

Scott Reading: Welcome to The Three Ps of Cancer podcast where we'll discuss prevention, preparedness, and progress in cancer treatments and research. Brought to you by the University of Michigan Rogel Cancer Center. I'm Scott Reading.

Scott Reading: In this special episode Michigan Medicine social media strategist, Ed Bottomley sits down with gynecologic oncologist Dr. Jean Hansen and family medicine scientist, Dr. Diane Harper to talk about cervical cancer.

Ed Bottomley: So first off, let's meet our experts. Welcome to both of you. If you could start off with just an introduction, a short background on each of you, you could go first.

Diane Harper: Thank you, Ed. I was an engineer by training, before I decided to go to medical school, and then saw both of my parents die of cancer, and so I had become extraordinarily interested in cancer prevention and how we address risk factors, how we improve screening, how we look at helping people live the fullest life they can possibly live.

Ed Bottomley: Thank you, Dr. Harper. Dr. Hansen?

Jean Hansen: So I am a gynecologic oncologist here at University of Michigan. I did my fellowship training in gynecologic oncology at MD Anderson Cancer Center in Houston. I recently came back home to start my practice here at U of M.

Ed Bottomley: Fantastic. Well, it's a pleasure to have both of you here. So let's move on to our questions. Our first question, for Dr. Harper. How is cervical cancer diagnosed?

Diane Harper: Cervical cancer is usually diagnosed with some kind of screening mechanism. Cervical cancer by itself doesn't make you itch, and it doesn't make you hurt. The only real symptom it would have at the cancer stage would be if, after you have sex, you notice bleeding, that's unusual, and you need to come in and get checked for that. But generally, it's a preventive cancer that we can get, because we ask women to come in and get screened.

Ed Bottomley: Okay, and the next question is a perfect follow-on from that. What screening tests are available for cervical cancer, when should I be screened, and how often?

Diane Harper: There have been a lot of changes in the last ten years about screening. And there have been a lot of different guidelines that have come out. The most recent guidelines say that we have three different ways that you could be screened for cervical cancer. The first thing I want to say is that you need to be 21 years of age. So this is a privilege, to be screened, and you have to be 21. Younger than that, it doesn't make sense. So, 21 is when we start. At this time, we stop at 65, but there's some research that says since we're living longer, we might not have to stop at 65, but for now, 65's the ending age. So when you start at 21, you get the traditional kind of pap smear, the kind of pap smear that we've had for 60 years. You come in, the woman comes in, she has to have a speculum exam, the physician goes in, they grab cells, they send those cells off

to the lab and look at the cells and see if they're normal or abnormal. We do that every three years for women up until the age of 29, and then once they turn 30, we have lots of options.

Diane Harper: So between 30 and 65, she can get an HPV test alone, she can get a pap smear test alone, or she can get both of those combined together. The advantages of doing the HPV test alone is that if that's negative, and you test negative for that virus, you can go another five years very safely before you're screened again. If you continue to use the pap test, like you used in your 20s, then you can safely go every three years with the pap test until you need to be screened again. If you put the pap smear and the HPV test together, you spend a lot of extra money, and don't gain a lot of extra information, but that allows you to go for five years. So those are the mechanisms we have for screening.

Ed Bottomley: The next question, you mentioned HPV. Could you explain the guidelines around HPV a little bit more?

Diane Harper: So just, I'm going to take a little bit of a step back from that, even. HPV stands for human papilloma virus. That is a great big family of viruses. They have... think of them as having oodles of cousins. Lots of different cousins out there. And each of those cousins cause a different kind of HPV infection. Fourteen of those cousins cause what we call cancer, cause high-risk types. They can lead into a cancer. So when we look for HPV, we're actually testing for a virus that you could get, and we're looking to see has that virus done any damage to those cells that are on your cervix?

