**FINAL-MASTER-TEMPLATE**

**dr clark:** I have educated extensively about the COVID vaccine, which a lot of people on social media mistake for quote, unquote, me pushing the vaccine. I do not push the vaccine. I have never once said. Everyone should get the vaccine nor have I ever said no one should get the vaccine, what I have done and what the right approach to do is provide as much information as we can about what we do and what we don't know, so that the individual can make the best decision for them.

[00:00:28] **INTRO:** Hi, I'm Sarah Kuhn. Welcome to the Juneau women podcast, where I sit down for candid conversations with women who are experts in their field and share their specific knowledge so that we can become better equipped to handle all things. Motherhood,

[00:00:41] a women is an extension of Jonah, a fitness and nutrition app created to help guide you through your trying to conceive pregnancy and motherhood journey.

[00:00:49] Everything we do at Juna is designed to empower and support you through one of the most incredible and challenging times of your life.

[00:00:56] On today's episode. So what I'm talking with, Shannon and Clark, OB GYN,

[00:00:59] and a professor of maternal fetal medicine who specializes in high-risk

[00:01:03] pregnancies. Shannon has spent the past year studying the correlation between COVID 19 and pregnancy. In this episode, we discuss the impact of COVID and the vaccine on fertility.

[00:01:13] And then we jump into pregnancy and lactating individuals. This episode is meant to inform and educate, but ultimately this is a conversation that you should be having with your own care provider. I hope you find this helpful as you navigate through your decisions with the COVID vaccine.

[00:01:26] **SARAH K:** Shannon. I'm so excited to have you on the podcast today. Do you mind introducing yourself and just telling us a little bit about you and your area of expertise?

[00:01:35] **dr clark:** I am Shannon Clark. I am a professor in maternal fetal medicine, and that means I did four years of an obstetrics gynecology residency followed by an additional three years to sub-specialize in maternal fetal medicine. And that's. Where

[00:01:49] all of my patients have are pregnant and have high risk pregnancies for whatever reason, whether it be maternal and, or a fetal reason.

[00:01:56] So I am a professor at

[00:01:57] in a large academic center where I have roles as a clinician education, educator and researcher.

[00:02:02] And then I do a lot of education on social media, on the side where I specifically.

[00:02:06] Other than the past year, which has

[00:02:08] been dedicated to COVID education, but

[00:02:10] really babies after 35 fertility, I, all things, fertility, pregnancy, motherhood, Parenthood related

[00:02:16] to those who are conceding after 30 days.

[00:02:19] And you

[00:02:19] **SARAH K:** yourself have twins,

[00:02:21] **dr clark:** right? That's right. I do. Yeah. And we're actually on a, yeah, they're four and a half where we're on that little staycation. So you might hear them running around, but yeah. Yeah. They're four and a half.

[00:02:30] And I did receive them after several failed cycles of IVF. I went to donor egg and was able to concede them via donor egg.

[00:02:37] **SARAH K:** Oh, incredible.

[00:02:38] I have a four and a half year old. That's my, as my oldest. And I'll tell you a man. Yeah,

[00:02:44] **dr clark:** it's a lot. It's all your hands full now. I had my husband's very hands-on, which is great. And

[00:02:50] I have great

[00:02:50] help with our childcare so I can not complain. Yeah, that's good.

[00:02:55] That's the name of the game, right?

[00:02:56] Yeah, exactly.

[00:02:57] **SARAH K:** Cool. I, this could go in a million different directions, but as you mentioned

[00:03:01] you have this kind of specialized in COVID education in the last year, and that's what I want to talk about today.

[00:03:07] So actually let's start at the beginning cause I think there's been a lot of

[00:03:11] Misinformation being spread about the impact of the COVID vaccine and fertility.

[00:03:18] So can you just talk a little bit about that?

[00:03:21] **dr clark:** Sure. Yeah. And this has been months in the making

[00:03:25] but

[00:03:25] I, we happy to go over it again because I,

[00:03:27] it does need to be addressed pretty much daily at this point, but basically what happened is

[00:03:32] right when right after the EPA came out for Pfizer.

[00:03:35] As an MNR as the first M R M RNA vaccine to be available in the United States.

[00:03:40] There was a blog, I think it was called health and money news. And it was by two

[00:03:46] two

[00:03:47] PR people are not in obstetrics or fertility. I don't know what their backgrounds were, but essentially what they were saying is

[00:03:53] the spike protein of the SARS Coby too, or the COVID virus

[00:03:58] is the what's the vaccine is targeting.

