'll tell you that there are rarer genes than BRCA1 and 2 that you may have read about associated with other syndromes. They're extremely rare and we do test for those when we see the signs for those syndromes, but they're very rare compared to BRCA1 and BRCA2. The names of those genes are p53, PTEN, CDH1, which we see with gastric cancer, CHEK2, which is a gene, PALB2—you may have heard of these in the newspaper—and ATM. But we really don't see these commonly in the populations that we typically see.

Of all of the hereditary breast cancer families that we've seen at Memorial Sloan-Kettering, and there are thousands of them, probably only a quarter of them are accounted for by BRCA1 and BRCA2 mutations, and then a very tiny percentage by these additional genes. There's another big chunk, though, that's accounted for by the research, and I'm going to switch over to Dr. Stadler to talk to you about some of the late-breaking research in other aspects for the next eight minutes of our allotted time.

ZSOFIA K. STADLER, MD: Thank you, Dr. Offit. As Dr. Offit pointed out, the BRCA1 and the BRCA2 genes have been very well characterized. We know that these mutations in these genes are associated with a very high risk of breast cancer. Some of the other syndromes that he mentioned are also associated with a very high risk, but all of these genes put together only explain a fraction of the risk of breast cancer or the hereditary risk of breast cancer. So breast cancer geneticists have been very interested in looking for new types of genetic changes or genetic mutations that may help explain the remainder of the risk of breast cancer.

The studies that we have been focusing on—and this has been advances in technology that have allowed us to really look at the genome of patients very closely—are what are called genomic

studies, or the other name is genome-wide association studies. These studies are extremely large studies where they take thousands of patients with breast cancer and compare their genes to thousands of women without breast cancer. In fact, these studies have been very interesting and have identified a number of points along the genome that seem to confer a subtle, a very small increase in risk of breast cancer. In terms of the magnitude of the risk, it is a tiny fraction of the risk when you compare it to the risk associated with BRCA1 and BRCA2 mutations.

These studies are important because they help explain the epidemiology of breast cancer and they also help scientists to find new genes that may actually explain breast cancer carcinogenesis, or how breast cancer itself and breast tumors develop. On the other hand, we strongly feel that these genetic changes are not ready for testing in individual patients yet, because the risk associated with each of these small genetic changes is so low that it doesn't really tell you that much. So at the end of the day, the most important risk factors are still family history and having one of those strong mutations such as BRCA1, BRCA2 or some of the other genetic mutations that Dr. Offit mentioned.

Over the Internet, some commercial companies have started offering testing for these genetic changes that scientist have identified, but we don't think that these are really ready for interpretation yet. While they are commercially available—usually individuals can access the test on the Internet and send in a saliva sample and you get results back—we do not think that these are really clinically interpretable at this time. The best way to go about genetic testing for breast cancer is still to go talk to a genetic counselor, take a detailed family history and then decide whether any kind of testing, genetic testing, is warranted.

Just to transition a little bit to the research that we have been doing here, it's along the same lines. We're looking for brand new types of genetic changes that may help to explain breast cancer. And these changes are called copy number variations. They're just different types of changes in the DNA that have recently been identified with newer technology. Our specific study focuses on identifying new types of genetic changes in women with early-onset breast cancer, specifically those that are under the age of 45. And we're looking for patients who have breast cancer and have parents who do not have breast cancer. That's a family trio. That's why I mentioned before in the bio that this is a family-based study.

In these trios where the patient is affected with breast cancer and the parents are alive and unaffected, they would give us a sample of their saliva. We would look at all of their genes and try to discover a new genetic change that's only in the patient with breast cancer but not in the parents that may have explained breast cancer in that particular individual. We're currently enrolling onto the study. You can email me at stadlerz@mskcc.org, or you can call me at (646) 888-4070 to find out a little bit more about the study. All aspects of the study can be done over mail. We can send you the containers for a saliva sample and you can send us back the saliva. This is something we're investigating now and we're currently accruing patients, too.

KENNETH OFFIT, MD, MPH: The research study is set up in a way to make it clear that this is not free BRCA testing. We're not testing for BRCA in this study. In fact, the things that we're testing for we haven't even discovered yet, so there's no giving back of information in the study. In addition to sending the saliva, you would give an informed consent, which explains the study,

and you would understand fully what the ramifications are, i.e. that we're not going to be giving back information from the study because it's not set up to do that.

ZSOFIA K. STADLER, MD: Right. It's purely for research purposes.

KENNETH OFFIT, MD, MPH: The only other final comment—since we have one minute left, I would be remiss if I left out the poor stepchild of cancer, breast cancer prevention, which is one that unfortunately we all too often leave out and I wanted to be sure I didn't do that on this call—is the use of drugs to decrease the risk of breast cancer, tamoxifen and raloxifene. We use these drugs in women who have increased risk, and they cut risk by at least 50 percent. In fact, in women with BRCA mutations, if you do the ovarian surgery and then take one of these drugs, you can probably decrease breast cancer risk by 90 percent. In all of the brouhaha about mammography and MRI we often forget about these proven prevention drugs. They do have certain side effects, but they're very strong and we didn't want to leave those out of our presentation.

I think that's it on our side. Zsofia, anything else that we wanted to mention?

ZSOFIA K. STADLER, MD: No, I think that was most of it.

KENNETH OFFIT, MD, MPH: We'll pass the baton.

