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Welcome to Yale Cancer Answers with doctors Howard Hochster, Anees Chagpar and Steven Gore. I am Bruce Barber. Yale Cancer Answers is our way of providing you with the most up-to-date information on cancer care by welcoming oncologists and specialists, who are on the forefront of the battle to fight cancer. This week in honor of Breast Cancer Awareness month, it is a conversation about texting as a way to follow up with breast cancer patients with Dr. Sarah Mougalian. Dr. Mougalian is an Assistant Professor of Medicine and Medical Oncology at Yale School of Medicine, Dr. Gore is a Professor of Internal Medicine and Hematology and Director of Hematologic Malignancies at Smilow Cancer Hospital.

Gore While I am very interested and I am sure many, especially of our younger generation of listeners will be very interested to see how we can treat breast cancer through texting because that sounds better than chemo, but before we get to that, I am sure that is not really what you are going to talk about, how did you get interested in breast cancer in particular?

Mougalian Well, I have always had an interest in women's health and when I decided during my training that I wanted to pursue a career in oncology, it seemed a natural fit. I think I really love taking care of women. I love taking care of women across the spectrum of breast cancer and it has just brought me a lot of career satisfaction.

Gore I would point out, if I am not mistaken, that some people with breast cancer are men, no?

Mougalian That is a good point.

Gore Do you refuse to see them?

Mougalian No. We do have a fair number of men in our practice, I take care of a couple of them and you are right to remind me that men do in fact get breast cancer.

Gore But it is a really small proportion.

Mougalian It is a small proportion.

Gore Yeah, so breast cancer awareness makes me think of prevention and early identification or early diagnosis, is that we should be thinking about in breast cancer awareness month?

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Mougalian I think breast cancer awareness month is a very complicated topic, not the awareness month itself, but prevention and thinking about all aspects

of breast cancer. So prevention is thought to be really around mammograms and when we should start having mammograms and when how often we should have mammograms and if you look back at all of the different guidelines from various societies, the range is from you should start having a mammogram at age 40 to age 45 to age 50, you should have it annually, you should have it every other year.

Gore It seems like there is always coming up with a new set?

Mougalian It really depends on who you are asking and for the purposes of the average woman, the United States Preventative Services Task Force, USPSTF recommends that women start having mammograms at age 50 and getting mammograms every other year. The American Cancer Society on the other hand recommends earlier than that and getting annual mammograms, and Imaging Societies, Radiologic Societies recommend similar early and often.

Gore We won't to discuss any financial incentives there.

Mougalian We are not going to talk about advises that might be around, but I think it is worth a conversation with your physician to understand what is your overall risk of developing breast cancer, understand your family history and any other risk factors that you might have for developing breast cancer to develop the right screening opportunity for you.

Gore You know, when I was training which is a long time ago, both as a person in internal medicine and subsequently in medical oncology, the emphasis really was on teaching young women in their earlier gynecological encounters to start doing breast self-exam, is this kind of by the wayside, like you are not really, is like what is the point until you are 40 or 50?

Mougalian Well, I think breast exams have really never been shown to improve diagnosis of cancer. I think it is important that women be aware of their breasts and know what their breasts feel like and I know that sounds little bit silly, but any change is worth a visit to your physician to talk about what that change is, but in terms of doing a monthly self-exam, we do not generally recommend that.

Gore So that I am just dating myself?

Mougalian You are dating yourself.

Gore Ok, well I deserve it, I have got enough gray hairs to date myself, but it is well intentioned, right?

Mougalian It is.

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Gore Yeah, what about, you know, women who classically, we would talk, you know had cystic breasts or fibrocystic diseases, is that still a thing?

Mougalian That is still a thing.

Gore Ok. It is harder both diagnostically.

Mougalian Yeah, it is harder. Cystic breasts or dense breasts sometimes mammograms can be challenging in this population because when you look at a mammogram, breast tissue looks white and cancer also looks white or abnormalities look white and so dense breasts can hide abnormalities on mammogram and so in the State of Connecticut women who have dense breasts can have additional imaging such as ultrasounds or MRIs to evaluate the density of their beasts to evaluate for abnormalities, but you are right, fibrocystic breasts can be a challenge both on physical exam when we are examining the breast and on radiologic exam because lumpy-bumpy breasts can feel abnormal, that is why it is important that you know what your breasts feel like.