[00:04:01] So the MRNs vaccine from the Pfizer Medina

[00:04:04] is it prompting our body or fuel cells to produce the spike protein? In which case once it's. Produced are ant antibodies are developed against that, so that if we were ever exposed to the spike protein again, through COVID infection, our immune system would work by hosting the antibody response and to combat that, that potential exposure that's how these vaccines are working.

[00:04:26] They were saying that the spike protein, which proteins are made of amino acids, all proteins

[00:04:31] in our body are made of amino acids. They were saying that the spike protein or the stars could be to had was very similar

[00:04:37] And amino acid sequence to a placental protein. This placental protein is called since Seton one.

[00:04:43] And basically it's in the trophoblast layer of the placenta. And what it does is it's helps implantation of the placenta and establishes circulation between the mother and the placenta and thus the fetus. So what they were saying in this. And it was actually very, in my opinion, as a medical professional, very inflammatory, because they didn't provide any scientific evidence about why this could happen.

[00:05:02] They were saying that essentially, if you were to get the vaccine, I

[00:05:05] despite protein,

[00:05:06] we're, our bodies are formulating antibodies. It gets a spike protein because they have similar immuno acids sequence. It's going to target this subtle protein as well, which would lead to a miscarriage and or pregnancy loss.

[00:05:19] Since then

[00:05:19] multiple fertility specialist.

[00:05:21] And then also an excellent article in fertility and sterility, which is put out by SRM or the American society of reproductive medicine. Put out a great article that said this is biologically impo implausible, meaning it just does not make sense. The homology or the sameness, if you will, between the spike protein amino acid sequences

[00:05:39] the sorrows could be two.

[00:05:40] And the amino acid sequence of this placental protein is simply not there. And it's not going to happen. So basically that article was retracted. No longer even available. Those people disappeared. However, this is how many months later, and I'm still getting asked about it. And not just me, anybody that educates

[00:05:57] on the COVID vaccine is getting ask about it because it's a very sensitive topic.

[00:06:01] And I get it that once I it's, as a med professional, we think,

[00:06:06] it was one blog. Not even scientifically-based and we're still hiding it. What the heck, but I get it. I get it. That's why I have no problem answering this question over and over again and addressing it over and over again because people need that.

[00:06:20] I going through infertility myself, I get it.

[00:06:22] It just shows you the power of one piece of false information. Yep. Oh

[00:06:27] **SARAH K:** my God.

[00:06:28] All it takes. It's funny when I think what ends up happening is

[00:06:31] I'm not

[00:06:32] let's say I'm not in the, I'm not trying to conceive, but I hear from someone that like, Oh, it hurts fertility, so I don't dig into it.

[00:06:39] I'm just like, okay, but now I'm like, Oh, now I'm ready to have a baby, but I shouldn't get the vaccine because I had heard that it impacts fertility

[00:06:45] and that's

[00:06:46] that's it. And I feel like that's what. Just snowballs.

[00:06:49] **dr clark:** So have they met him, many of these

[00:06:51] myths or blatant false

[00:06:54] pieces of information are largely contribute to what we call vaccine hesitancy.

[00:06:58] And unfortunately the average person who doesn't have a medical background or doesn't know how to go in and do a scholarly Google search, if you will, to find

[00:07:07] that data,

[00:07:07] it. I understand how it's still around.

[00:07:10] But

[00:07:11] it doesn't help either when people keep perpetuating it and without any explanation.

[00:07:14] So that's where we fall. We come in, people such as myself who are medical professionals and are willing to keep. Fighting the good fight. Fight the fight. Yeah.

[00:07:23] **SARAH K:** So we will underscore it simply. It does not

[00:07:25] **dr clark:** impact for it as a matter of fact. And I, this article just came out today. I just put it on my

[00:07:31] about ovarian Phillip Cuellar function.

[00:07:34] I just put into my Instagram stories and it's another confirmation that we don't have any concern that the COVID vaccine is going to affect

[00:07:41] **SARAH K:** fertility. Perfect. I'm going to link to that

[00:07:43] in our

[00:07:44] **dr clark:** it's in my stories. You can get it. Yeah. Perfect.

[00:07:46] **SARAH K:** So while we're talking about fertility, I,

[00:07:49] cause I think like a year ago

[00:07:51] everyone was like

[00:07:52] let's take a beat on family planning.