Diane Harper: And that's what the key point is, is looking and understanding what is HPV. So we know that it's related to cancers, we know that for cervix cancer it causes 100% of them, we know that HPV infects the penis, and gives you about 90% of penile cancers, it infects the vagina and the vulva, and gives you about half of those cancers that come with it, and it causes head and neck cancer. And head and neck cancers, depending on where it is, can be anywhere from 10% to up to 90% of those head and neck cancers. So there are many different kinds of places in the body that this virus can infect, and many different percentages that can be at fault for causing the cancers.

Ed Bottomley: Thank you for that explanation. The next question, what can cause an abnormal pap test besides HPV?

Diane Harper: So in the laboratory, and when the clinician takes your pap smear testing, they may not get all of the cells that they need to in order for that to be able to be read as what we call a satisfactory smear. So in other words, there's at least two different kinds of cells we need to see, and so potentially, a smear that would be unsatisfactory would be one that didn't get all sampled. Now that's a little different than abnormal, so, because it doesn't really say that there's something wrong, it just says we couldn't see the cells we needed to see to do the screen

right. But it is one that would cause the woman potentially to be called back in, depending on what was seen.

Diane Harper: So the other things that cause the cells to be considered abnormal that's not HPV is just the way the cells look, the way the cells happen upon each other. One of the big advances... When I first started my medical practice, we did pap smears, and we put them on a glass slide, and we sprayed them with hairspray. Okay? And so when the pathologist had to look at it, he had to look at like 100 different cell layers to try to find all the cells in that gloppy mess I put on that glass slide.

Diane Harper: And so now, we have something called liquid cytology, which is, we take it and we put it in a little thing of liquid, and then the liquid goes through, and they strain it, and they filter it, and it takes all the cruddy stuff away, and just allows you to get the cells on it, so when they look at it under the microscope, they can look and see the cells well. That has helped us reduce the number of abnormal a lot. Because some of the abnormal we would get would be cells folded over on each other. The art of cytology is an art of reading and appreciating art. It's all based on a subjective viewing of how big a nucleus is, how big it is in comparison to something else, is it folded over, is it not folded over? So by going to this liquid cytology, we're able to help eliminate most of that. So at this point, in this day, if you have an abnormal pap smear, it's usually because it's HPV associated.

Ed Bottomley: All right, and the next question, and you've touched on this. If I have an abnormal pap, do I have cervical cancer?

Diane Harper: No, and that is the most important thing for people to know. First of all, if you have a positive HPV test, you do not have cervical cancer. If you have an abnormal pap test, you most likely do not have cervical cancer, but the key point for both of those are those are early signals that something could be progressing towards that, and we have to know where you are in that progression towards cancer, so we can stop it before it gets to being cancer. So that's what it's really important for people to realize, is don't panic when it's abnormal, but pay attention, and let's come in and find out where you are on that progression, and let's get you stopped.

Ed Bottomley: Thank you for that very important information. This question, I haven't been ignoring you, Dr. Hansen, this question could possibly be for both of you. What is a colposcopy? And how will I know if I need one?

Jean Hansen: So a colposcopy is essentially a microscope that looks at the cervix and helps us identify abnormal cells. The way that we know you need a colposcopy is based on the type of abnormal pap smear you have. So there's sort of a range of types of pap smear results you can get, from kind of low-grade changes to very high-grade abnormal changes, but basically the pap smear is a screening test, and so that tells us, if you have an abnormal pap smear, that you need to come in and

get a colposcopy. And what that means for the patient is that they will come in, they will get a pelvic exam and a speculum exam. We actually put a vinegar solution on the cervix, and that helps abnormal HPV infected cells light up, or become more obvious to us, and then we put a microscope near the cervix that helps us really identify those abnormal areas. And then in that, if we identify any abnormal areas, we biopsy those. And that's a biopsy that's done while the patient's awake. It's typically very well tolerated by patients in the office, and that biopsy will tell us whether there's abnormal cells or not, or abnormal tissue or not, and kind of where on the spectrum the patient is in terms of cancer or pre-cancer.

Ed Bottomley: Thank you for that. Anything to add, Dr. Harper?