Gore So you know, it seems to me still when I interact with the lay public that you know women are terrified of breast cancer, I mean across the board, this is the thing that many women appropriately worry about I guess, it is still over the lifetime a reasonable percentage right?

Mougalian One in eight women.

Gore Yeah, so is there are a group of younger women in particular whom we can be very reassuring to, who do not have a huge risk or should everybody just be sort of on the ball?

Mougalian I think that starting at about somewhere between age 40 and 50 and I am not going to put my direct number on when screening should start.

Gore It is going to change as you start hitting those benchmarks Sarah.

Mougalian Very close Steven, very close.

Mougalian I think that young women in general are at low risk. The incidents of breast cancer starts to creep upwards when women hit their 40s, but young women are at low risk, it does not mean that young women cannot get breast cancer, and so I think that we should have a healthy caution with any abnormality and bring it someone's attention, but I think that your average 25-30-year-old should not be running around saying I am going to get breast cancer, I need to be getting my mammograms at these ages.

Gore And does it matter at what age they started menstruating or whether they breastfed or not?

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Mougalian You are pointing out some risk factors for breast cancer, early onset of menstruation, so early periods, lack of pregnancies, lack of breastfeeding, these are risk factors for breast cancer, but that does not necessarily mean that if you do not do those things or if you did have an early onset of menstruation that you are going to get breast cancer. There are genetic predispositions, you

may be familiar with the BRCA mutations, these are abnormalities in someone's DNA, something that they are born with that predisposes men and women to developing certain types of cancers, breast cancer and ovarian cancer being the common ones. You may have heard of Angelina Jolie….

Gore I was going to say isn't that the one that Angelina had?

Mougalian Yeah, she had a BRCA1 mutation and ultimately opted to have bilateral mastectomy.

Gore Which were prophylactic, she did not have breast cancer, right?

Mougalian Correct, she opted to have both of her breasts removed to reduce the likelihood that she develops breast cancer which many women with these mutations do opt to have done.

Gore So should everyone be screened for these mutations?

Mougalian It is a great question and one in the genetics with genetic experts, the people are actually thinking about because it is actually something that people may be not everyone in the population but everyone with breast cancer. This is why it is very important to know what cancers are in your family and what people in your family have died from, particularly as it pertains this conversation, breast cancer, ovarian cancer, endometrial cancer, prostate cancer, melanoma, pancreatic cancer, all of these cancers can point us toward a genetic predisposition to developing cancer, and it may change ultimately what treatments you have if you are found to have a mutation and develop a cancer or do have a mutation that predisposes you to one. So I think it does highlight the importance of knowing your family as much as you can and talking to your family, I know, at least in my family the older generations, we really do not know what happened to those, they did not want to talk about it. We hear a lot about female cancers or cancer of unknown cause, but it is really important to know what has happened in your family, because these genetic predispositions do exist.

Gore And if your mom had breast cancer, say in her 80s or something, is that enough of a family history to have your antennas up?

Mougalian It is an important thing to know, but it is probably not indicative of a genetic predisposition.

Gore But if she had it in her 40s, you might be more concerned.

Mougalian Correct. So cancers of earlier onset cancers are more concerning. Cancer itself is a disease of ageing and so, as we age we are inherently more at risk of developing breast cancer.

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Gore Ok. So what I am hearing is that the average young women of childbearing age should have a regular health follow up that we recommend in general

understanding her body, but probably not be unduly concerned, but at some age, whether it is 40 or 50 or something, mammograms should play a role.

Mougalian Correct.

Gore Ok and how sensitive and reliable are mammograms?

Mougalian They are very sensitive and sometimes overly so, particularly when we take into account some of the newer types of mammograms, 3D mammograms, mammograms with tomography, and so often times, you see abnormalities on mammogram that then warrant additional follow up or more frequent imaging or even a biopsy. So sensitivity of mammograms while it is likely to find a cancer, it may also find other things that put women through a lot of additional testing which we do not want.

Gore Which we do not want either for discomfort of the women and the expense and everything else, right?

