

Episode 7 – HPV (Human Papillomavirus)

With Dr. Joseph Bocchini

Diane (00:01):

How do you sift through the flood of information that's out there about vaccines to find the facts? You listen to the Vax Matters podcast, where we explore all matters related to vaccines. I'm Diane Deaton.

Deon (00:16):

And I'm Deon Guillory. A new episode starts now.

Diane (00:25):

Hi everyone. You're listening to Vax Matters. A podcast series about vaccines from the Louisiana Office of Public Health. I'm your host, Diane Deaton, and helping me facilitate conversation today is Deon Guillory.

Deon (00:38):

Yeah. Thanks, Diane. I'm great. It is great to see you again. Great as always to be with you. We've got an incredible show today. Our guest is Dr. Joseph Bocchini, who currently serves as director of Willis-Knighton Children's Health Services, and professor, and vice chairman of the Tulane University Department of Pediatrics. So listen to this, he's going to bring his expertise to our discussion of all facts of HPV from the virus and its complications, to the vaccine developed to help prevent it. Welcome to the Vax Matters podcast, Dr. Bocchini.

Dr. Bocchini (01:13):

Thank you very much. I'm happy to be here.

Diane (01:15):

Thank you again, doctor. Let's go ahead and get started right away. Let's begin with these two questions. I'm thinking this is going to start the conversation for today, because a lot of people wanna know what is the HPV virus and how was it discovered?

Dr. Bocchini (01:34):

So the HPV virus is, that's a short, um, uh, title for the human papillomavirus. This is a very large family of viruses. The ones we're talking about today are the ones that can cause a variety of different infections on the skin and mucus membranes. Uh, these viruses were discovered over the course of the last, uh, 30 years, uh, as people began to use new technology and new techniques to identify different viruses that produce a variety of infections. And also, uh, because of epidemiologic studies, uh, these viruses were then linked to a variety of different important infections, which resulted most importantly in the development of cancer

Deon (02:24):

And, and doctor, you, you mentioned cancer, and that is one of the things that, you know, people who know just a little bit about this, that's one of the concerns here. What cancers does HPV cause?

Dr. Bocchini (02:38):

So HPV is a very important cause of a number of cancers in the back of the throat, and in the genital area. This virus... Um, there are 13 different types of HPV virus that can cause cancer. Um, cervical cancer was the first cancer that was linked to HPV, uh, types. Uh, we now know that virtually all cervical cancer is caused by HPV. In addition, uh, HPV causes cancers of the vagina, of the vulva, and the anus in women, and, and also the back of the throat in women. In men, the most common site for infection, and then cancer is in the back of the throat. In addition, uh, HPV causes penile cancers in males, as well as anal cancers in males. If you look in aggregate, over, over, approximately 40,000 new cases of HPV related cancers are diagnosed each year in the United States.

Diane (03:46):

That many?

Dr. Bocchini (03:47):

That many.

Diane (03:48):

So obviously when the vaccine came out, this was, this was huge medical news, doctor.

Dr. Bocchini (03:55):

This was a very important breakthrough. Again, with new technology, uh, researchers were able to identify a portion of the virus that would induce a strong antibody response in the people who received the virus of the vaccine. And as a result of the vaccine, get protection against infection with the various strains of, of, uh, virus, uh, that can cause, uh, these cancers.

Deon (04:24):

And let's, let's get a little more into the vaccine itself. Uh, 'cause like you mentioned, it was a breakthrough, uh, for helping to prevent HPV. What type of vaccine is this? And how long has it been around?

Dr. Bocchini (04:39):

Well, the first, um, vaccine was licensed in 2006. So we have 16 years of experience now with HPV vaccines. The first vaccine, um, was designed to, um, prevent infections with the two most common types of HPV that caused cervical cancer. In addition, the vaccine had the two most common types of HPV that caused genital warts. So this initial vaccine was able to, in theory, pre- prevent a very high percentage of all of the cervical cancers as well as 90% of cases of genital warts. As we have learned more and have further developed the vaccine, we now have a vaccine that has nine different types of HPV in it. Uh, the seven types that are most commonly associated with not only cervical cancer, but all the other cancers that I mentioned, plus the same two types that are responsible for 90 percent of genital warts. So with this current vaccine that's available, uh, for adolescents and young adults, we can now prevent 90% of all of the cancers related to, uh, HPV.