Diane Harper: I'd just like to say, because I come from it from a primary care standpoint, I like to say we like to make sure that women understand that nothing goes inside their vagina other than the speculum. The colposcope says on the outside of them. And that we use bright light and magnification, exactly what Dr. Hansen said. Bright light and magnification along with that vinegar solution, in order to be able to let the cervix tell us its story.

Ed Bottomley: Good stuff, thank you. The next question, what are preventive measures for cervical cancer?

Diane Harper: So we know that there are risk behaviors that are associated with cervical cancer. Number one is smoking, so stop. Stop smoking. We can help you with lots of different ways, but smoking makes the infection stay and progress, and it is a risk factor for cervical cancer. The other risk factor for cervical cancer is the number of sexual partners that you have. It is also the number of sexual partners that your partner has. So that even if you have never had sex with anyone, the partner you choose to have sex with may have had 20 partners. That gives you all 20 of their partners' risk. So it's incredibly important for people, as they're starting relationships, to really be open and honest with each other about how many partners have you had? What kind of risk am I getting into? Are you going to be there to support me when my pap is abnormal? Those are important things to know.

Diane Harper: We also know that some kinds of contraceptives help or alleviate some HPV infections. We know that using a progestin-based IUD, so in other words, Mirena, Skyla, those kinds of IUDs, have been helpful at not letting that HPV infection progress any further in the spectrum. It doesn't prevent it, it's not a preventive medicine, but it's something that's helpful that they can use. And by far and away, the biggest thing is that the way in which HPV infections are spread is a skin-to-skin contact, it's not blood, it's not saliva, it's not semen, it's not eye tears, it's skin-to-skin contact. That's the only way it can be spread. So how do you disrupt that? You use condoms. You use condoms, you use female condoms, you use male condoms. I would say that I may not have mentioned when we talked earlier, but the other condom part that is useful, is when you're

having anal sex, because that is also incredibly helpful to prevent the tissue-to-tissue contact that allows transmission of HPV contact.

Ed Bottomley: Thank you for that. Now we're going to move on to some questions, I believe, for you, Dr. Hansen. How common is cervical cancer?

Jean Hansen: So cervical cancers are kind of our third most common gynecologic cancer, so it's... in this country, it's one of the sort of less common gynecologic cancers. The most common are uterine cancer and ovarian cancer, so it's kind of behind that. And I think it's important to realize that cervical cancer is mostly a cancer found in developing countries. The majority, 75% or more of the cervical cancer cases worldwide are not in developed nations like the US or Western Europe, they're in other countries, and that's where we really need to work hard with prevention and strategies to alleviate those cases.

Ed Bottomley: Are there different types of cervical cancer?

Jean Hansen: Yeah, there's several... we categorize it by how it looks under the microscope, or the histology. So the most common by far is called squamous cell carcinoma, and that makes up about 75% of cervical cancer cases. Those are typically, if not 100%, related to HPV exposure. The next kind of category we see are adenocarcinomas, or adenosquamous carcinomas. Those are, tend to develop a little bit farther up into the cervical canal, and may not be detected as well on screening tests like a pap smear as a squamous cell carcinoma would be. And then the remainder, the other 5-10% of cases, are kind of more rare histologies, small cell, narrow endocrine, kind of more aggressive histologies that are not, tend to not be HPV related.

Ed Bottomley: Now with regards to cervical cancer, what is the prognosis for cervical cancer?

Jean Hansen: It really depends on the stage. So the stage is assigned by the size of the tumor, and the location of the tumor. And so the earliest stage cancers are confined to the cervix, and really, are not even visible to the naked eye, they're microscopic. And as they grow, your stage becomes higher. And so, the prognosis for cervical cancer that is microscopic or really just detected on biopsy, that we can't see, the five-year survival for those types of cancers are above 95%, so very, very good. As you get into larger tumors that are still on the cervix, but visible to the naked eye, the survival's somewhere between 80% and 90%, and then as you get to tumors that are spread outside the cervix or even spread to other parts of the body, your survival goes down dramatically. So for somebody who has a cervical cancer that's, for example, in the lungs at the time of diagnosis, their five-year survival is somewhere around 10-15%. So I think that speaks to the prevention angle, where it's really, really important for us to detect these cancers (A) before they develop, and if there is a cancer present, to identify it at an early stage, because we know that the stage really, really impacts long-term survival.