[00:07:54] Like it's probably not the best time to think about getting pregnant because like we just didn't know much about it is like

[00:08:02] what's your advice now for women who are wanting to get pregnant?

[00:08:06] **dr clark:** It's an individual decision.

[00:08:07] It's individual decision and I understand that hasn't seen, but I'll also understand the urgency when people have waited.

[00:08:13] And now they're like, I, especially those who are over age 35 and especially over age 40, I get it. But I think you just have to weigh the risk and the benefits of,

[00:08:22] a, if you were to get pregnant, And you're in and you choose not to vaccinate and that's perfectly within anyone's right. To do that.

[00:08:30] What are your chances of getting the infection in pregnancy versus if you wait, what's the potential pitfalls of waiting, especially if you're older, age 35 or over age 40,

[00:08:38] it depends on what your personal timeline is. If you were to get COVID infection and you're pregnant. Are you going to have

[00:08:45] adequate access to adequate prenatal care right now?

[00:08:48] It's not like it was a year ago.

[00:08:50] Mostly, but he is getting seen in person and we have thankfully people that are getting vaccinated. So it's not going to be to that degree, but you know what, if you have preexisting medical conditions and you get pregnant. And you'll get COVID infection,

[00:09:02] there's things to think about.

[00:09:03] Those are all things that need to be addressed and it's always helpful if you want, you can always get a preconception consult with an obstetrician or someone like myself to talk about these things, because sometimes that does help because we can ask certain questions. Or if you're family planning, talking to a fertility specialist, especially if you needing to go under fertility treatments

[00:09:22] these are, that's what we're here for is to

[00:09:24] help you make the best decision for you.

[00:09:26] **SARAH K:** Yes.

[00:09:27] I love that. I think a lot of people feel like right now, their access to their OB or reproductive endocrinologist or someone like you like is more limited, but I feel like

[00:09:38] it's not,

[00:09:39] **dr clark:** no, I don't think it is. I, and I do think the one good thing out of COVID is the. I wouldn't say perfection because it's, I don't know if it's ever going to be perfected, but

[00:09:48] the strides we've made in telemedicine,

[00:09:50] there are a lot of things we can do with telemedicine.

[00:09:52] A lot of us who never did it are doing it now. And these types of consults are perfect for that because you don't have an acute issue. You just need some counseling. You need somebody to walk you through this decision-making process. And that would be a great thing for a tele med visit with a fertility specialist or a maternal fetal medicine specialist like myself.

[00:10:09] And I'm sure that wouldn't be too hard to find somebody

[00:10:12] who was able to do that. So that's always a potential

[00:10:15] thing that anybody can consider in that situation. Yeah.

[00:10:18] **SARAH K:** No, I love that.

[00:10:19] Okay. So let's talk about COVID and pregnancy.

[00:10:22] What are, again

[00:10:24] I think like the, there has been. Like, as new information comes out,

[00:10:29] we've died,

[00:10:30] I'm like, cause I'm still like, I was pressed.

[00:10:31] I'm like

[00:10:32] I'm all over the place here. But I was pregnant with

[00:10:35] my third baby during the pandemic, but I was like in my second trimester and I feel like the information that I consumed was different now we know different stuff. So what are the risks in each trimester? And like my.

[00:10:50] Is miscarriage a bigger issue?

[00:10:53] Yeah. I'll let

[00:10:54] **dr clark:** you, we don't have a stratification if you're in the first trimester, these are risks from COVID. In fact, are you talking about COVID infection or COVID yeah, we don't have, I wish we did, but we don't have a table that says in first trimester, this is what you're at risk for second and third.

[00:11:10] That's not how it happens. This is what we do know in generalizations. We know that pregnant women are at increased risk for severe disease.

[00:11:17] Based on the need for mechanical ventilation

[00:11:19] increased risk of death in the pregnant

[00:11:20] patient

[00:11:21] compared with her non-product counterparts. We also know that there's an increased risk for preterm labor and depending on how early.

[00:11:27] That delivery is, would directly affect the potential complications and risk for the neonate. And we also know there, and we're getting more reports about an increased risk of stillbirth

[00:11:36] and pregnancies. There was a large

[00:11:40] multinational cohort of pregnant women that was studied with COVID infection that did show infection earlier in pregnancy does increase the risk for complications, but that's really the only one that I have known of.

[00:11:50] Recently.