LINDSAY AVNER: Excellent. Well, thank you so much, Dr. Offit and Dr. Stadler. Good evening, everyone. I'm Lindsay Avner. As Melissa said earlier, I'm the Founder and Executive Director of Bright Pink. I am so honored to introduce our next speaker, who is going to give an overview of the genetic testing process for young women.

Amber Trivedi is a Senior Genetic Counselor at Informed Medical Decisions, Inc., where she provides genetic counseling via telephone or Web. Prior to her career in genetics, Ms. Trivedi coordinated breast cancer clinical trials at UCLA and Northwestern University. She previously provided hereditary cancer genetic counseling through the Northwestern University Ovarian Cancer Early Detection and Prevention Program. She has a special interest in the unique needs of young women at high risk for breast and ovarian cancer and how this risk factors into family planning and relationships.

Ms. Trivedi is a member of Bright Pink's expert panel and acts as a Bright Pink Education Committee New Program Champion. Amber, I'll turn the call right over to you.

AMBER TRIVEDI, MS: Great. Thanks again, both Lindsay and Melissa, for inviting me to speak on this call. I would like to describe the genetic testing process.

The first step in genetic testing is genetic counseling. As a genetic counselor, I frequently realize that people have no idea what it is that I do, so I first want to describe what exactly genetic counseling is. All it is, is a process in which you can figure out your risk for hereditary cancer and discuss all your options. It's important to know you don't need to wade through all the info alone and decide about the genetic tests on your own. Professionals are there to help you.

Genetic counseling can be performed, of course, by a genetic counselor or another genetic professional. Additionally, if you don't have access to a genetic counselor, it can be performed by an oncologist, including surgeons and other oncology-related professionals. Primary care physicians, such as OB/GYNs and internists can also provide genetic counseling. Nurses trained in genetics can provide genetic counseling as well. There are a lot of professionals who are available to provide counseling.

The one thing you want to make sure of is that whoever you go to for genetic counseling is specifically trained to discuss these issues. Because there are a lot of factors involved, you want to make sure you go to an expert.

What exactly happens during a genetic counseling session? A genetic counselor will first analyze your family history and estimate the chances that cancer in your family is hereditary. They'll also discuss whether or not genetic testing can benefit you. Genetic testing is often not straightforward. That's something people are surprised to hear. So a genetic counselor can talk about the benefits and limitations of genetic testing.

They will also estimate what your personal risk is of developing cancer in the future, regardless if you get genetic testing or not, and talk about ways that you can capture cancer earlier, prevent it, so all the things that Doctors Offit and Stadler had mentioned. They'll discuss those with you and help you decide which of those options fit best with your lifestyle personality and your personal goals.

A very important thing to note is that genetic counseling does not equal genetic testing. You don't have to get testing if you get genetic counseling. I hear all the time people saying, "Well, I don't really want to get counseling because I'm not sure about testing. There are so many things I don't know about." I just want to encourage you [to] utilize that resource to get that information to make the decision about testing.

The first step in trying to figure out your risk starts with gathering your family history. It's best to gather as much information as possible before you meet with a genetic counselor or doctor, so I just wanted to give you a few tips for how to collect your family history if you are thinking about this process. You want to try to get information about three generations up from you, so correct medical information about yourself, obviously, any children you might have. Then you'll want to collect information about your brothers and sisters and their kids, then your parents and their brothers and sisters, so your aunts and uncles on both sides, your first cousins, your grandparents and if possible your grandparents' brothers and sisters. Obviously it's hard to get some information from those older generations.

You want to ask who in the family had cancer, including the type of cancer they had. Additionally, you want to make sure it's the primary cancer. For example, someone might say, "Oh, Aunt Sophie had lung cancer," but in fact she didn't have lung cancer. She had breast cancer that spread to her lung. So make sure you clarify on that because where the cancer started affects your risk level. You also want to ask relatives how old they were when they were diagnosed with cancer. Now, in an ideal world we'd have verification of all these diagnoses with

medical records or death certificates, but do the best you can to get that information.

You want to include information about all your relatives, even if they don't have cancer, because it's important to see what proportion of people in the family had cancer. You'll want to ask how old people were when they died and what their cause of death was if they didn't have cancer. Other important information is whether or not people had any preventive surgeries, like surgeries to remove their ovaries or breasts and that affected their chances of getting cancer.

Lastly, I want to encourage you to break the silence and get your relatives to talk. The Surgeon General has designated Thanksgiving, which is next week, as Family Health History Day. You'll find that many people aren't comfortable talking about their medical histories, especially the older generation, so it's up to you to say, "This is important for everyone in the family to take charge of their health," and it's important to break the silence and open the lines of communication.

The accuracy of any risk assessment you get is related to the accuracy of your family history, so try to delve as deep as possible. But if you don't have any information—for example, if you're adopted or if you're just not in good contact with extended family members—just do the best you can. A genetic counselor will work with whatever you have. They'll also be able to let you know if it's important to really dig deeper and get more information.

To give you a few tools to help you collect your family history, the Surgeon General has an online tool called My Family Health Portrait. You can find that at www.hhs.gov/familyhistory. There's also another tool called It Runs in My Family, and that's at www.itrunsinyourfamily.com.