Diane Harper: And just as a follow-on, we are seeing more people with the early stages that are curable, because of screening. But the important message for those women is that, yes, they're survivors and they're cured, but they have to stay in the screening pool, because we don't know that they're not going to ever develop another abnormality or another cancer. So it's... And if they should develop another cancer, it's also curable, so those are good things to keep going as they move forward.

Ed Bottomley: Thank you. Thank you both for that. What's the... you might have touched on this already, but what is the average age for cervical cancer?

Jean Hansen: The average age is about 48 years old, so it's a cancer that is, typically happens in younger women. There's very small proportions of patients that are over the age of 75 or 80 that get cervical cancer, and that's why we, currently the guidelines are to stop screening at age 65 with the exception of some certain situations, so, yeah.

Diane Harper: What we see with the natural history of HPV is that of those people whose HPV infection doesn't go away, which is about 5% of the people that are infected, it takes on average, about 15 years from infection until they would develop cancer. And so if you think that they're exposed in their early 20s or late teens, then about 35 is that first peak of the cervical cancers that you see. And then you think of the middle-aged women who either themselves are having affairs or whose marriages have broken up or whose partners are bringing in new HPV, then they have this next time frame in which they develop cervical cancers. So while the average age is around 48, we see this little peak around the 35, 40 age, and then we see this other peak around the 55, 60 age that corresponds very nicely with when people are getting re-infected again.

Ed Bottomley: Thank you for that, very interesting. Are there... This question just came in. Are there different, are there any different, are there different ethnic types of women that are more likely to get cervical cancer? I think I said that one right.

Jean Hansen: You know, the differences in the cervical cancer incidence in different populations tends to be related to socioeconomic status. In patients that, in populations that have less access to care, barriers, whether they're language or transportation barriers to accessing care and accessing screening, those are the populations that we see more frequent HPV infection, and more cancer. And I think that that's also related to why we're seeing, why we see more cervical cancer cases in developing nations, because they don't have this infrastructure of screening that we have here.

Diane Harper: I think it's important for people to realize that this is an equal opportunity infection, and that it doesn't matter who you are or where you are in this world, what color your skin is, what food you eat, what religion you practice, that this is an equal opportunity infection, and it entirely depends upon your sexual partners. Entirely depends upon whether or not you smoke, and that we have

seen in the five continents literature, we've seen this in population after populations after population. And the key to that is that prevention is so important. And now that we have HPV vaccines, and now that we know only two doses is needed for kids up to 15 years of age, potentially we can get to one dose, we could really make an impact in the number of women who get cervical cancer. So I think that's important for looking at racial/ethnic disparities. Yes, it is higher in Hispanics and in African-American women than it is in white women, in the people who get cervical cancer. But that's only because we haven't been able to tell our story and reach out to them and help them feel comfortable coming and being part of a screening program.

Ed Bottomley: I feel like there are a lot of very important takeaways today. So towards the end, I will circle back and make sure anyone who's tuning in, we can get some of these important messages out again. So thank you, thank you both. The next question, can I still get pregnant if I have cervical cancer?

Jean Hansen: Yeah. I think... So there's a couple of different ways to answer this. This may mean if you've been treated for cervical cancer can you still get pregnant in the future? So in some situations, if you have a cervical cancer that's confined to the cervix and is a certain size, we have, there is a procedure called a trachelectomy that we can do that essentially removes the cervix and the surrounding tissue, as well as the tumor, and we are able to reattach the uterus to the top of the vagina, and create sort of a normal, functioning uterus. That's a procedure that's very specialized, that's done by a gynecologic oncologist, and it's really done in very select patient populations. Patients who want to have children in the future, who don't have a history of infertility, who have certain histologies, for example, squamous cell and adenocarcinoma only, and who don't have very large tumors. And so if they fit those criteria, we are able to offer them that type of procedure.

