



**Betsy A. B. Greenleaf  
DO, FACOOG, MBA**

## Preventing Pre-Term Birth

### SUMMARY KEYWORDS

preterm birth, baby, preterm labor, pregnancy, child, risk, people, infections, cervix, weeks, healthy, gynecology, premature labor, labor, stress, mother, uterus, bit, put, preterm

00:00

Welcome to our session on preventing preterm birth. I'm Professor James Adams and with me today is Dr. Betsy Greenleaf, who is board certified in obstetrics gynecology, and Uro gynecology. That's it. Thanks so much for joining us today.

00:16

Ah, thank you so much for having me. It's such an honor to be here.

00:20

This is such an important topic. preterm birth is so common in the US. Can you explain a little bit first about your background and your experience working with pregnant women?

00:30

Sure. I'm trained in obstetrics and gynecology. So I went through a residency where I delivered tons and tons of babies and we saw a lot of preterm labor unfortunately, in the inner city where I did my some of my training, and then I, after I finished obstetrics and gynecology went on to do a fellowship, and Uro gynecology, which has been actually renamed female pelvic medicine and reconstructive surgery. So it gets a little further into some The other health conditions that can happen in the pelvis. So,



01:05

that's just a wonderful background. Um, can you tell us a little bit about how common preterm birth is and the severity of it?

01:12

Sure, you know, unfortunately, it is more common than we think. And then about 12% of all pregnancies in the United States will have preterm well ended a preterm birth, but out of those 12% 50% are actually caused by preterm labor. So we kind of have to look at the difference, what is preterm birth versus what a preterm labor So, obviously you can figure out some of it from the conversation in the terminology that we use that preterm birth is actually giving birth to a baby earlier than expected. Now, I find a lot of times with the general population, everybody thinks that their due date is like the date that they're supposed to give birth. And so a lot of times I talk to patients and we get their obstetrical history, I'll ask them, you know, it didn't happen. they ever had any preterm births. And you know, some people be like, Oh, I delivered a week early or delivered two weeks early. Well, the actual the definition for preterm birth is really, if if you're delivering under 36 weeks, so 37 to 42 weeks of pregnancy is considered normal, full term birth. So we don't get worried if it's like a week or two before your due date. But if it's like below 36 weeks, that's where we really get more concerned. And so then we talk about preterm labor is the act of the uterus is contracting but not just contracting because many people during their pregnancy will feel contractions and I know especially first time moms get very worried. Even as an obstetrician I when I went through my own pregnancy, and I started feeling those things. I got a little panicky, but you for it to actually be a preterm labor You actually have to have uterine contractions with the cervix dilating and changing over time. So that's actually more of a labor. So as you go on in your pregnancy, the uterus will start naturally contracting because it's kind of practicing and getting ready for delivery. So that's normal. But things things you want to look out. Really signs of preterm labor are not just, they're going to be regular contractions, a contraction is going to get a little bit more painful. They may be associated with a change in vaginal discharge, maybe especially if there's a bloody discharge. If there's a gush of fluid. There's some people think like, Oh, we did, I just peed myself which urinating and incontinence is very common during pregnancy, especially near the end because there's not a lot of room for that bladder with a big baby, you know, but baby's pushing down on it. But if there is a gush of fluid and there's vaginal discharge and there's more contractions or there's just cramping or anything, the The biggest message is some women just you don't know and you're worried. I've seen it happen many times where people are worried and they don't want to look stupid and they don't want to call their doctor or go to the emergency room where I've always tell patients, you rather be safe than sorry. There's no question that stupid rather, have you asked the questions and come in and get checked and it'd be nothing. Then you sit at home and be like, Oh, I'm afraid to ask and it turned out to be something. Okay,



04:31

so certainly 12% is a big number. And so, what are some of the major implications of preterm labor and a preterm birth both initially and longer term for the child's development?

04:45

So one of the problems that 70% of preterm births and in neonatal deaths, so, you know, that's very devastating to a family to a mother. And that's so neonate the neonatal time is coming within the first month of birth, and a majority of those can happen within the first week, that's the highest risk time is within the first week. And then what you have is the infant deaths go up with preterm birth, there's a 36% risk of infant deaths. And then there can be long term effects at 25 to 50% of those cases have long term neurological impairment in those children. So they can have developmental impairments. They can have neurological impairments, sometimes pre term delivery and pre term pregnant labor, preterm birth and preterm delivery can be associated with birth defects. So it's, in some ways is the chicken or the egg when it comes to what the child is going to be dealing with what that family is going to be dealing with. But in the families are not associated with birth defects. There can be also neurological developments and impairments that can happen with those effects. For the rest of their life.

06:02

And so certainly the age of preterm birth, if it's 35 weeks versus 30 weeks, can you talk about the impact of that? earlier is presumably much worse.