[00:11:51] But what I think is the important thing to understand is that we know that pregnant individuals are at increased risk for severe infection. We don't have the percentages by trimester, but we know, and it also depends on. The luck of the draw, whether or not you don't necessarily have to have calamities to have severe infection.

[00:12:12] I've seen patients both ways, but we also know that people with co-morbidities and pregnancy have an even more increased risk. So

[00:12:19] that's something to consider. And I will also say that there were a couple of other studies that came out

[00:12:22] one was in mid March or so that kind of looked at the impact of COVID-19 on pregnancy outcomes.

[00:12:27] And this was actually a big meta analysis of 42 studies that involved

[00:12:31] over 400,000 people pregnant people. And basically what they showed was that COVID-19 infection was associated with preeclampsia, preterm birth and stillbirth. We also know that symptomatic COVID infection was associated with an increased risk of hysteria and delivery and preterm birth.

[00:12:46] And that's just because the sicker, the mom is the more likely that she's not going to be able to undergo.

[00:12:50] Vaginal delivery or induction of labor into staring delivery would be the safest and the sicker they are. They might have to be delivered preterm.

[00:12:56] And then we also know that when compared with mild COVID infections, severe COVID infection is strongly associated with preeclampsia, preterm birth and low birth weight.

[00:13:04] And that's low birth rate is likely due to the preterm birth.

[00:13:07] We know that we had evidence that

[00:13:09] COVID infection affects the placenta. Which could be a reason why we are seeing this increased risk of pre-term or pre-eclampsia.

[00:13:15] We're seeing these starting to see these outcomes and all that put together could be considered what we call adverse pregnancy outcomes.

[00:13:21] So that's definitely something to consider.

[00:13:23] We know that COVID infection is not good for the pregnancy and I hear all the time. The risk is low. Yes, it is. The risk is low in it, unless it occurs to you, it happens to you,

[00:13:32] and it is happening. So that is something to consider.

[00:13:35] You can do

[00:13:35] a risk assessment based on the individual.

[00:13:38] And, but that's not an absolute, there, there are some people who are otherwise healthy that do have a severe COVID infection in pregnancy.

[00:13:46] **SARAH K:** So with that said,

[00:13:46] it's, it sounds like you like let's try and avoid getting COVID right?

[00:13:51] **dr clark:** Yeah. I had my running, my patients not get COVID. Yes.

[00:15:33] **SARAH K:** So then let's talk about the COVID vaccine for pregnancy.

[00:15:37] **dr clark:** Yeah.

[00:15:37] That's a great question. And

[00:15:39] I have educated extensively about the COVID vaccine, which a lot of people on social media mistake for quote, unquote, me pushing the vaccine. I do not push the vaccine. I have never once said. Everyone should get the vaccine nor have I ever said no one should get the vaccine, what I have done and what the right approach to do is provide as much information as we can about what we do and what we don't know, so that the individual can make the best decision for them.

[00:16:05] And

[00:16:05] I just talked to someone earlier today about. You got three types of pregnant patients, one that says I've done my homework. I know I want it. Give me the shot. Sign me up. Okay. You're good. You don't need to talk about anything else? No, I'm good. Sorry. Fine. When you have the patient that comes in and says.

[00:16:21] No way, no hell do not come here and know, and they completely don't want to talk about it. I'm not going to say you're going to sit down and you're going to know they're not my child. These are grown individuals. I'm not going to push

[00:16:31] any kind of counseling on it. If they already know they don't want the vaccine, they don't want the vaccine.

[00:16:34] Great. But most people are going to fall somewhere in between. Okay. And that's where it's extremely important for the obstetrical care provider to be able to have a meaningful conversation with that individual about. As much as we know about the COVID vaccine right now. And the first thing we know. We have not saved the COVID vaccine in pregnancy.

[00:16:55] It's just now being studied formerly in pregnancy, great weight. And we've already established that, but we know that, like I said, we're going to individuals are at increased risk for severe infection. They're at increased risk. If they've had infection or adverse pregnancy outcomes, we know that based on your social circumstances, and if you're at increased risk based on your social slip circumstance,

[00:17:14] do you live within a household of individuals who are going out into the public and are at increased risk? Are you an increased risk because of your job?

[00:17:21] Are you to increase just because you're pregnant and you have other medical conditions that further place you at increased risk. So there's so many things that we can talk about.