Jean Hansen: In patients who are diagnosed with an early stage cervical cancer who are not planning on pregnancies in the future, we typically offer a radical hysterectomy, which removes the uterus. I think that that's the... that's where that question was going.

Diane Harper: On the prevention side, doing pap smears on every single lady who becomes pregnant is routine. That is standard of care. And the reason is that sometimes we'll be surprised, and women will be pregnant and have cancer that's found.

Jean Hansen: It's one of the most common cancers diagnosed in pregnancy, so.

Diane Harper: Because they come in for their pre-natal care, and we can actually screen them at that point, which is really important. And so in that case, there's a lot of discussion that goes on, but many times, they can have a completely normal pregnancy, and usually the baby is delivered by C-section, I will actually defer to my colleague here, it used to be C-section and radical hyst, but...

Jean Hansen: It depends if it's a cancer that's confined to the cervix and they're a candidate for a hysterectomy, and we may get to that at some point, kind of the different treatment options, then yes, a C-section with a radical hysterectomy at the same time is an option. In some unfortunate cases, patients will have advanced disease diagnosed in pregnancy, and then we recommend something different, so it really depends on the stage, and again, that's the benefit of screening and seeing these women for pre-natal care is that you're able to diagnose these cancers if they happen.

Ed Bottomley: Thank you for this. The next question, as you predicted, is a little bit of a follow-on. If I've had a hysterectomy, can I get cervical cancer again, or another cancer?

Jean Hansen: So in women who have... So the majority of hysterectomies are done for benign reasons. So the most common reasons people get a hysterectomy are abnormal bleeding, heavy bleeding, fibroids, pelvic pain, so not cancer related reasons. In those women, if they have had negative or normal pap smears up until their hysterectomy, they do not need any pap smears afterwards, because the risk of having an HPV related cancer or a pre-cancer is very, very rare. In people who have abnormal pap smears leading up to that hysterectomy, we ask that they continue to get screened for 20 years after that initial abnormal pap smear. So they may have to come in and get pap smears of the vagina after their hysterectomy. In some cases, women have a hysterectomy where their cervix is not removed. That's called supracervical hysterectomy. It's done in some cases. In that situation, they need to continue screening as if they had not had a hysterectomy, because they still have a cervix in place. And after the cervix is removed, if somebody has a history of HPV infection or abnormal pap smears, they're at risk for developing dysplasia or HPV related changes in the vagina and also in the vulva. And if they are smokers, this risk is really magnified, so we always encourage them to stop smoking.

Ed Bottomley: Next question. What's new in cervical cancer research? Are there any clinical trials available?

Jean Hansen: Yeah, I think the biggest thing in the last several years that's come up for treatment of cervical cancer is immunotherapy. So the immunotherapy takes advantage of the immunogenicity of cells. So cervical cancer specifically, squamous cell cervical cancers, they have, the tumors are made up of cancer cells, and also supporting cells, which we call the microenvironment, and those cells in the microenvironment tend to be very immunogenic, and are very responsive to immunotherapy. So there's a drug called pembrolizumab which was FDA-approved last year for patients who have recurrent cervical cancer, so cervical cancer that has been treated and has come back, or those who have gotten chemotherapy for their cancer and gotten, the tumors have grown on that. So it's an option for people who have advanced or recurrent cervical cancer, not for people who have a microscopic cervical cancer that can be

treated with surgery. So it's a very specific patient population that that's useful in, but we are very optimistic about how it will work.

Jean Hansen: There are some clinical trials here at Michigan Medicine that are being done in patients with HPV related cancers, not just of the cervix, that use immunotherapy. So we're very excited about those.