06:14

Yeah, so probably the worst time and even though you know, it's 2020, we, we still it's tough because with, we don't really know the causes. So that's part part of the big thing is that there's not 100% we kind of have patterns on what can cause in this, but we don't have 100%. Like, this is what causes and we don't have 100% testing on like, well, we can test you for preterm labor. There are some tests that help predict it, but one of the problems is all right. So anything before 20 weeks of pregnancy is considered more of a miscarriage and that's in medical terms. We call it a spontaneous abortion. Abortion doesn't mean the word that we use Think of where someone's having a pregnancy removed, it just means that a pregnancy is passing. So under 20 weeks, there's really there's, we don't really have the ability to save those, those babies that they're just not developed enough. So after 20 weeks, it's actually considered a preterm birth and then, you know, gets a little funky around that 20 week time of person comes in during that actual time. I have seen it's very, very rare. Of course, the younger the babies are, the harder it is for them to be saved because they're not developed, their lungs are not developed. So it makes it under more risk for infections, but I have seen people give birth to 20 weekers. And those babies are been able to make it when you're reaching closer to the 32 weeks. One of the things that we get concerned with is lung development, because lung development happens



much later in the pregnancy like 32 weeks and beyond. So if someone's coming in and preterm labor, often what will be given to the mother is will usually give steroids to the mother. And the reason why the steroids are given is it helps the baby's lungs to develop and therefore helps to, you know, give that baby a better chance of surviving, you know, sometimes to they, you know, they'll do every thing, if you are a preterm labor, they do everything to kind of keep you pregnant as long as you can, so that we can get that baby, you know, basically as developed as possible, as much as possible, beyond 34 weeks, so I have to say, there's usually at that point in time, they usually just say, well, there's no there really no more advantage of trying to get the baby like from 34 weeks to longer. So we kind of let you know, we try to do as much as we can to, you know, take the stress off the mom. But if labor's progressing, they don't usually try to stop it if it's beyond 34 weeks of pregnancy.

09:02

Okay, great. My wife worked as a neonatal nurse for many years and she certainly had a lot of experience working with little 234 pound babies. Talk a little bit about how long a child might spend in the NICU, neonatal intensive care unit after birth if they've been born prematurely.

09:22

Yeah. So you know, it's even though your child may be born early and has had a birth date. In the medical community, we treat that baby like it's still in the in the womb because it still has to go through the developmental processes. So even though it was born, say it like 34 weeks, it's not going to, you know, it's going to take like six weeks before it's going to start looking and acting like a newborn at 40 weeks. So the idea is in the NICU is you want to kind of keep that baby. You know, they're going to put the baby in an incubator. They're going to be monitoring the The vital signs there's going to be, you know, that's where it gets a little hard for the mothers because a baby that young may not breastfeed so but then can supplement the baby with your own milk or sometimes they have, there's, there's options for donated milk, there's options for formulas that they're going to feed the baby, but they're going to try to get the baby to a point where it was born during its normal time that it can be fine on its own. So it's all going to be individual based on that child and how that child is doing. But, you know, the biggest risks of just, you know, being born that earlier, the biggest one is infection, and lung development. You know, interesting enough that the highest rates of infant mortality are babies that are born under and in medical terms we go by grams, so it's under 2500 grams, which is around about five pounds. So you know, they want to try to get those Babies up to at least five, you know, five pounds. But you know, it all depends on what's going on with that child.

11:06

So basically, the more premature The longer the family could expect to see the child in that NICU. Yeah, yeah, the terms of later development. Some children born prematurely may



develop normally, but many of them are at higher risk of a variety of conditions. Can you talk a little bit about that?

11:24

Yeah, so sometimes, you know, it's tough because you might not see it initially. But as that baby gets older, we know that 25 to 50% of those babies will have long term neurological impairment. So they might not reach the milestones that we're expecting to see in a baby that was born healthy and full term. So I think the really important thing with that is to keep up with those pediatrician visits because they have charts like okay, the baby should be doing this at this age. You know, the baby should be like lifting his head or baby should be sitting up or the child should be walking or the I should be talking. So all along though those those steps, we have milestones that they're expected to reach. And if they're not reaching it, you know, getting early medical care with the pediatrician or even with physical therapists when it comes to like with occupational therapists, when it comes to getting those children walking or speech therapists work with them to get them talking. And what's nice is, you know, your pediatrician is probably your best resource for that. But also many towns, part of the school system is they're linked into these programs. So you can get a child in, you know, you can contact your town and be like, you know, if you have a child that's a little bit developmentally, developmentally delayed, you can get them connected in with the town right away so that by the time they get to school, the school is prepared. So there's so many and there's so many social services that are available for this. Yeah, I think another great you know what I love for preterm labor preterm delivery is the March of Dimes. The March of Dimes is an organization that's basically dedicated to dealing with preterm babies. And they have so many resources and education online. They're really a wonderful organization.

13:18

Yeah, so I think that's great for parents to be aware that these children born prematurely are somewhat creative risk and just need some extra attention extra monitoring, they may need some extra services. Those services are out there for them. Right. Um, can you talk a little bit about what we know and don't know about the causes of preterm labor and preterm birth?