Diane (05:58):

That is amazing, 90%. Our listeners need to be aware of that. That is huge. But again, this is thanks to the vaccine.

Dr. Bocchini (06:08):

That is correct. And, and I think that one of the important things about this vaccine is it must be given to people before they are infected with HPV, because once they are infected with an HPV virus, the vaccine is not gonna change the course of that infection. So it's very important and why we recommend this vaccine for children who are too young to be exposed to HPV, because we want them to be vaccinated before they are likely to be exposed and thus be able to get the best protection against HPV infection.

Diane (06:45):

When you talk about being exposed, what do you mean by that, doctor?

Dr. Bocchini (06:49):

So HPV is a virus that, um, spreads primarily through sexual contact. So this is one of the sexually transmitted infections, but it, and it's actually the most common sexually transmitted infection. And throughout our lifetimes, probably the vast majority of us have been exposed to and have been infected with at least, least one of the types of HPV that are in the vaccine and many of us are exposed and infected, uh, to, uh, with a number of the different types. So it's a-

Diane (07:24):

So it's common?

Dr. Bocchini (07:25):

It's a very common infection. In fact, the CDC estimates that at any one time in the United States, about one quarter of the population, 25%, are actively infected with the virus.

Diane (07:38):

Had no idea. Yeah.

Dr. Bocchini (07:39):

Yeah. It's very common. And once you're infected with the virus, your body does develop an immune response, but it, um, and for most of us, the infection is eliminated by our body. Um, but it takes up to two years for that to happen for some individuals. If you are infected with one of these more dangerous, uh, types, the ones that can cause cancer, your body may not be able to eliminate that infection. And then it becomes a chronic persistent infection and the longer you're infected, the more likely the virus is going to integrate into your cells, cause them to begin to, uh, replicate or divide in an abnormal way, and ultimately lead to cancer. And so for cervical, um, cancer, we know there are a number of changes that occur in cells that ultimately lead to cancer, but it takes anywhere from 10 to 20 years for those changes to occur. So-

Diane (08:42):

Very slow,

Dr. Bocchini (08:43):

Very slow. So for cervical cancer, we do have, uh, screening, um, programs for women who need to be Pap tested. I'm sure many people are familiar with going to the doctor and having a Pap test on a regular basis, uh, to look for cellular changes that would happen before cancer develops. And when

those changes are there, doctors have to remove those cells, because the only treatment for the abnormal cells that occur with HPV is to try and remove those cells before they cause more damage and ultimately become cancer. So if you look at the number of, even with the screening program that we have in the United States, there's still approximately 10 to 14,000 cases of cervical cancer diagnosed each year in United States. That's in spite of the screening programs that we have. In addition, there's over 300,000 cases of the early changes that potentially can lead the cancer that require procedures or close follow up to prevent a, a, a woman going on to develop, uh, cervical cancer. So this is a very important, uh, problem HPV and the infections it causes, and the dangers of, of a chronic infection with one of the more severe types. All that can be prevented for all of the types that are in the vaccine, um, with, uh, routine immunization

Deon (10:19):

Mm-hmm. And, and doctor, the, the, the big point here that you mentioned is having, uh, someone, uh, have the vaccine, a child before they are sexually active. When the vaccine was developed, initially it was for girls and not boys. Tell us about that and how that changed over the time.

Dr. Bocchini (10:39):

So this goes back to, um, our understanding by doing large scale studies to determine whether HPV was related to a number of cancers. The first cancer that HPV was related to was cervical cancer. So the effort was made to, um, design a vaccine that would prevent HPV infection that led to cervical cancer. So that's why, uh, girls and young women were chosen as the first vaccine recipients. At the same time, the vaccine was being developed, additional studies, not only showed more genital infections both in, uh, and cancers in men and women, but also showed that there was a very high incidence of cancers in the back of the throat that were caused by HPV. And in fact, today HPV is the most common cause of, uh, cancers that develop in the back of the throat. About 70% of all of them are caused by HPV infection.

Diane (11:42):

Had no idea.