Diane Harper: On the screening side, we have some new things happening as well. Since HPV is now a screening option, there are already industries set up to do self-sampling with HPV for women whose culture, or they're in a abusive relationship, they can't get in to be screened, and so they can self-sample for HPV and know whether or not they need to get in for further care. We'd like to see that incorporated more within the medical practice, so it doesn't kind of go off by itself, so we can help guide the way that comes forward, but I think seeing self-sampling is going to become something that's important.

Diane Harper: The other advance that we're seeing on the screening side is that we're moving more towards markers, biological markers that we can get, that are independent of that traditional pap smear. So we're looking at different markers of does this cell grow, doesn't it grow, what's already affected it in the environment, so it could be potentially that one day we would do that self-sample screen, you would find out whether you had HPV, we'd find out if you had biological markers on that, and you could go straight from that to know, colposcopy to know what was going on. So it would really streamline and simplify the screening process, and we're always looking for that point of care where we can do it in the office, and not have to make people wait two or three weeks for results. So I think that the next ten years is going to see a lot of changes in this field.

Ed Bottomley: Absolutely, I'm sure. And while we're talking about the next ten years, the next question, how has cervical cancer incidence changed over time?

Diane Harper: When pap smears were first invented or discovered or made available to people, the incidence of cervical cancer was somewhere between 50 and 80 per 100,000 women. And that was huge. That was a huge amount of cervical cancer that was happening. Now, the current CDC reports show that, in the United States, taking all races together, they have about a 7.6 per 100,000 rate. So we've dropped dramatically. Now when you look at underdeveloped countries, in other parts of the world, their rates are still at that 50 to 100 per 100,000 women. When you look at the Nordic countries, who have national databases, Norway, Sweden, Finland, Denmark, you see that they have been able to get their cervical cancer rates down to almost 3 per 100,000, which was the maximum you could do using pap smear technology.

Diane Harper: So now that our technologies are changing and we're getting HPV involved in this, we really think that we can lower that cancer rate even lower. So at this point, we have come a long way from in the 19... It was discovered in 1929, is

when Dr. Papanikolaou made his first speech at Battle Creek, Michigan. 1929. It took until 1960 for people to implement it. So in that time frame from 1960 to now, we've made huge jumps in our ability to screen women, to prevent this cancer, and we're going to continue to make jumps, to try to get as many people in the population down to these lower screening levels.

Ed Bottomley: Thank you for that. The next question that we have, if my daughter had the HPV vaccine, does that protect her from getting cervical cancer?

Diane Harper: It protects her from getting HPV infection. And if you don't get the infection, you can't get cancer. So it's important that she had the vaccine. The vaccine is very important, because it will prevent her from getting the infection. What we don't know about the vaccines is how long that protection will last. And so it's incredibly important when her daughter becomes 21, that she start the screening program.

Ed Bottomley: Thank you for that. That's a pretty important statement that you made there. Can we circle back a little bit, and talk about some of those other preventive measures that you feel that we should be sharing with everybody? Some of the big takeaways that you feel, in case anyone's tuned in just now? Sorry.

Diane Harper: Stop smoking. That's the very first one. That does so much harm and very little good, so on anything, smoking is not a good thing to have.

Jean Hansen: And I think it's important to emphasize that although this is, we're talking about cervical cancer here, not smoking will prevent other HPV related cancers, oropharyngeal cancers, which are just as serious, although not our focus of discussion today.

Ed Bottomley: No, it's amazing. One day I want to create a video that just takes all of our experts from each of our Facebook lives, saying, "Stop smoking." [inaudible 00:30:24].

Jean Hansen: Yep, stop smoking.

Diane Harper: Exactly. It is the most important thing you can do.

Jean Hansen: Yep.

Diane Harper: So that is good. The other one is be choosy about who you have for a sexual partner. Be choosy. Talk to people. Yes, love is wonderful, yes, we are human beings, and we are supposed to procreate. We are supposed to have sex, and we are supposed to have babies, but be choosy about who you choose.

Ed Bottomley: And that was something you mentioned earlier, that even if you'd had no sexual partners yourself, it's about your chosen partner's sexual partners, right?