So why would you even take the trouble to collect your family history? Most importantly because not all cancer is hereditary—in fact, most of it is not—and figuring out that family history will let the professional figure out if you're at risk for hereditary cancer or not. Only about 5 to 10 percent of all breast cancers are hereditary, and 10 to 15 percent of all ovarian cancers are hereditary. But there are some keys in the family history that indicate whether someone's at higher risk than expected. For example, one flag is breast cancer being diagnosed under the age of 50. If you're connected with the Young Survival Coalition, that probably applies to you.

Additionally, ovarian cancer or two related cancers—fallopian tube cancer or peritoneal cancer—if those are diagnosed at any age that can be a red flag. Another flag is breast cancer diagnosed more than once or found in both breasts. And people of Jewish ancestry have a higher chance of hereditary cancer, so if we see breast or ovarian cancer at any age in a Jewish family, we would want to look into that. If you see different relatives with breast and ovarian cancer who are on the same side of the family, that's another red flag. Finally, anyone with male breast cancer is also at risk for hereditary cancer.

Another reason that the family history is important is because genetic testing does not always provide a clear answer. We've seen some that clearly had hereditary cancer. They had all those red flags I just listed, multiple generations of women diagnosed at a young age, but they get testing and their genetic test results are normal. As Dr. Offit had mentioned, most people get

tested for the BRCA1 and 2 genes, and he listed several other genes that are much more rare but that we have the ability to test. But sometimes people test normal for all of those genes. Obviously there are some genes that we haven't discovered yet. What that means is that a normal genetic test result does not rule out the chance that your family has hereditary cancer, so we really need that family history to interpret what a negative test result means and to tell you how high your risks actually are.

Talking about results, when someone pursues BRCA testing, there are three possible results. One is positive, where that causes an increased risk for cancer. Two is negative, where as we said we don't know exactly what that means. And there's also a third result that's inconclusive. They call it a variant of uncertain significance. That means they found something in the genetic test results but they don't know what that means, whether or not it causes increased risk for cancer. In order to make test results as easy as possible to interpret, it's ideal if genetic testing is performed on somebody who's already been diagnosed with cancer. A genetic counselor can help identify which family member is ideal for testing.

Because the results aren't always clear, genetic testing is not for everyone. For those who are at average or low risk, there's a very small chance that your test will come back positive. It will most likely be negative. Since a negative result doesn't lower risk, genetic testing wouldn't necessarily tell you anything new. For those at average risk, there's a comparatively larger chance that your test result would be inconclusive, which could cause a lot of anxiety, knowing they found something but you don't know what it means. So genetic testing makes sense in individuals who have a reasonable chance of testing positive, but sometimes it could do more harm than good in average or low-risk individuals.

Deciding whether or not you want genetic testing involves both medical and non-medical factors. Let's start first with the medical aspects. Why would you want to get genetic testing? It depends on if you've already been diagnosed with cancer or not. So let's start with women who've never had cancer. Why would you want to know what your risks are? First of all, you can actually do something about your risk. Doctors Offit and Stadler talked about all the different ways you can find cancers early or ideally prevent it altogether. If you are going to undergo extra screening, those tests are more likely to be covered by insurance if you have a genetic test that's positive. Also, some of the things like preventive surgery obviously carry a lot of risk as well. So if you know your risk, you'll know that the benefits of those options outweigh the risks.

Knowing your risk could also affect your lifestyle choices. Another medication that can help reduce ovarian cancer risk is the birth control pill. You might make the choice to go on the pill versus other types of birth control. You might choose to breastfeed your children, which could help lower your risk for breast cancer. It also could affect family planning. For people who are considering removing their ovaries, they may choose to decide to have kids younger or maybe spaced closer together.

For women who've had cancer, knowing your risk could also affect your surgical decisions. For example, would you want to get a lumpectomy versus a mastectomy? If you're getting a mastectomy, would you want it in one breast or both breasts? Genetic test results can sometimes make those decisions easier for you. Additionally, you'll want to know to prevent other types of

cancer. If you've had breast cancer and you're doing well, the last thing you want to do is turn around and be diagnosed with ovarian cancer. So you'll want to take advantage of those early detection and prevention techniques.

Women with cancer could also have lifestyle choices that differ when they know their risk. Also, very important for a woman with cancer, getting that genetic testing provides very important information for their family members. As I said before, it's ideal when a family member gets that genetic testing. So many cancer survivors view genetic testing as a gift that they can give to their relatives so that their relatives have the opportunity to prevent cancer in themselves.

What are some non-medical factors that go into deciding about genetic testing? Some people are searching for an explanation for the cancer in their family. Knowing they have a genetic mutation actually might give them peace of mind or a sense of control for knowing what their risks are and knowing it wasn't just chance, in a way. It's chance to inherit the gene, but identifying that risk can give people a sense of control.

Other things you're going to want to consider before testing are: Are you ready to find out what your risks are? It's an important decision that can impact you in ways you wouldn't expect. You'll want to use all your available resources to educate yourself so you'll reduce the chances of being blindsided by what genetic testing does to you psychologically. You'll also want to consider if people in your family agree with your viewpoint. Obviously you share your genes with your family. When one person wants to know their risk and another doesn't, that can cause family conflicts.

Maybe you know you want genetic testing, but is it a good time to do it right now? If you've just gotten a cancer diagnosis and are struggling with things like chemotherapy, or maybe you're pregnant or something else major is going on in your life, you want to balance whether it's a good time to find out your genetic risks. Also, you'll want to think about how knowing your risk affects your sense of self, your body image, since things like preventive surgery for the breasts and ovaries are related, and your relationships as well. You'll want to explore all of those factors.