Mougalian Yes and then there are types of cancers that are not readily identifiable by mammograms, in breast cancers, lobular cancers tend to kind of infiltrate and tend to go unnoticed on mammograms.

Gore That is a certain kind of subtype?

Mougalian It is a subtype of cancer, so you might hear of mammographically occult cancers or cancers that were not seen on an annual mammogram and then pop up months later.

Gore Yeah, we have a wonderful friend who is fortunately quite well right now, but who had a history of cystic breasts and was very diligent about reporting changes and having regular mammography and presented with a metastatic breast cancer lesion with back pain and she had a spinal lesion despite all that great medical follow up and really intelligent use of in the healthcare system and many biopsies, I do not know what is her subtype is, like I said fortunately she is doing well many years later. Knock on wood.

Mougalian That is good, that is good.

Gore So while you know what I would like to do now is start turning and probably after our break to what happens when somebody gets a diagnosis and then of course, we do want to know all about how texting can cure breast cancer or something like that?

Mougalian Something like that.

Gore Ok, but in the meantime, we are going to have to take a short break for a medical minute. Please stay tuned to learn more information about breast cancer with my good friend, Dr. Sarah Mougalian.

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Medical Minute Support for Yale Cancer Answers is provided by AstraZeneca, working to pioneer targeted lung cancer treatments and advanced knowledge of diagnostic testing. More information at astrazeneca-us.com. The American Cancer Society estimates that over 1500 people will be diagnosed with colorectal cancer in Connecticut this year. When detected early colorectal cancer is easily treated and highly curable and as a result it is recommended that men and women over the age of 50, have regular colonoscopies to screen for the disease. Tumor gene analysis has helped improve management of colorectal cancer by identifying the patients most likely to benefit from chemotherapy and newer targeted agents resulting in more patient specific treatments. This has been a medical minute brought to you as a public service by Yale Cancer Center and Smilow Cancer Hospital. More information is available at YaleCancerCenter.org. You are listening to WNPR, Connecticut's Public Media Source for news and ideas.

Gore Welcome back to Yale Cancer Answers. This is Dr. Steven Gore and I am joined tonight by my guest, Dr. Sarah Mougalian. We have been discussing the field of breast cancer and "how texting can benefit patients." I put that in quotes because Sarah has been chastising me for being setting up too high expectations about her really interesting research on texting which we will get to in a few minutes. Sarah thanks so much on the first half, we, I think did a really nice job of kind of started outlining how some of the ways people come to be identified as having breast cancer and perhaps you can spend a few minutes, you know, sort of like taking us through that really scarier thing of what happens when the radiologist calls you, do a biopsy or you get a biopsy and it is breast cancer?

Mougalian Yeah, I think that is definitely what most patients feel, just a moment of panic.

Gore Is it usually got on the phone really?

Mougalian I think a lot of the times.

Gore I just cannot imagine that.

Mougalian A lot of times it is done on the phone, sometimes in person if an image looks particularly suspicious, people lay the groundwork for a potential cancer diagnosis, but I think often times it is done on the phone.

Gore I cannot even imagine getting that call.

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Mougalian Well you could look at it the other way too and say if we called and said we want you to come in, that might actually create more anxiety. So usually the first step is to meet with the breast surgeon. Breast surgeons are specialty trained surgeons who do a lot of breast specific surgeries. General surgeons can also do breast surgery. So you meet with the surgeon and the goal

of that visit is to talk about types of surgeries to remove the cancer. Now for early stage breast cancer and that is what I am going to focus on today, the mainstay of treatment is surgical removal and so in many cases that is the first step. So people have surgery; depending on the type of surgery, they might also meet with the radiation oncologist and depending on what is found at the time of surgery, they might also meet with a radiation oncologist. The role of radiation in the treatment of breast cancer is to kind of mop up what the surgeon might have left behind, microscopic cancer cells that somehow remained inside the breast and usually as part of breast cancer treatment, people meet with a medical oncologist like myself.

Gore Even for early stage?

Mougalian Even for early stage, so you are exactly right to point out that many times people come to my office and say, "I don't even know why the heck I'm here."

Gore And you say, "I don't know either" right?

Mougalian No.