Diane Harper: Yes, exactly. And that doesn't mean that you say, "Well, you've already had 20, you're off my list," right? That may be your life partner, but just know what the risk is going forward and going into it. That's important. It's important for him too. Remember, guys get HPV vaccine too. Guys get HPV associated cancers. So it's a two-way street in understanding who do you want to pick to be your partner. I think that's really important for people to understand. Use condoms. Use condoms. Condoms will help. They don't protect against all STIs, they don't protect against all HPV infections, but they cut down on it, and so you want to do everything you can to keep yourself healthy. And let me tell you, if you haven't been to the Trojan website lately, there's a lot of amazing different condoms out there. So you should really go check those out.

Ed Bottomley: [crosstalk]

Diane Harper: It really is, it's a good thing to look for. And then the other thing is, if you really want some kind of birth control, and you have options, and your body is able and you think you want an IUD, a progestin IUD offers some protection. We often call that LARC, long acting reversible contraception, and that is become kind of the top number one international contraceptive method we recommend everywhere. And that helps prevent pregnancy when you don't want it, it helps prevent HPV infection, it helps do many things. So I think those are the kind of top things, and then additionally, think about, I should give a plug to the HPV vaccine, is now approved up to the age of 45. So starting at the age of 9 up to the age of 45, that will prevent the infection, we know that, we have absolutely solid data that it will prevent the infection.

Ed Bottomley: Thank you, thank you. Dr. Hansen, do you have any treatment takeaways? Anything that you think should be the, if someone's just tuning in or if someone's coming to the end of this video, what they should take away from this?

Jean Hansen: Yeah, I think that the key again is prevention. We know that when these cancers are caught early, we have better treatment options, less aggressive treatment options, and screening will help, will identify pre-cancerous cells or dysplasia, allow us to treat those, and prevent cancer in the future, so I think that really prevention is the key. If you are in a situation where you are diagnosed with cervical cancer, it's important to be seen by a gynecologic oncologist, because the surgery for early stage cervical cancer needs to be done by a gynecologic oncologist, and those, and also there's surveillance that needs to happen after that surgery that's really important, and so it's important to get yourself evaluated in that way. Yeah.

Ed Bottomley: Thank you, thank you for that. And we have another question that came in. What about women who have gone through menopause? Does this protect them from cervical cancer?

- Diane Harper: Menopause does not protect people from cervical cancer. Menopause reduces the amount of estrogen, it makes the vaginal tissues more likely to tear, it makes the cervix more likely to be what we call atrophic, and very easily disturbed. And remember, I said this is a skin-to-skin infection. So if you can fall down and skin your knee more easily, then the bacteria can get, the virus can get in more easily. So menopause does not protect you from HPV infections.
- Ed Bottomley: Thank you for that. You mentioned earlier, when we were talking about resources, what resources do you know of that are available for the low-income population for getting a pap test?
- Diane Harper: The CDC runs a program that's called the Breast and Cervical Cancer Prevention Program, it has been going, I think, since 1980, and it specifically provides breast cancer screening and cervical cancer screening for women 40 and older, who have no other access for that. So in other words, they don't have Medicaid, they don't have Medicare, they don't have private insurance, they have nothing to help them. It is an amazing program, the number of people who have been served by that has decreased since the ACA has come through and provided people with more insurance, but nonetheless if you find yourself without insurance, you cannot get a pap test for that, the program will provide that for you free of charge, and the program will also provide you with help to getting workups for when those screens are abnormal.
- Diane Harper: So you don't have to worry about saying, "Okay, I'm going to go in and get screened, I think something might be wrong, but then I don't have the money to follow up with it." No, the program will help you do that. But the purpose of the ACA was to get more people insured, so more and more people should have insurance. That was, all preventive services was legislated by Congress so that that should be part of your ACA coverage, and certainly if you have private insurance, you have to have preventive services covered as well. So I think that gives us the three different ways in which we can make sure that women have access to, they have the ability to have that test paid for for them. Getting them to come in is another question.
- Ed Bottomley: Yeah, yeah. Indeed, indeed. We have another treatment question that's come in. Is surgery the only treatment option?
- Jean Hansen: So it depends on, the treatment for cervical cancer is very dependent on the stage at which it's diagnosed. So if it's a stage one cancer, which is either a microscopic or larger tumor that's confined to the cervix, generally we treat those with surgery. And that surgery is typically a radical hysterectomy, which involves removal of the uterus, removal of the supporting tissues of the uterus, and of the top of the vagina. And the goal is to completely remove the tumor with clean margins. In cases where the tumor is larger, involves the vagina or the supporting tissues of the uterus, or even farther out to the pelvic side wall, generally those we don't treat with surgery, because we're not able to remove