[00:17:28] Talk about the kind of weigh the risk and the benefits. For you as an individual and whether or not getting that vaccine is best for you. And a lot of times it just takes us talking about that to help make that decision.

[00:17:39] We also know, and it's great. We have some data

[00:17:42] from the safe and there's on some of the pregnancy

[00:17:45] some data on the safety of the vaccine in pregnancy.

[00:17:48] And that was put out by the ACP on March 1st as a

[00:17:51] from

[00:17:51] January until February 16th. And we should be getting an update soon

[00:17:54] checking every day to see when that comes out. But we ha we need some, we have seen no concerning trends in the vaccine as far as

[00:18:02] any concerning trends in pregnancy, which is very reassuring.

[00:18:05] And then, and we may talk about this later. Another positive is what's going on right now at the J and J vaccine. We had six cases they were concerned about, and we can talk about later or while they were concerned, but they were on it. And they paused the vaccine. So that is showing you that they are taking the safety of the COVID vaccine extremely seriously.

[00:18:26] So that should be very reassuring, especially to pregnant individuals. So for me, when I saw that I may not necessarily agree with it from a scientific standpoint, but I was like, you know what, they're really doing their job. So that made me feel better

[00:18:39] as a medical professional and as someone who takes care of pregnant individuals.

[00:18:42] It's

[00:18:42] there, yes, there's a lot of unknown, but. At the end of the day, the vaccines should be available to pregnant individuals and those that are lactating and those that are trying to conceive so they can make the best decision about them, about their healthcare. So that's why it is available to these individuals.

[00:18:57] **SARAH K:** Got it. And is there when it comes to, and I'm maybe I

[00:19:02] maybe you don't know the answer to this question, but I'm hoping you do. Is there a particular

[00:19:08] like trimester that is more beneficial to get the vaccine in.

[00:19:13] **dr clark:** Yes. So this is a great question.

[00:19:14] People, since we'd gotten some of this data about the antibodies, people were

[00:19:19] comparing it to the T that vaccine, and you're getting the T that vaccine in the third trimester.

[00:19:23] Why? Because that's the best chance that around 28 to 32 weeks or so, if you get the vaccine for the T that booster that the antibodies cross, the placenta,

[00:19:31] get to baby and help protect the baby from whooping, cough, or pertussis, once it's born. We're not getting the tea, that booster to protect mom.

[00:19:40] We aren't doing it to protect baby. This is completely different than the COVID vaccine. The COVID vaccine is given primarily to protect mom. What we know now about the antibodies is just a bonus. If we don't have a protected mom, You're not going to have a protective pregnancy. So that's why there is no trimester specific recommendation on when to get the COVID vaccine.

[00:20:03] Now, if you are in the first trimester and you are at increased risk of exposure, get the vaccine. If you're not, because you don't live in a household with individuals that are going to increase your risk, or you don't work outside of the home and you're

[00:20:15] able to socially distance, and you're not getting exposed in your, or your risk of exposure is low, then you may decide, okay.

[00:20:21] May decide. I want to wait until the sec,

[00:20:22] I'm out in the first trimester and get into the second trimester and that's fine too, but there's nothing, we don't know any specific data that says you need to take it at this trimester versus this. And we don't know that, but we do know that it's to protect mom first and foremost.

[00:20:35] Got it.

[00:20:36] **SARAH K:** Now let's say like the vaccine is now available to me and I'm in my third trimester and I want to get the vaccine. Does the vaccine cross the placental barrier to help my baby?

[00:20:49] **dr clark:** Yeah. So the whole thing about getting backseat with the vaccine and pregnancy

[00:20:53] is that we have had studies where we have found the COVID specific antibodies in the cord blood.

[00:20:59] And if you have COVID specific antibodies in cord blood from after vaccination and pregnancy, then the baby does have those antibodies. Now we don't know how protective. Those antibodies are for the neonates or how long they're protective, but the baby is getting antibodies to send a rate. We just don't have that data yet, but it's very reassuring that we are seeing the antibodies in the cord blood.

[00:21:19] To answer your question. Yeah, it does. It is reassuring. It's reassuring. No

[00:21:23] **SARAH K:** one. This is

[00:21:24] in the,

[00:21:24] in the

[00:21:25] in the vein of antibodies

[00:21:27] so I'm a mom and

[00:21:29] like I, obviously, I think w

[00:21:31] I'm pretty sure that if I have, if I, either, if I've had COVID or I've had the vaccine, I am producing antibodies, we're not sure if those are actually protective antibodies,

[00:21:44] **dr clark:** if you've had COVID

[00:21:45] **SARAH K:** or

[00:21:46] or the vaccine.