Dr. Bocchini (11:44):

Yeah. It's, um, it has emerged as a, a really important problem. And, and, and the reason we understand this now is that again, with new technology and new techniques, we've been able to find the virus of these sites, and through studies have been able to relate the fact that the cancer is caused by the infection, the chronic infection with certain types of HPV. And, and that's really led to additional studies in boys and men. And that's what led to the licensure of the vaccine in boys and men. And it led to the decision that we needed to give this vaccine to get the best outcome to young children before they're likely to be exposed. And that's why we have the current recommendation that the vaccine is given to all children at age 11 to 12. Uh, so that we can provide them with protection long before they're likely to be exposed to the virus.

Deon (12:45):

Especially for, for, for boys, because there is no approved, um, approved screening for HPV in men.

Dr. Bocchini (12:55):

That's correct. The only site that we, we have approved screening for and techniques that are well established is for, uh, the prevention of cervical cancer and the recognition of early changes that

might lead to cancer. But there is no, uh, uh, screening that's available for cancers in the back of the throat, or cancers at other sites in both men and women. And so, um, it's really important that, that we recognize that for those cancers, we often don't know that the person has that cancer until it really develops, or, or has the risk for that cancer until the symptoms develop.

Diane (13:34):

Let's talk a little bit too about specific ages. You said prior to any sexual activity, you're looking possibly as young as 9, 11, 12 year old for adolescents, but is there a cutoff age too, doctor, that you'd be so to speak too old to have the, the, the vaccine? Is there, is that a possibility? Or such a thing?

Dr. Bocchini (13:57):

Well, there, that's a, that's a very good question. Um, the routine recommendation is for every child from 11 to 12 begin to get the, the HPV vaccine. And for those children, it's a two-dose regimen. You give a single dose and then 6 to 12 months later, you give a second dose. And, um, as you alluded to, the vaccine is actually licensed for children down to age nine. So if a parent and a physician wants to start the immunization process at age nine, that's certainly appropriate and can be done. In addition, the initial recommendation, uh, for, uh, for girls and women was to catch up women who had not been previously vaccinated at the recommended time up to age 26. Recently, the CDC, well, actually it's been about three years now, uh, the Advisory Committee on Immunization Practices, uh, has raised that routine recommendation for boys and men who were not previously immunized at, to, all the way up to age 26. So now everybody who has not been immunized at the time that, uh, it is recommended, should catch up with that immunization up to age 26.

Dr. Bocchini (15:16):

Now, the vaccine is also licensed up to age 45. And what the CDC and ACIP recommend for people who are 27 to 45 years of age, is to have a discussion with their physician to determine if they are at risk for HPV infection. And if they are, make an individual decision about whether it would be appropriate to get the vaccine. So it's not a routine recommendation. And the reason in part for that is that the vast majority, maybe 80% of the infections that ultimately lead to cancer have already occurred by the time somebody is 26 years of age. And then it takes another 10 to 20 years before they're likely to manifest that, um, that, that, um, uh, cancer related to that infection. So we want people immunized on schedule. And if not, certainly by age 26, uh, for those people who have missed that opportunity at a younger age. And then from 27 to 45, an individual discussion with a physician, uh, to determine a person's risk would then help make the decision about whether it be beneficial to get the vaccine up to age 45.

Diane (16:31):

So it's two shots? Is that what you said, doctor? It's a two-shot series.

Dr. Bocchini (16:36):

It's a two-shot series for people who initiate the series before their 15th birthday.

Diane (16:42):

Okay.

Dr. Bocchini (16:42):

Someone starts to be vaccinated at age 15 or above, they need three doses. Um, and the reason that younger children only need two doses is that the immune system of young children is strong that you actually get a better immune response in children, 11 to 12 in terms of antibody and, uh, response than you do for, uh, older adults who are also protected, uh, against infection. So you only need two doses for younger children. At age 15 and above, you need three doses. And then your doctor may decide that because you, there are certain underlying medical conditions that might make it less likely that you're gonna have a good response to a vaccine, so you have a problem perhaps with your immune system, or you're on medicine that interfere with your immune response, all of those individuals should get three doses.