Sometimes these decisions are going to extend beyond the genetic counseling session. A genetic counselor is trained to explain the medical information in a clear way and to help you understand your options, but sometimes the issues take longer to discuss than in just one or two sessions. In these situations, it's important to see a psychologist to get you through the decision-making process, or possibly for long-term therapy if that's needed. If you do see a psychologist, you'll want to choose someone who has experience seeing clients, confronting medical issues. They're called health psychologists. Psychologists who work with cancer centers often have experience specifically with hereditary breast and ovarian cancer. Regardless of your decision about genetic testing, whether you get it or not, it's important to have a professional assess what your risk is, because even if you don't get testing, you want to make sure you're doing appropriate screening based on your family history.

Now, if you've decided genetic testing is right for you, what are the next steps? It's a simple blood draw. That part is simple, although we discussed the interpretation of the results. It's very complex, and the psychological impact can be complex as well. What about insurance?

Thankfully, about 90 percent of people do get genetic testing covered. It's more likely to be covered if you have a strong personal or family history of cancer. We're very glad that most people get testing covered because the cost ranges from \$400 to \$3,000 depending on the family history and the type of test that's run.

People always ask about insurability and discrimination. We're very happy that the Genetic Information Nondiscrimination Act has passed federally, which prohibits health insurers and employers from discriminating based on genetic test results. State by state there are also several laws in place.

I also wanted to talk about DNA banking. In addition to or instead of genetic testing, you have the option of DNA banking. And that's where they would draw your blood and store your DNA to be tested at a later date. Dr. Offit had mentioned being able to do postmortem testing. Since that's not always easy to do on certain tissues that are found, DNA banking makes that process easier.

This is something that's often very difficult to talk about, but the reality is that our relatives with cancer aren't always around to get testing. That's why it's hard to think about banking your DNA. But since it's ideal to test your relative with cancer, banking allows testing even after those relatives pass away. This is good for the people who want to help their relatives but aren't able to handle genetic testing amidst all that they're going through, especially if they're going through cancer treatment right now, or for people who actually have negative genetic test results. They might bank their DNA because who knows? Several years down the line, maybe a new gene will be discovered and their relatives will be able to get answers.

How can you get genetic counseling or testing? You can search online to find a genetic counselor in your area. The National Society of Genetic Counselors' website is www.nsgc.org/resourcelink.csm. That will take you to a page where you can search for a genetic counselor. Additionally, the National Cancer Institute has a directory. That site is www.cancer.gov/search/genetics_services. If you don't live near a genetic professional and it's hard for you to get there, you have the option of talking to a genetic counselor via telephone. The company I work for actually does phone counseling because we want to increase access to care. Our website is www.informeddna.com. You can also ask your doctor if they work with a genetic professional. That would be the easiest route.

Finally, discuss your options with a health care provider who's trained in these issues. When you're thinking about who's qualified to do this, know training is important because they have to know a negative result does not mean you're not at risk. The provider should be familiar with genes other than BRCA1 and 2 to determine when those tests are appropriate. They should also be able to recognize their own limitations and know when to refer to a genetic professional.

Lastly, get support. The fact that you're on this call shows that you're already connected somehow to YSC or Bright Pink. I'm really glad about that because many young women find the supportive care network helpful. These organizations were created to help you connect with other women like you, so I encourage you to use them and get as much support as you need.

With that, I'll turn it over to Lindsay to introduce Jamie.

LINDSAY AVNER: Thank you, Amber. Our final speaker tonight is the wonderful Jamie Pleva, a young breast cancer survivor who went through the genetic testing process and tested positive for the BRCA1 gene mutation in April 2008. Jamie has a strong family history of breast cancer. She is a volunteer for both Bright Pink and YSC and she is a powerful voice for all young women affected by breast cancer.

Jamie, the call is all yours.

JAMIE PLEVA: Thank you, Lindsay. As Lindsay said before, I did test positive for the BRCA1 gene. It actually came about because at the age of 32, about ten years ago, my eldest sister, Tracy, was diagnosed with breast cancer. She found her lump when she was breastfeeding her six-month-old son, Jason. She thought it was a clogged milk duct, but it just wouldn't go away. She went to her doctor with her concern and he basically turned her away, saying, "Tracy, it's most likely a clogged milk duct. Don't worry about it. You're too young for breast cancer."

Six months later, a couple of weeks after my nephew's first birthday, she went back to the doctor. She pointed to the same spot and said, "It's still there." The doctor was like, "It's probably nothing," but he decided to do a mammogram and a biopsy. It turned out to be breast cancer. She actually ended up being diagnosed stage IIB, so there was some lymph node involvement.

Nine years went by and Tracy continued to battle her disease because it ended up metastasizing to the lymph nodes. She had a one-sided mastectomy with reconstruction and she went through chemo, and she couldn't get the chemo to last her ten months. It came back and it went through the lymph node chains in her breast and around her neck and under her arm. Once we thought we got that under control it went to her brain. Then it went to a bunch of different places. We would beat it down and it would come back.