[00:21:48] **dr clark:** Okay. So yeah, my patients, Jason, so yeah, so one thing we have seen is, and there was a recent study that showed that after vaccination, during lactation antibodies, COVID specific antibodies are found in breast milk. Now, the thing about antibodies in breast milk is this.

[00:22:05] The primarily

[00:22:06] responsible antibodies for passive immunity during breastfeeding in general are IGA antibodies. And the reason why those are important is because they can withstand whatever degradation might occur in the GI system of the neonates after consuming the breast milk. Okay. This study showed that we have increased

[00:22:21] antibodies.

[00:22:22] In breast milk, but they were primarily IgG antibodies. Now the IgG antibodies are what we

[00:22:27] specifically see when vaccinated vaccination occurs in pregnancy. So we don't know the significance of that. Does that mean these IgG antibodies are not, are going to get broken down in the gut.

[00:22:35] Because they're not IGA. So we did see a little bit of an increase, but we also

[00:22:39] saw that the LGN antibodies are increased somewhat, but not as much as the IGA IDG. So we don't know the significance of that, but I will say, listen, it's not going to hurt getting vaccinated in pregnancy or sorry. In lactation.

[00:22:50] The likelihood is that there are some antibodies getting to the baby. Again, we don't know how, if they get to the baby, how protected they are

[00:22:57] they are, or for how long.

[00:22:58] **SARAH K:** But at least the good thing

[00:22:59] is now you're vaccinated and you're not. Yes,

[00:23:04] **dr clark:** exactly. Protecting mom. I protected mom protects Fady period.

[00:23:08] **SARAH K:** Yeah. That's

[00:23:09] which I feel like is that's enough for me.

[00:23:11] Exactly. Okay. So what are

[00:23:15] like some of the risks of getting the vaccine in your opinion?

[00:23:19] **dr clark:** We do know the side effects and we do know that women in general have more side effects than males and that's, and non-pregnant, we don't, we do know that we don't really have the data about pregnancy and side effects just yet, but we can assume that pregnant or not, that you're, you.

[00:23:33] You might be expected experiencing more side effects with those are the ones that you typically see with

[00:23:37] vaccines in general fever, headache, chills, flu like symptoms, myalgias or muscle pain. So

[00:23:43] those are the main things they have done studies on anaphylaxis in the general population. And the risk of anaphylaxis is actually really low.

[00:23:49] But I, and there are no data on. If you're in this trimester versus this, the side effects are increased by this. We don't have any of that.

[00:23:56] One of the things that I have heard is if I get into the first trimester, what do I do? If I have a fever, do you have a fever take Tylenol?

[00:24:00] It's not going to affect your response to the vaccine. Okay. So that's one thing to consider as well. If you do get the vaccine in the second, in the first trimester.

[00:24:07] But you can take Tylenol and no matter when you get the vaccine

[00:24:09] but you always worry about having a high fever in the first trimester.

[00:24:14] I have not seen any reports that you're getting. People are getting a very high fever in general.

[00:24:18] But if you do develop a low grade fever, you can take Tylenol in any trimester of pregnancy. Okay.

[00:24:24] **SARAH K:** That's good to know. All right. So they're not in general, not a lot of risks here to consider. Yeah, I

[00:24:30] **dr clark:** mean, but again, we don't have the safety data.

[00:24:33] All we know is what we're seeing through the safe and there's, and

[00:24:36] that ACP came out on March 1st with a group with some great tables.

[00:24:40] And you can put that you should put that in a link in your notes as well

[00:24:43] to have access to that, because that kind of breaks everything down. As far as what side effects were being experienced.

[00:24:48] Perfect. I will do that.

[00:24:49] **SARAH K:** Okay. So the last thing I wanted to talk about is the J and J vaccine, because

[00:24:55] so yeah, just, if you want to talk a little bit about the difference between the J and J vaccine and then

[00:25:00] what happened.

[00:25:03] **dr clark:** What do you mean? Like the differences as far as

[00:25:05] cause it's,

[00:25:05] **SARAH K:** It's not an MRN.

[00:25:07] It's the live back pain. Yes.

[00:25:09] **dr clark:** So let's talk about MNA. So Pfizer and Medina are M RNA vaccines. How do they work? Am RNA?