Dr. Bocchini (17:36):

The good news is that for healthy young children, under 15, and for people 15 and above who complete the regimen, we've, we know based on, um, the studies that were done for licensure of the vaccine, that over 99% of people who get this series, get a strong antibody response to all of the types that are in the vaccine. And that protection lasts for as long as we've been looking at the, at the long-term studies of using the vaccine, it, it lasts for, um, uh, 15, 16, 17 years. And that's just, we only, we know that because that's how long the studies have been going on. But the evidence is that the protection is, will last many, many more years beyond that.

Diane (18:23):

And that was 99%? Is that what you said?

Dr. Bocchini (18:26):

Yes. Yeah.

Diane (18:27):

Wow.

Dr. Bocchini (18:27):

It's a remarkable, it's a remarkable vaccine.

Diane (18:30):

Yes, indeed.

Deon (18:31):

Um, you mentioned those who were, um, older who could get the vaccine, especially if they are at risk. What do you mean by being at risk? Can you explain that a little bit?

Dr. Bocchini (18:43):

Well, since this is a sexually transmitted infection, if someone is in a stable, um, um, uh, you know, a single partner situation, and has been in that, that situation for years, the risk of acquiring a new HPV infection is going to be very low. On the other hand, if someone is, um, um, dating a number of different people, uh, has more, uh, partners, uh, then they may be at increased risk because they have more potential for exposure. So that might be a person who, uh, would be, um, considered to be more at risk and be potentially benefited by getting, uh, the vaccine.

Deon (19:30):

Yeah. So someone who may be, uh, uh, very sexual active, um, outside of a committed relationship, they would be more at risk for something like this?

Dr. Bocchini (19:39):

Exactly. That's exactly right.

Diane (19:40):

I think I would assume, doctor, that you've had some pretty interesting conversations with the, uh, parents of younger children, of adolescents wanting to know your opinion, your thoughts. Um, I, I think this probably is a question, a re- about a refused vaccine, because is it giving my child, uh, permission to think that they're, they can be sexually active? Does it promote promiscuity? What are you talk- 'Cause I'm sure parents have these concerns. And as a doctor pediatrician, what do you say to parents?

Dr. Bocchini (20:15):

So you're right. There are parents who, um, have raised that question. They have a concern that by giving this vaccine, you are actually giving your adolescent permission to become sexually active. The evidence is that that's not the case. Uh, we have a number of studies that have been done that show that, uh, giving the vaccine does not, um, is not associated with any increased likelihood of initiation of sexual activity. So that's a question that's already answered based upon a number of studies. So, uh, yes, that may be a concern, um, by some parents, but, uh, my response and the primary care physician pediatrician's response is that the data is very clear that giving HPV vaccine is not associated with any increased likelihood that a child will initiate, uh, sexual activity.

Deon (21:12):

Yeah. And on, on top of that, doctor, parents are probably asked this question as well, like, thinking about their child's health, uh, further down the line when they become an adult about possible infertility. Can you, uh, talk about that and how that conversation was brought up around this particular vaccine?

Dr. Bocchini (21:34):

So like many new vaccines, um, when it first came out there, there were some questions that, uh, that parents had, um, related to, uh, not only sexual activity, but potentially infertility. Um, and, and it's very clear now with, uh, 16 years of experience, that there is no evidence, uh, to raise any concern about infertility, uh, with HPV vaccine. In fact, the vaccine has proven to be incredibly safe as well as I indicated, highly effective in preventing, um, HPV infection. So, um, that is something that, um, I, I think has been resolved. I think one of the things that, that we always deal with is that, um, there is a considerable amount of misinformation-

Diane (22:26):

Indeed.

Dr. Bocchini (22:26):

... that is on the internet about rare things that some people, uh, relate to HPV vaccine. And one of them is the question of infertility. Uh, but the evidence is that this vaccine does not, is not associated with infertility. That's one of the, uh, areas of misinformation that people might find on the internet.

And, um, as a result, what I would suggest for people, um, who are looking up information about HPV vaccine is there are a couple of really strong, trusted sites that they can go to, to get information about not only HPV vaccine, but any vaccine. Uh, Centers for Disease Control and Prevention in Atlanta is an excellent site.

Diane (23:13):

Okay.