While all of this was going on, I worked for the YSC very briefly. I was lucky enough to do some volunteer work there, and I was beginning to wonder about the genes and the testing. I decided that since Tracy was diagnosed, my breast surgeon decided he was going to keep a very good eye on me, which meant that every year I was getting an MRI and I was getting ultrasounds to keep an eye on me. Around February of 2008, my boyfriend at the time found a small lump underneath my arm. I brought it to my breast surgeon with concerns. It turned out to be nothing, but I brought up the idea of getting tested for the gene because, for me, I'd rather know if I have it so that way I can be proactive and do something about it, so that way I would never, for one, put my family through the pain again of having a daughter with breast cancer, or I can do something about it. I can fight it. I have the opportunity.

I went in to my genetic counselor. We went through my family tree and we decided that getting the test was the best thing to do. I found out in April of 2008 that I did test positive for BRCA1. My eldest sister, Tracy, also tested positive. My two middle sisters tested negative. Our BRCA1 gene came down through my father. He ended up actually having prostate cancer, but his is very simple and he beat it easily. His mother had breast cancer. She had it multiple times and ended

up passing from it.

After I found out the news that I was BRCA1 positive, I actually found Lindsay and Be Bright Pink, because I needed somebody to talk to. I tracked those ladies down and they were an immense support to me. They really helped me to feel great about my decision of getting a prophylactic mastectomy with reconstruction. My surgery was scheduled for January 15 of 2009. In November of 2008, my sister Tracy took a turn for the worse and we had to admit her into a hospital where she was intubated because her breast cancer was spreading to her lungs.

During this time, I was then getting ready for my surgery. I went in on December 3rd of 2008 for a pre-surgery mammogram. Before you go in, when you're having a mastectomy done, they have you do pre-surgery testing: mammograms, sonograms, ultrasounds. The first step for me was the mammogram. I went in on December 3rd. My doctor saw calcifications. On December 4th, I went back for a biopsy. December 5th of 2008 I was told that I did indeed have stage I breast cancer. So, go figure.

My doctor, my breast surgeon, bumped up my surgery date to December 15th, and on December 15th of 2008 I had a double mastectomy with reconstruction. I was scheduled to meet with an oncologist to see if I would need chemotherapy. We put that off until about January because we were settling down for the holidays and Tracy was still very sick and in the hospital.

In January, we decided that I was going to get chemo because it came back that I was stage I, and though my cancer was not in my lymph nodes, I am a triple-negative cancer, which tends to be more aggressive in young women. So I was set up to do chemo. I also knew that going through chemo at a young age sometimes could cause a woman to lose her egg supply and can make her lose her period, so I set up getting my eggs harvested. I went through that whole process, and as soon as that was done I was going to start my chemo in March. In February I started with my shots.

Unfortunately, during this time my sister was getting much worse. On February 20 of 2009, just this past February, my eldest sister Tracy did pass away from breast cancer that spread to her lungs. It was actually the morning of my sister's wake [that] I had to go and get my eggs harvested and then head to her wake, which kind of stunk, but it is what it is.

A week later I started my first chemo regimen. I did chemo for six and a half, seven months total. I was told on August 21st that I can start thinking the word cure. I'm holding onto that and I'm holding my oncologist to it, because there's no way I'm doing any of that ever, ever, ever again. Today, I was actually in surgery, just finalizing and fixing up my implants, because when they did my mastectomy they had to take everything, including nipples and stuff. So today I went in and they did some altering to my implants. In a month I'll be able to get my nipples back. It's pretty exciting.

Basically it's been a long, hard road. I'm still very lucky and very blessed that I was able to have the opportunity to do something about breast cancer and I didn't just sit around and wait. I had great doctors who fought for me to be able to get the genetic testing done and to always make sure I was tested and paid attention to. Had I not decided to get the genetic testing and had I not

decided to be so proactive, my cancer probably would not have been caught as early as it was. It probably would have gone further down the road, like my sister Tracy's, and I wouldn't have been given such a fighting chance.

I've been very lucky, and just keep on fighting and plugging through and doing anything I can do help anyone else out in my situation. So, thanks.

LINDSAY AVNER: Thank you so much, Jamie, for sharing your story. You're definitely an inspiration to all of us.

We are actually going to now be opening up the line for questions. Before we start, I just want to add a little disclaimer, in that anything that any of the doctors and the medical professionals have said here tonight—Dr. Offit, Dr. Stadler, Amber—does not actually constitute an opinion. It's really important that you don't take this as medical advice and you speak with your doctor about a strategy that's right for you.

With the questions, we're actually looking for more generic questions versus personalized genetic counseling-related questions.

I think we're going to be ready to queue up the questions. If you would like to ask a question, please press one, then four, and then an operator will assist you.

OPERATOR: We have a question from Chicago, Illinois. Please go ahead. Your line is open.

WOMAN: Hi, Lindsay. I have a question in regard to the genetic testing. If someone were to get tested similar to yourself, and then they found out that they do have a very high likelihood of developing breast cancer because the BRCA1 or 2, they have that, does insurance typically cover the double mastectomy, or is that considered cosmetic surgery at that point.

JAMIE PLEVA: Do you mean Lindsay or Jamie?

WOMAN: Both, I guess. Either one.

JAMIE PLEVA: Oh, okay. Lindsay, do you want to take that?

LINDSAY AVNER: I can take it. And if the doctors could jump in here, that would be wonderful. If you actually test positive for the genetic mutation, there is definitely a higher likelihood that your insurance will cover the surgery. So it is, as with everything insurance related, there are always kind of those exceptions, but in general most of the surgeries are in fact covered if there is that positive mutation.