[00:25:16] It

[00:25:17] gives the it's called messenger RNA. It codes for the spike protein for the SARS Coby too.

[00:25:24] In the vaccine. So basically what they did is they took the message.

[00:25:28] From the messenger RNA, it made it into messenger RNA for the spike protein.

[00:25:31] They put it in a lipid bubble. That's where the vaccine comes from. It gets injected into

[00:25:35] the body's host cells and the immediate area where it receives the vaccine takes in that. Mr. M RNA, not into the nucleus of the cell. That's where the DNA is. That's not where the MRN goes. Your DNA is not altered, but it goes into the other aspects of the cell that makes the body produce the spike protein.

[00:25:51] Once the body sees. That spike protein. It's

[00:25:54] yo, that's not my body. I'm going to produce antibodies to get rid of it. So then that's where the immune response comes in and that's how vaccines work your body says. I don't like this spike protein. I'm going to develop antibodies to the Sprite. Protein.

[00:26:05] Then it happens. And then if you get exposed to the SARS Coby too, in the future, that's exactly what happens. Your antibody response now knows what it looks like. And as soon as it sees it, it's going to attack. So that's an MRD vaccines, the

[00:26:18] J and J vaccine, and also estrogen AstraZeneca vaccine in Europe.

[00:26:21] I'm not going to belabor that because it's not here in the U S but the J and J vaccine has an ad. No virus vector. So basically there are several viruses that we have used since the 1970s called viral vectors. They have been altered a little bit to where they're not causing active disease. And the,

[00:26:36] some of the examples that have been using used for

[00:26:39] viral vectors vaccines would be the end, no virus, which is what

[00:26:42] J and I think measles was used as one.

[00:26:43] And then there's vaccinium is another virus. So they use these viruses. They alter them a little bit, but they make it to where these viruses code for the spike protein. So the Edna virus also codes for the spike protein. So the ad no virus gets injected into your body. It two codes for the spike protein, the same way the MRNs does.

[00:27:02] It's just put into your body in a different way, then your antibodies are made and then that's how the vaccine works. So that's the difference basically between the MRN vaccine, Pfizer Medina and the J and J vaccine, which is an ad, no viral vector vaccine. Got it. Okay.

[00:27:19] **SARAH K:** And does that have anything to do with the way

[00:27:22] with

[00:27:22] the, what it was?

[00:27:23] So I think

[00:27:24] six people got like deep was a DPT. Is that right?

[00:27:29] **dr clark:** No.

[00:27:29] Okay. So basically what happened with the

[00:27:32] the JJ vaccine? So between, I think it was March 19th and April 12th or something like that, somewhere around there, they saw that six. Individuals developed three rural venous sinus thrombosis, which is a blood clot and the venous sinus system of the brain along with low platelets.

[00:27:51] So a CBST. Does happen, but it usually happens alone. It doesn't usually happen with low platelets because those are

[00:27:58] contradictory. You have a clot from the CDs in the CST, and then you have low platelets, which are anti-clotting if that makes sense. So that was, that combination is very unusual.

[00:28:09] Very rare, but also very unusual. So when you saw six people getting it after the vaccine, that was what the red flag was. And then they were all in women. Okay. Now those were six cases. They all had the CST plus low platelets in the maternal trial. There were three CBST cases, but it was not with low platelets.

[00:28:27] Those platelets were normal. That's why it did not get flagged that because

[00:28:30] the risk of that was still below the general population risk. So even though this is

[00:28:35] very rare because it happened in six people.

[00:28:37] And,

[00:28:38] one with one vaccine and not compare to the other three other two, that's what caused the red flag.

[00:28:43] And again, it's out of

[00:28:44] out of an abundance of caution because this combination is very rare in general.

[00:28:48] But they did the right thing because they need to look at, make sure there's no other cases,

[00:28:52] try to see if there's any other cases, anywhere else. They need to try to figure out if it's just women.

[00:28:56] Why. Okay. So you need to look at that to see if there need to be any of the recommendations regarding the vaccine.

[00:29:03] If, and when they unpause it, if you will.

[00:29:05] They're doing their job and doing their due diligence to look into this and see if they can find any trends or any other information regarding this particular

[00:29:13] combination of the CST.

[00:29:14] Plus the low platelets with the J and J vaccine. Got

[00:29:16] **SARAH K:** it.

[00:29:17] And

[00:29:17] it was six out of

[00:29:19] 6 million, right?