Gore You don't do that.

Mougalian Not usually, but the role of the medical oncologist is a little different than the role of the surgeon and the radiation oncologist. The job of the surgeon is to take the cancer out, make sure the lymph nodes are clear or get the lymph nodes that might contain cancer out. The role of the radiation oncologist is to mop up, but my job is to make a risk assessment of what is the risk that the cancer comes back, particularly outside of the breast.

Gore Even if it was a small cancer and they removed it?

Mougalian Even if.

Gore And even if they had radiation, it is still possible?

Mougalian It is still possible, and the reason that it is still possible is because cancer by definition can invade and it can invade into the lymphatics to get the lymph nodes, but it can also invade into the blood stream and it can go outside of the breast.

Gore And you cannot tell that by looking at tumor under the microscope.

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Mougalian You can look at various features of the cancer and put that into a risk assessment, we look at the grade, we look at some histologic markers, we look at the estrogen receptor, the progesterone reception, the HER-2 which is another cellular protein and we can make a guess as to what the risk is, but we cannot know for sure, there is no radiologic test, no blood test that tell us whether or not cancer cells have escaped. Depending on that risk assessment that I make

based on a number of models and my experience, we might talk about different types of systemic treatments and these systemic treatments are things that go everywhere in the body to wipe out any cancer cells that might have escaped before they have a chance to set up shop and grow. Systemic treatments come in a variety of types, probably most people think of chemotherapy.

Gore I was going to say.

Mougalian I see you have done this before, Steve. Chemotherapy is medications, usually IV medications that go everywhere in the body, but have toxicities in and of themselves, but for other types of breast cancer, in fact about three-quarters of breast cancer we also talk about endocrine therapy, hormones, and probably better called anti-hormones.

Gore Right, but a lot of the public calls it hormone therapy right?

Mougalian Hormone therapy.

Gore Hormone blockers, is that what?

Mougalian That is really what it is, a hormone blocker. The reason we talk about hormone blockers is because about 75% of breast cancers express either the estrogen receptor and/or the progesterone receptor. Estrogen and progesterone, I know you remember this, Steve.

Gore Female sex hormones.

Mougalian Female sex hormones produced by the ovaries, but also made even after menopause when the ovaries no longer function produced in women by the adrenal glands, by fat cells. So women and men too, but women have estrogen and progesterone in their bodies and the estrogen and progesterone receptors are kind of like, I describe them as baseball gloves and they see circulating female hormones, estrogen and progesterone, they catch them, they take them into the cell and use them as fuel and so cancers that have the estrogen receptor and progesterone receptor can be thought as being fueled by hormones.

Gore So they grow more?

Mougalian They grow more and so you can imagine that blocking the estrogen receptor would also be an effective way of "starving breast cancer."

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Gore Ok.

Mougalian So these endocrine therapies, these hormone blockers, these medications prevent breast cancer cells from seeing the hormones that they need to survive and are a pivotal part of the treatment of early stage estrogen receptor or progesterone receptor positive breast cancer.

Gore So for the subset that has these baseball gloves, right?

Mougalian Yes.

Gore And not for the people who don't?

Mougalian Right. For the people that are ER, PR negative, the tumors. The problem with these hormone therapies, these endocrine therapies, the good part is that it is a pill and people generally like pills better than they like IV chemotherapy, but the problem with these pills is that they have some potential toxicities or side effects and the duration of treatment for most women is at least 5 years, sometimes in some women we talk about longer than 5 years, we might talk about 10 years. So 5 years of a pill for a lot of women who aren't accustomed to taking medications, it is really a long time. Side effects can include, just to give you an example of what some of the medicines are, tamoxifen is probably the one that most women have heard of before, but we also use medications called Aromatase inhibitors.

Gore They are stronger, right, sort of?

Mougalian Not so much they are stronger, they have a different mechanism of actions, they work a little differently, and they are a little bit more effective in the treatment of breast cancer. You might have heard of drugs called Letrozole or anastrozole. Every drug has multiple names, we do that to be as confusing as possible. Letrozole or Femora is the brand name, anastrozole or Arimidex is the brand name. Faslodex is a different type of medication, not typically used in early stage breast cancer, but Faslodex is also a shot, but tamoxifen or the Aromatase inhibitors are pills. Some of the side effects of these medications, people can get hot flashes, changes in their sex drives, changes in their moods. Well with tamoxifen, not usually, some menopause like symptoms; with the Aromatase inhibitors, definitely.