Dr. Bocchini (23:13):

It provides, uh, very good information for parents. Um, in addition, the American Academy of Pediatrics has considerable amount of information about HPV vaccine and all vaccines, uh, that can certainly be helpful to parents who wanna review information and become knowledgeable before they make their decision to have their child vaccinated. So I would, um, be careful to screen the sites that you use to get information so that you have the proper information and, and are not misinformed.

Diane (23:47):

And this is not only for parents of young girls, but for, for the, uh, boys as well, because there was some talk about the possibility of infertility in boys. It just, it just kept going on and on and on. And like you were talking, you know, doctor, the, the misinformation is out there, and after a while it kind of takes on a life of its own.

Dr. Bocchini (24:06):

It, it really does. And, and again, that's why it's really important to pick, uh, your trusted, uh, resources, ask your physician, um, for the resources that he or she uses, uh, to make their decisions. I think, um, you know, we promote this vaccine for our patients because we have looked at the information and we believe the evidence is very strong, that it's not only safe, but highly effective and prevents cancer. And I think the most important thing for HPV vaccine is that this is a vaccine that prevents cancer. So-

Diane (24:44):

Bottom line, yeah.

Dr. Bocchini (24:45):

If you're really looking at the health of your child down the road, this is an incredible way to reduce their risk for their long-term risk for, for cancer.

Deon (24:56):

Yeah. And doctor, you mentioned some great, um, resources out there to get information, and, and outside of speaking to your, of your child's physician, but also the Louisiana Office of Public Health, there's some great information within, uh, that, uh, arena too.

Diane (25:11):

Absolutely. Yeah.

Deon (25:11):

Uh-

Dr. Bocchini (25:12):

Correct.

Deon (25:12):

Something else, um, and I'm, I'm, I'm guessing that these are some of the names of some of the vaccines, um, uh, and you'll have to forgive me if I mispronounce them (laughs), 'cause-

Dr. Bocchini (25:24):

Okay.

Deon (25:24):

I don't have the expertise as you do. Uh, but Cervarix? [inaudible 00:25:29]-

Dr. Bocchini (25:29):

Yeah. I can, I can help you.

Diane (25:30):

(laughs).

Dr. Bocchini (25:30):

Right. I can help you with that one. But you got that. That was really good. It is Cervarix.

Diane (25:34):

Good job (laughs).

Deon (25:34):

Oh, okay. Thanks.

Dr. Bocchini (25:35):

(laughs).

Deon (25:36):

Um, and then there's, uh, Gardasil, and then Gardasil 9. Is that, am I saying that correct?

Dr. Bocchini (25:42):

Okay. So it's Gardasil,

Deon (25:43):

Gardasil. Okay.

Diane (25:44):

Mm-hmm. Mm-hmm.

Dr. Bocchini (25:44):

And then Gardasil 9.

Deon (25:45):

See, okay. I should have known that because I remember seeing the commercials, uh, the commercials for those. Uh, so what's the difference between those three? And are they-

Dr. Bocchini (25:55):

Okay.

Deon (25:55):

... still used?

Dr. Bocchini (25:57):

So the only one that's used in the United States right now is Gardasil 9.

Diane (26:02):

Okay.

Deon (26:02):

Okay.

Dr. Bocchini (26:03):

And so, um, the first vaccine, the first Gardasil had four of the HPV types in the vaccine. So it prevented infections with two of the types that cause cancer, and the two types that cause 90% of genital warts. The same manufacturer then expanded the number of, uh, virus types in the vaccine. And so now we have Gardasil 9. So they removed the original Gardasil from the, the, uh, from the United States, and now we only use Gardasil 9, um, because it now has seven of the, of the types that cause cancer, plus those two that cause [inaudible 00:26:48], um, uh, the, the genital warts. Um, and, and so it gives us broader protection against the, the, the cancer producing types. And that's where we have the ability to provide 90% of, of protection. [inaudible 00:27:04]-

Deon (27:03):

And then we have seven plus two is nine. So that's why we get the nine with the name?

Dr. Bocchini (27:07):

That's the Gardasil 9. Yes.

Diane (27:09):

Mm-hmm.