[00:29:20] **dr clark:** Yeah. Yeah. So six out of 6 million.

[00:29:22] But you also have to, if you break it down, that was six out of 6.8 million cases, but that's all comers meaning all individuals, but then you break it down.

[00:29:31] These cases were six cases in women aged 20 to 50, or I think it was 18 to 48, maybe 18 to 48. So then you break it down even further. So that breaks it down. It makes it a little bit more

[00:29:41] Concerning when you look at it in women only in that age group, does that make sense? Yep. So that's when those statistics

[00:29:46] increased more and that's another reason why they decided to put

[00:29:50] **SARAH K:** and last question about

[00:29:52] were any of them pregnant?

[00:29:54] No

[00:29:54] **dr clark:** none were pregnant or none were pregnant or postpartum. Okay.

[00:29:59] **SARAH K:** Got it. And what do you think that

[00:30:02] what will it take on the research side to then say, okay, we're going to unpause J and J.

[00:30:08] **dr clark:** I,

[00:30:08] this is one of the things where I wish I knew more about vaccinations.

[00:30:12] I know enough to read what's out there and make a educated decision,

[00:30:16] a guesstimate, I don't know, because we never been in this situation before.

[00:30:20] Cause it is still under an EUA,

[00:30:21] it's not been FDA approved. So I don't know what it's going to take. I think they need to try what they're probably trying to do first and foremost is look for any other cases. They have to do that.

[00:30:31] First and foremost, then I need to look at whatever cases they can find.

[00:30:34] And see if there's

[00:30:35] any patterns of risk factors

[00:30:37] what did they do? And it's all in females, then that's going to be another thing to explore. They may, on the other hand, look and find other cases and see that it's not just in females and which would change things. So I,

[00:30:48] I think it's going to depend on what they find during this investigation process.

[00:30:52] **SARAH K:** Yeah. Now I just, I have

[00:30:54] a number of friends who have just gotten their JJ J and J vaccine who are obviously like see these headlines and get really nervous. So do you have any.

[00:31:03] Any thoughts for those people who are

[00:31:06] still in that?

[00:31:07] **dr clark:** Yeah, it's a two to three. They're telling you within two to three weeks

[00:31:09] to watch for signs of headache and things like that.

[00:31:12] Listen, if it was me, I'd be concerned too, even though the risk is so small, there was so small, but I understand because

[00:31:18] When something like this happens, it contributes to the next vaccine has an, a C it does. Yep.

[00:31:22] And I can't necessarily say it shouldn't because I, if I take my, my, my medical hat off

[00:31:28] I can understand that.

[00:31:29] Again, I will reiterate that the risk is still very low and I think it should give people. Some confidence, if anything, and how the system is working

[00:31:38] for the safety of these vaccines

[00:31:39] which I think is a silver lining in all this.

[00:31:41] I do think it will be un-paused

[00:31:43] probably without, after this other 10 days.

[00:31:45] That remains to be seen.

[00:31:46] But. Yeah. I think that if anybody has any concerns

[00:31:49] that it's okay to call your provider and talk to them about it.

[00:31:52] If your provider can't give you answers or have

[00:31:55] a, what I call a meaningful conversation with you

[00:31:58] then you gotta find somebody else that can, because

[00:32:01] you do want some reassurance from whoever's taking care of you.

[00:32:04] **SARAH K:** Totally. Yeah. I think like to all of this, like these are all questions that you should be able to ask your provider and feel comfortable that you're getting

[00:32:13] **dr clark:** that you're getting it right.

[00:32:14] Listen, we have a duty as medical care professionals, healthcare professionals to stay up to date on this.

[00:32:20] And it's a lot of work. Trust me, I'm looking every day, but I'm making a conscientious effort and we all should be because we have to be able to have these conversations with our patients no matter who they are. Yeah. So it does take work. So if you find that your provider is not able to have those conversations with you, then that might be concerning to me.

[00:32:37] Yeah,

[00:32:38] **SARAH K:** totally.

[00:32:39] Shannon, thank you so much for taking the time to help us decode all of this stuff.

[00:32:45] Really appreciate it.

[00:32:46] **dr clark:** Thank you for having me. I appreciate it.

[00:32:51] **INTRO:** Okay. That's all for today. If you like today's episode, please share it with a mom and friend and leave us a review. If you're pregnant, postpartum, or trying to conceive, you can download the Juna app completely free for seven days.

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