WOMAN: Okay, thank you.

KENNETH OFFIT, MD, MPH: We actually published a series on that just a couple of years after the genes were identified, and 99 percent of the surgeries are covered. If you go to a good health professional, they can write medical necessity letters to make sure that they're covered.

WOMAN: Okay. Thank you.

OPERATOR: Our next question comes from Roswell, Georgia.

WOMAN: Hi. My question is for Dr. Offit. I was wondering if there is a link between the BRCA positive-involved prostate cancer. Is there a specific gene that you can test for, for the prostate cancer?

KENNETH OFFIT, MD, MPH: The question is genetic basis of prostate cancer. A small amount of prostate cancer is explained for by BRCA, primarily BRCA2, not BRCA1, mutations, although BRCA1 mutations also may be a small part of it. There's a whole other subset of prostate cancer which you see in families, where a father, his brother, his father will have prostate cancer. The studies that Dr. Stadler was describing, these association studies, have been associated with an increased risk of prostate cancer in those settings.

The problem with this, and perhaps Amber may comment on this, as much of her company actually tests for some of these variants, we don't believe that those variants are of sufficient risk to help individuals tailor their screening and prevention for prostate cancer. As you know, prostate cancer is a very controversial area, much more so than breast cancer because of the false positive rates of detection and a lot of surgery being done to remove prostate glands that may not be necessary.

There is a lot of hereditary prostate cancer. A small amount of it is accounted for by these tests that we think are still research tests. But if you have prostate cancer in the setting of breast cancer or pancreatic cancer or ovarian cancer in a family, then that's a very strong candidate for BRCA2 testing.

WOMAN: Okay. Thank you.

AMBER TRIVEDI, MS: Thanks, Dr. Offit. This is Amber. Yes, we would fully agree with you. Our company doesn't perform testing, but certainly we've had people who have done testing through commercial labs that have these more common variants of genes that have an increased risk for prostate cancer. It's not exactly clear how to interpret it, so it's not something that we recommend and do at least put people at ease and say it's unlikely that it's going to be as large of an impact of something, like the BRCA genes would be on breast or ovarian cancer.

WOMAN: Okay. Thank you.

OPERATOR: Our next question comes from New York.

WOMAN: Hi, sorry. I just had a question in terms of age recommendation in the event that someone is diagnosed as being BRCA1 and/or 2 positive. What is the minimum age recommendation if you do choose to undergo surgical intervention?

KENNETH OFFIT, MD, MPH: Well, there are a couple of questions of ages here. The first, I

guess, is the question of at what age would we recommend doing the testing, let's say if you have a mutation in the family. The next would be: What would be the age at which you would actually start doing screening? And what type of screening would that be? Would it be self-examination or MRI screening? And then the final would be: At what age do we recommend the surgery? I'll give you my take on that, and Amber and Dr. Stadler can comment.

Legally, I guess, or by convention, really, because you won't get arrested I don't suppose if you do it before the age of 18, I guess unlike drinking in some states, but at least for BRCA testing 18 would be the earliest age that we would typically begin. We actually would try to wait longer than that. We can get into a whole psychological discussion, but for young women starting out that part of their lives with that information is a major psychological burden, when they're just sort of in a period of their lives when they're entering out into the sexual world and considering starting their own families. So we encourage them to wait.

What we're finding increasingly is that the age of reproduction is coming into play, because that little clinker I mentioned about using your genetic testing in special circumstances, if you decide that you want to have children who don't have these mutations, that can be done. Very often that becomes the age at which we first will do the testing, the age of reproductive consideration. That can be even in the 20s, early 20s.

We don't start the screening until age 25. All the brouhaha about the age of mammographic screening in the general population doesn't apply here. We're starting at 25, way earlier than the general population.

Then the age of the surgery, if you go for the decision of the surgery of the breast, really depends on other considerations. We know that the maximum risk for breast cancer with these mutations is in the early period. So if you're going to be doing the surgery, the surgeries are typically done in the 30s and 40s. It wouldn't be as sensible for the BRCA1 mutation, for example, to be doing the surgery later in life because you will have lived through a lot of the risk at that particular period of your life.

The age for the ovarian surgery: generally the earlier, the better, because we've found that the ovarian surgeries prevent breast cancer. For the woman who decides to do the ovarian preventive surgery after say she's done having children, in her mid-30s, she can take true hormone replacement therapy until her typical age at menopause to maximize her quality of life. Of course, that's a very individualized discussion that one would have. But in general, one wants to do the ovarian surgery at the period where it makes sense. The earlier [it's done], the better the protection on the breast cancer side.

That's a very longwinded answer, because there are a lot of different ages of consideration. I think the hardest one for us is the age at which you do the testing, because you can have 18-year-olds going on 30 and 18-year-olds going on 14. A lot depends on where the individuals are at that stage of their lives.

WOMAN: Okay. Great. Thanks so much.

AMBER TRIVEDI, MS: Dr. Offit, I think you brought up great points in that you have to do a balancing act, and for trying to think about cancer risks versus preventive screening or surgery and when are you going to maximize the benefit with minimizing the risk. Then there's the other factor that's harder to take into account, and that's your own personal readiness. I think many people probably—Lindsay and Jamie can speak to this—sometimes the burden of not knowing your risk becomes so high that you choose to get the testing, even if your literal cancer risks aren't that high yet, or getting a mastectomy to give you some peace of mind. You may choose to do that earlier because you want that peace of mind to be [inaudible 00:57:28] of your life. You might want to choose it later because you might want to have kids and try breastfeeding first.