Dr. Bocchini (27:09):

And then, uh, Cervarix was another excellent vaccine. It had the two stereotypes of HPV, uh, that, the same two stereotypes that were the most common causes of cervical cancer, but it was only studied in women, um, in this country. Um, and, um, and so, um, the Gardasil became the one that

physicians used. So now, uh, Cervarix is no longer available in the United States. Not a bad vaccine, and it's used in many other countries. Um, but, uh, here, uh, we've chosen to use the 9-valent vaccine, the Gardasil 9, because it gives you broader protection, and it's available for both men and women, boys and girls.

Diane (27:54):

You know what we're doing again, here today, doctor, is giving information that people need to be aware of. And Deon had mentioned earlier about seeing something, uh, on television, on, on Gardasil 9. You know, the, the television that the public service that we're providing for, you know, our state, for our country, goes a long way in bringing it to the forefront of parents. And something that I didn't realize is that our state has one of the highest cervical cancer rates in the country. We need to be aware of that. We need to ask questions. We need to do the best we can for our young people. There, there are our future.

Dr. Bocchini (28:35):

I think that's an incredibly important point. Uh, I, I think one, vaccines provide considerable protection, but in our state where the cervical cancer rate is high and actually the HPV cancer re- uh, rates in our state in general are higher than most states in the United States. And so it, it, it makes it even more important for us to be very aggressive in getting our children immunized to protect them while we can, before they are potentially exposed, uh, to, uh, these viruses. And so, um, one of the things that really is important is that although we are slightly above the national average for the number of children who are getting vaccinated against HPV, it's still only 60%.

Diane (29:28):

Only 60%, really?

Dr. Bocchini (29:29):

Only 60% of our, only 60% of our adolescents who are, are looked at when they're 17 years of age, so this is even older than we, uh, would like to see them vaccinated. Only 60% of them are fully vaccinated against HPV. Um, the rest of the country, the total is about 58%, but we have some states that are up above 80%-

Diane (29:53):

Wow.

Dr. Bocchini (29:54):

... of their adolescents are fully immunized against HPV. We need to get there ourselves. We, we need to continue to work, to educate parents, to have them understand the importance of this vaccine as a cancer prevention, and then see if we can get our children vaccinated. Um, I think long term-

Deon (30:14):

And hopefully this conversation will help with that.

Diane (30:14):

Mm-hmm.

Dr. Bocchini (30:15):

Yeah. Long term, it's really critical as you mentioned earlier to the future of the children in our state.

Deon (30:23):

Doctor, um, you mentioned how this vaccine was something, in 2006, was kind of when this all was moving forward. And, you know, we've got those years of research, uh, so far, but, you know, at that point, you've, there, there are people who may have missed that and are, and they, the older number, the older category that we kind of mentioned before, and they may be at a higher risk of having an HPV in infection. Can you tell us, is there a treatment for an HPV infection? And will it go away? Or will it just be dormant and just be with someone for life?

Dr. Bocchini (31:06):

Well, um, there is considerable research going on about whether the virus can become dormant and then come back. And I think that's one of the questions that I think were kind of is becoming clear now that some individuals who have the virus, who then on subsequent testing appear to have cleared the virus, begin to shed the virus again. So it's still there. So a period of dormancy and then return of the virus is something that is emerging as a, as a real issue. Um, how frequently that occurs, um, how important that is overall in the number of cases of cancer, we still don't know. However, what we do know is that when someone is infected with HPV, it may take one to two years for them to clear the infection, for them to be negative for the virus. Um, and that's a long time. And, um, and so it means that not only are they at risk for continuing to have the virus and then having some abnormal cells developed because of the infection, um, it also puts them at risk for spreading the infection to partners.

Dr. Bocchini (32:18):

So that's why this virus is so common, um, in the community, because, um, it's there and e- and spreadable for, uh, many, many months. Um, and then of course the oncogenic types, those are the types that cause cancer, they're more in, in, aggressive and more invasive. So they're the ones that are more likely to stay for a longer time. Um, and so, um, once you're infected, it's, it's, it's always possible that, um, that that infection will persist. Even though 90% of people, um, we can't find a virus after about, uh, two years, uh, in the other 10%, those viruses persist, and they're the people that are at risk for, um, cellular changes that, um, that can lead to cancer. And as I mentioned earlier, there's no medical treatment for HPV.