the tumor in its entirety in a safe way, and so those patients will get a combination of radiation and chemotherapy rather than surgery.

Jean Hansen: And then in cases where the tumor has spread to other parts of the body when it's diagnosed, which of course we hope to prevent, then those patients will get chemotherapy. In some situations, there are very small cancers that are confined to the cervix that don't look, kind of don't look aggressive under the microscope, and those can actually be treated, in patients who want to have children in the future, can be treated with just what we call a cone biopsy, which is a large excisional procedure of the cervix that leaves most of the cervix in place. Those patients just need to be followed very closely after that procedure.

Ed Bottomley: And in terms of after treatment, are there support services available after treatment?

Jean Hansen: Yeah, you know, because this is a cancer that happens in younger women, and we're performing hysterectomies or giving radiation therapy to younger women, sometimes this is a common reason that they would need support. So we do have, through the cancer center, support services, support groups for patients who have undergone, essentially a surgical or radiation related menopause at a young age. And that's something that we can offer them through the cancer center, and that's been really helpful. The other thing is that after you finish your treatment, it's important to come back for regular visits. Usually that will involve a pelvic exam. The goal of that is to make sure that the cancer hasn't come back. And they get a pap smear once a year after we finish treatment. And we ask them about symptoms and how they're doing, and whether they have any sort of signals that the cancer is coming back. So we really, really, if it does come back, we want to detect it early so they have more options.

Ed Bottomley: Okay. It looks like we've gone through all of our questions. I think there were a lot of really important touchpoints that we pushed out today. So we're closing in on the end of our chat together. I'm going to mention the Rogel Cancer website, the cancer answer line, we're also going to post that on, in the comments section as well. Are there any final thoughts, or anything you want to impart?

Jean Hansen: My final thought is that everybody should get their HPV vaccine. I think that's probably what Dr. Harper will say as well. Everybody, now it's approved from age 9 to age 45 in both men and women, and there's very, very few contraindications to this vaccine. One is pregnancy, but you can get it before or after pregnancy. This is something that everybody should really be getting. It's a huge, huge advance in cervical cancer, and really, everybody should be getting it, I think.

Diane Harper: And my message, in addition to saying, yes, the vaccine has done an amazing job at preventing HPV, is that when your daughter turns 21 years old, one of your birthday presents to her is to make her an appointment for her first screening exam. Get her started on a life of good behavior.

Jean Hansen: And don't smoke.

Ed Bottomley: That too.

Jean Hansen: We've driven that point home, but yes, stop smoking.

Ed Bottomley: Well, thank you both for your time. I think it's been a really useful chat here. Your time, your expertise, the time of our audience that they've spent with us. For more information on cervical cancer, for the treatment options at Michigan Medicine, you can visit rogelcancercenter.org/gynecologic-cancers. Now that's a bit of a mouthful, so we'll put that in the comments section too. You can also call the cancer answer line at (800) 865-1125. That's (800) 865-1125.

Scott Reading: Thank you for listening, and tell us what you think of this podcast by rating and reviewing us. If you have suggestions for additional topics, you can send them to cancercenter@med.umich.edu, or message us on Twitter @UMRogelCancer. You can continue to explore The Three Ps of Cancer by visiting rogelcancercenter.org.