Gore It is got to be hard for young women in particular.

Mougalian Very hard. With more advanced breast cancer in young women, we often suppress the ovaries putting women into immediate menopause and that can be really hard to tolerate, it can really affect the women's quality of life, it can affect her day to day activities, hot flashes, joint pains, can be problematic, it can affect her relationships with a significant other and her sex drive and her sex life and her relationship.

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Gore I mean I could imagine because in postmenopausal women, we often give back estrogens, but I cannot imagine you would do that in this case?

Mougalian It is something that we try to steer away from. There are occasions where we sometimes use topical formulations of estrogen, but we do try to stay away from that because estrogen could fuel the cancer. So these side effects can be really problematic for a lot of women, which actually is a nice segue into my research…

Gore How you are curing people with texting?

Mougalian I do not know so much about curing, but one of the big problems with the treatment of endocrine receptor or endocrine-sensitive cancers is keeping people on these medications for the prescribed amount of time, for 5 years, for example because of the toxicities and because a lot of women are unaccustomed to taking medication on a daily basis.

Gore Especially if it is making you feel bad.

Mougalian Especially if it is making you feel bad. So one of the things that I am particularly interested in is how we use technology, how we use our cell phones, how we use text messaging, how we use the internet to improve healthcare delivery. Over the last few years, I have been working on an intervention we call it BETA text, Beta stands for Breast Cancer Endocrine Therapy Adherence.

Gore Did you make that up?

Mougalian I did.

Gore Oh wow!

Mougalian I am very proud. The BETA text intervention sends text messages to patients on their cell phones and then they can respond back and those messages that they text back are received by their care team. So for example, you might receive a daily text saying 'did you remember to take your medication today,' or a weekly text, 'are you having side effects from your medicine and if you are having side effects, how severe are these side effects' and you might be asked a little more infrequently 'what barriers are you experiencing to taking your medication regularly.' These responses are then received back by the clinical team, who can act on them if you note a substantially severe side effect, well we can call you and address things with you. So if you are having really bad hot flashes, well there are a lot of behavioral modifications that we can talk about, identifying triggers, for some women it is alcohol, other women spicy food, chocolate unfortunately.

Gore No.

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Mougalian Yes, could trigger side effects such as hot flashes, but there are other things that we can do as well. There are prescription medications and a couple of antidepressants can decrease hot flashes. We could talk about all of these things on the phone before your next follow-up appointment, so that you are not suffering over a long period of time, months, before your next visit. So the premise of this BETA text and of the study is by acting on side effects and acting on problems in realtime or in close to realtime that we are going to be able to keep people feeling better and therefore on their medication longer which will improve their ultimate outcome. We know that women when they

stop their medication before the 5 years that the cancer outcomes are not as good, the cancer could come back.

Gore Just like your mother nudging you.

Mougalian It is a little bit like that. I mean, I think it is really improved communication.

Gore And fathers can nudge too, I want to make that clear.

Mougalian Yeah, but women are better at it.

Gore Well in general yes, maybe.

Mougalian But the improved communication and improved engagement between patients and their providers could really make a substantial impact in their overall outcome and their treatment and their lives. So this is something that we have piloted here. I have a number of patients, we had a 100 patients enroll in our pilot study here at Yale.

Gore Wow!

Mougalian And now, we are going to be rolling it out across the country through one of the cooperative groups to test whether we can make this more of a national endeavor and then hopefully, within the next year or so actually perform the gold standard, a randomized clinical trial where we compare patients who get the intervention to those who don't and see how much of an improvement there is.

Dr. Sarah Mougalian is an Assistant Professor of Medicine and Medical Oncology at Yale School of Medicine. If you have questions, the address is cancer-answers@yale.edu and past editions of the program are available in audio and written form at YaleCancerCenter.org. I am Bruce Barber reminding you to tune in each week to learn more about the fight against the cancer. You are on WNPR, Connecticut's public media source for news and ideas.