There are so many other factors that go into that decision. It's very difficult to weight the psychological and the medical risks and benefits.

OPERATOR: Our next question comes from Plymouth, Massachusetts.

WOMAN: Hi. Thank you for taking my call. My question is regarding the family-based study that Dr. Stadler, I believe, had talked about.

ZSOFIA K. STADLER, MD: Yes.

WOMAN: My question is: She had mentioned that the patients who have had breast cancer should be involved, their parents, who have not had cancer. Then if there were other family members who had cancer, would it make sense for all of them to have...

ZSOFIA K. STADLER, MD: Not for this study. We are actually—if the patient with breast cancer has any sisters who have not had breast cancer, those patients would be eligible, sort of as the controls for the study. But we're not looking for any other family members. We're essentially looking for really families that don't have any identified inherited predisposition, such as BRCA, because if the family already has a known BRCA mutation, then we know what caused the breast and ovarian cancers in those particular families. These are really the families where the breast cancer risk or the breast cancer in the young women who were diagnosed in the family is unexplained.

WOMAN: I was diagnosed at 31, but we have not had any genetic testing done. I say we because my grandmother on my mother's side was diagnosed back when she was 48 and then again in her 70s. My mother has not been diagnosed as of yet, so we're not sure.

ZSOFIA K. STADLER, MD: I would say, without getting into too much individualized discussion, I think that talking to a genetic counselor is what I would recommend for you. I don't know, Amber, if you wanted to comment on that.

AMBER TRIVEDI, MS: Was there a question for whether or not you should be getting the other type of testing, other than BRCA?

WOMAN: Honestly, I've been kicking around the BRCA testing myself because I was so young. Part of my reasoning was because my brother does have children. I went through

chemotherapy and was thrown into perimenopause, basically, so I do not have any biological children, but my brother has a daughter and they decided that they didn't want to know. So I sort of put off the testing, but I started to think about [that] I should be doing this for myself, not necessarily anyone else. So I am reconsidering whether or not I want to go through the BRCA testing. But the family study, I was curious because it was mentioned that patients with cancer and then the parents without cancer...

ZSOFIA K. STADLER, MD: You would theoretically be eligible. Again, as Dr. Offit importantly pointed out, this is not something you would get results from. It would purely be for research purposes.

WOMAN: Sure. Okay. I was just wondering if perhaps later on down the line, like you said, for research purposes. I know that I wouldn't get any information out of...

AMBER TRIVEDI, MS: Regardless, it sounds like you probably could benefit from just talking to someone to help you make those decisions. In general, when people are considering testing, it's great to have the option of the clinical genetic testing that's common as well as participating in research. I think those are all great options for you, and you can see someone to help figure out which one fits you best.

WOMAN: Thank you.

KENNETH OFFIT, MD, MPH: We certainly want to encourage you, though, to consider going forward, because the genetic testing could be of use to your nieces. It's certainly a reasonable thing to consider in a family history such as yours. It does raise the important point that it's not tic-tac-toe. You can have three generations and you can have yourself affected, your mom not and your grandmother affected. Just because your mom isn't affected doesn't exclude this idea of going from generation to generation, because not everybody with a mutation will get breast cancer.

It's definitely something to consider doing. If you're tested and negative, then [it would be] a good time to participate in the research. As Dr. Stadler said, I wouldn't use the research as a surrogate for the clinical care.

WOMAN: Thank you, Doctor.

OPERATOR: Our next question comes from Grafton, Wisconsin.

WOMAN: Hi. My question is whether or not there's a higher risk for a particular cancer, say breast or ovarian, associated with one gene or the other, the BRCA1 or the BRCA2.

KENNETH OFFIT, MD, MPH: I don't want to hog up all of the microphone, so Zsafia, if you wanted to answer that, or Amber, I'm happy to...

ZSOFIA K. STADLER, MD: Sure. In general, there are slightly different cancer risks between BRCA1 versus BRCA2. We do think that the ovarian cancer risk is a little bit higher in BRCA1

carriers than in BRCA2 carriers. The onset of ovarian cancer tends to be a little bit later in BRCA2 carriers. Nonetheless, still the risk of ovarian cancer, even in BRCA2 carriers, is much higher than the risk in the general population at large.

The breast cancer risk is also slightly higher in BRCA1 than in BRCA2, but that's not really—we don't stress that difference too much. As Dr. Offit pointed out, there are some other associated cancers, such as prostate cancer, pancreatic cancer, and in general we see those more often in families with BRCA2 mutations but, again, those types of cancers are also seen in BRCA1. They're certainly not exclusive to BRCA2 mutation carriers. The increased breast screening, the prophylactic surgical options are not significantly altered between the two different genes.

WOMAN: Okay. Thank you.

OPERATOR: Our next question comes from Orlando, Florida.

WOMAN: Hello. My question is: I have a cousin who is actually a BRCA2, and I'm a BRCA1. We don't know how to tell the rest of the family what to get checked for, because we can't hand them our individual things that we got, our discoveries, because we don't know now [if] they just need to run the full gamut or is that unusual for a family to have two different genes.