Diane (33:13):

Mm-hmm.

Dr. Bocchini (33:14):

The only way to get rid of cells that are abnormal is to remove them. And I think this is important as well, uh, to, to discuss. Um, when a woman has, um, early changes that are, are of worrisome because they're close to cancer, um, in their cervical, uh, area, those cells have to be removed. So they actually have to take a piece of the cervix out to control the infection. Now, um, in terms of infertility, it doesn't change the woman's ability to become pregnant, but it may change the woman's ability to carry a pregnancy to term. Uh, because you need a normal cervix, um, to be able to carry a baby for the full nine months. And if they've had a surgical procedure, uh, to remove the infected cells, that may make the cervix less likely to be able to carry the baby for the nine full months. So it can be associated with premature delivery, which as you know, can be associated with a number of potential complications for that baby and a more difficult start in life. So, so I, I, I think, um, a

prevention is always better than the treatment. Um, and, and so we do have a chance to really prevent all of those things from happening.

Diane (34:39):

Yeah. Dr. Bocchini, you've talked about so many, uh, so much here and, and so many points.

Deon (34:46):

Excellent points.

Diane (34:47):

Yes. That parents need to know, that young people need to know, that, that people, again, that didn't get the vaccine early on, they need to have that conversation with their, uh, personal physician. Is there anything that we have not covered today before we close our podcast that you think of, that our listeners need to be aware of? Any last or final thoughts you have, doctor?

Dr. Bocchini (35:12):

No. I guess just to recap, um, again, it's really important to, uh, give this vaccine before a child is going to be at risk for acquiring the infection. That's why the 11 to 12 year old age group is, uh, really important. And we wanna have those children vaccinated on schedule. Um, and, but the point that you just made about catching up people is really important as well. 'Cause I think if individuals missed a chance to get vaccinated as 11 to 12, and if only 60% of our 17 year olds have been vaccinated, that means that we have a number of years beyond that, that we still have a number of susceptible young adults. And you're right, they need to be talking to their physician about, if they're under 26, they need to be vaccinated. If they're over 26, they need to have that discussion about whether they are at risk and therefore, uh, should get the three-dose regimen for the vaccine. So I, I think those are really important, uh, points, um, that, that I think need to be emphasized so that people understand that they can play an important role in changing the risk for cancer with this vaccine.

Deon (36:29):

Yeah. And, and, and one more, uh, little tidbit out there, doctor, that I know you could, uh, co-sign with is that this is a vaccine to prevent cancer, not STDs.

Dr. Bocchini (36:41):

Correct. Uh, very important, uh, very important point. We're not trying to prevent STDs. We're trying to prevent cancer. That's exactly right.

Diane (36:49):

Mm-hmm.

Dr. Bocchini (36:50):

And then, um, maybe I can mention one other thing. When we first began to use this vaccine, um, we didn't, we had about a 20 year period we thought before we would actually see an impact on cancer rates, because as I said, it takes up to 20 years following an infection for cancer to develop. So our first evidence that the vaccines were highly effective was that when we began looking for the types in the vaccine, we found that those girls, the studies were first in girls, that had been vaccinated, there was a significant decrease in the number of them that were infected with the types

that are in the vaccine. The second thing we saw, which was about 7 or 10 years later, was that those cervical changes that we talked about were becoming less frequent associated with the types that were in the vaccine. So we began to see that the precancerous lesions that can happen with the types in the vaccine were decreasing in numbers. And now, we have the first study from, and this was from Sweden, and it was just published probably late last year, showed that there's actually a remarkable decrease in cervical cancer rates amongst girls who were vaccinated. And this was with the initial Gardasil, which was the four, uh, types of vaccines. So we now have completed all of the evidence that we need to say with certainty that this vaccine prevents cancer.

Diane (38:30):

Dr. Bocchini, thank you so very much. This is, I, I would venture to say this is probably a difficult conversation for some families to have when you're talking about HPV, but, uh, thank you for bringing it to us today in terms that I believe everyone could understand. And I hope that our listeners have gleaned a lot of information from our podcast today. And we very much appreciate you being our guest today, doctor.

Dr. Bocchini (38:57):

Well, thank you very much and thank you very much for the opportunity. I appreciate it.