KENNETH OFFIT, MD, MPH: That's a good case for a good specialist, a good genetic counselor. For us, the Guinness Book of World Records, we actually have a family that has three different mutations in the same family. So it sounds unusual, but it really isn't all that unusual.

We're not allowed to do individual counseling on the phone because that's not what we're insured to do, quite frankly, so you need to obviously individualize your advice with your own counselor and your own physician. In general, it's fair to say that the most important thing that you can do is [to] communicate those specific test results in the family. If there's a mutation of one gene and a mutation of the other gene, you want to be very, very careful that both of those specific mutations are tested for in the family.

In general, if someone goes in to get testing, they are going to get both BRCA1 and BRCA2 tested, either fully sequences, or if they're of Ashkenazi ancestry, they'll have specific mutations done. Probably it's pretty safe that both of the genes would be looked for. But in medicine, it's always a good idea to leave no stone unturned and get the actual specific test results into the hands of the young women in the family who are going in to get genetically tested so that they can have that information.

Having said that, it means that there could be somebody in the family who's carrying both mutations. We've seen this, and interestingly enough it's not what we'd call a particularly—we call it severe phenotype, meaning that in women who we've seen with two mutations, they have the same issues, breast cancer, ovarian cancer risk, earlier onset. There's nothing that looks very, very much different in those individuals than in individuals just carrying one of the particular mutations.

Amber, do you have any other thoughts on that?

AMBER TRIVEDI, MS: No. I think you pretty much covered it. I guess I would just add that if you do take your results to a genetic specialist, they can help sort out the family tree and try to determine which of your relatives would get which test, as well as maybe help you write a letter that can be given to other family members to explain the situation. They can then take it into their health care providers to make sure that whoever wants testing is getting the appropriate test.

WOMAN: Okay. Thanks.

OPERATOR: Our next question comes from New York, New York.

WOMAN: I had a question about the tamoxifen. I was hearing the number 90 percent thrown around, and I was just wondering if that member of the panel who mentioned that would expound on it. I was under the impression that tamoxifen was only used for people who had already had breast cancer to prevent a recurrence. I'm wondering if it's also used for just someone who might be at a higher risk based on family history, genetics, et cetera, to decrease their risk overall.

KENNETH OFFIT, MD, MPH: Sure. Since I said it, I'll reiterate it. It's interesting, because what we're talking about here is not something that's secret. In fact, the FDA gives approval for drugs to be used, and this drug, tamoxifen, is approved by the FDA for prevention of breast cancer, not only the treatment of breast cancer. The number that is quoted is 45 percent decrease in breast cancer risk in women taking tamoxifen—these are generally postmenopausal women, but premenopausal women have been included in these trials as well—a 50 percent, 45 to 50 percent decreased risk.

The 90 percent that I used is based on a research study that we published. That was in women with BRCA1 and BRCA2 mutations who had already had ovarian preventive surgery who then went on and also took tamoxifen. So you do a double-edged attack and you do the ovarian preventive surgery and then take tamoxifen. We found that that 45 percent decrease went up to close to 90 percent for breast cancer. It's not 100 percent, so the surgery is still the only really complete prevention. But tamoxifen is a very strong preventive drug.

It does have side effects. You can get blood clots with tamoxifen. There are other risks of tamoxifen that affect the uterus. This is not something that we want to put in the drinking water. On the other hand, it is a very strong prevention drug. Since you're calling from New York, New York, you would have read in *The New York Times* a week or two ago a big article really questioning why this has been overlooked. Both this drug and another drug which is preventative for prostate cancer in men are really not fully utilized.

WOMAN: Thank you.

OPERATOR: Our last question comes from Tampa, Florida.

WOMAN: Hi there. I guess I can direct it towards Amber, and if you can answer it, that's fine.

I'm questioning how the insurance companies perceive a positive testing. Is that considered a preexisting condition? Should I lose our health insurance for whatever reason later on and then tested positive, would that be considered preexisting?

AMBER TRIVEDI, MS: Thankfully, I can say no, that even before the Genetic Information Nondiscrimination Act passed federally, under HIPAA genetic test results couldn't be considered preexisting. If someone say is positive for BRCA but does not have cancer and does not have any other major conditions, since they'll pick up pretty much any little thing, that should not affect your insurability.

WOMAN: Great. Thank you.

OPERATOR: We have no further questions at this time.

LINDSAY AVNER: Well, thank you all so much for your enthusiasm and questions that have contributed to making this teleconference such a great success. Both Bright Pink and YSC are here to help you as both high-risk young women and young survivors. Please remember to visit both of our websites, [youngsurvival.org](http://www.youngsurvival.org) [<http://www.youngsurvival.org/>] and then Be Bright Pink [<http://www.bebrightpink.org/>] for more information and to find out about upcoming programs and events. Don't forget that you will also be able to access the transcript and recording of tonight's call in the next month.

That concludes our program for this evening. Again, we would like to thank our wonderful speakers, Dr. Kenneth Offit, Dr. Zsofia Stadler, Amber Trivedi and Jamie Pleva, for helping to make this teleconference so successful and for sharing this important information with all of you.

Finally, thanks again to all of you for calling in and listening. Stay well and have a great night.

OPERATOR: Ladies and gentlemen, that does conclude the conference call for today. We thank you for your participation and we ask that you please disconnect your line.

[END OF TRANSCRIPT]