13:40

Sure. So, you know, it's interesting that 30% of preterm labor will spontaneously resolve. And out of all the women that actually goes from preterm that have preterm labor, 50% of them that are hospitalized will actually deliver at term. So you know, Just because this is happening, you know, it's you know, it's scary, it's scary to think about, you don't want to be the person that goes through that. But you know, if you are, you know, they were prepared in the hospitals, you know, they have the knowledge and the majority of the cases actually will spontaneously resolve. So, they do know that there are some risk factors, even though we don't know at



absolute hundred percent cause and I think maybe because of the causes can be many. If you've already had a premature baby in the past, then you're, that's definitely a risk that you can have another premature baby. Women that are pregnant with multiple pregnancies, twins, triplets, or more, they're at much higher risk for developing prematurely and if there's any kind of problems with the uterus or the cervix, whether it's you've had a shortened cervix in the past or if you have had procedures done on the cervix or procedures done to your uterus. Prior to pregnancy, that puts you at risk. So you know, we talk a lot about cervical length and cervical length is a sign that if the cervical length kind of shrinks down, it's a sign that you're going into labor. So a lot of people go well, what is the cervix, we know that the cervix is where you get your pap smears. But it's basically the opening of the uterus and a normal cervix without being in labor is approximately three to four centimeters long. And what happens during pregnancy between labor in general is that over time, that cervix will start shrinking and shrinking and shrinking until it becomes paper thin. And then not only does it thin out, but then it'll start to dilate and open. So that's what happened normally during labor. So sometimes actually getting ultrasounds to measure the cervical length can tell if a patient is going into premature labor. And so that's something that could be followed. Other things that put people at risk for premature labor is actually underweight or overweight during pregnancy. So these are things that you can really try to work on. You know, there's tons of things you can work on before pregnancy. If you're a person who's planning pregnancy, if you're someone who kind of oops, just found out that you're pregnant and wasn't really planning it, these are things you can work on. As soon as you find out that you're pregnant, though, pregnancy is not the time to diet. So if you find that you're overweight, then there are healthy ways to kind of keep your weight stable or slowly decrease it but you don't want to be doing some crash diet during pregnancy. Having a family history of premature labor also put you at risk. So you know, that's something that's important to know if you know of, you know, your mother, grandmother, sisters, aunts, if they've had issues with premature labor that can put you at risk of getting pregnant too soon after a previous baby. We know that that puts you at risk. So ideally, you want 18 months between the birth of one baby to the pregnancy to your next pregnancy. So, we know that that doesn't always happen, but that does put you out a little higher risk is just that the body hasn't fully recovered from the first pregnancy. And there are some medical conditions that can put you at risk some of the connective tissue disorders, there's one called Ehlers Danlos Syndrome, like scleroderma. Some of the arthritis is those can all put you at risk. Medical conditions such as diabetes puts you at a higher risk, high blood pressure. We also know depression puts patients at a higher risk for preterm labor. So you know, beyond depression, and we can also look at just stress in general. I mean, for especially for first time moms, it's kind of difficult, you know, this everything is new. You don't know what to expect, even though there's tons of books out there. It's still kind of a scary time. But you want to do whatever you can just kind of remain calm because those hormones of stress can actually increase inflammation and we know that



inflammation can trigger preterm labor, infections, actually sexually transmitted infections or badgal. infections can also put you at risk for recur pajetta, his risk for preterm labor. And

18:28

also just I think the biggest thing that is preventable is getting prenatal care as soon as possible, because they know that either no prenatal care or getting late prenatal care increases the risk of delivering early. So that's one of the things that you can do to prevent this from happening is make sure that you keep up with your doctor's visits, see the gynecologist and along with that, and they don't really Use this as a cause for preterm labor, but you want to be as healthy as you can be. And your diet is very important. So making sure that you're eating healthy foods, staying away from inflammatory foods like sugars. And in some people, gluten can be very inflammatory. Also, in some people, dairy can be very inflammatory. And you've got to kind of like balance it out. But I think sugars, if you have to give up something would be the best thing to try to put off eating and just eating lots of fruits and vegetables during this time to eat like a nice, well rounded.

19:36

You know, good well rounded nutrition during this time.

19:40

Sure, sure. And taking that comprehensive prenatal as well to fill in any gaps in nutrition. Yeah, so thanks. So it's certainly a lot of different risk factors that can relate to it. But as you point out, some of them are preventable. And so there are some things that we can do to try to reduce that risk.

19:58

Now, if there's one thing Interesting thing that I always found fascinating was not only do you think about doing your prenatal care, but this is the time you don't want to skip out on your dentist visits, because they know that dental disease, periodontist gingivitis having a bad tooth can actually throw you into preterm labor. And it's something that was interesting because it wasn't very well known when I went through my training and since then there's been tons of articles on it. But interesting enough, when I was in residency, we had a woman who came in with like a rotten molar, like just really had a bad cavity was terrible. She was in preterm labor. And at that time, it was a little bit difficult for us to get a dentist to come into the hospital to take care of her and because she was in preterm labor, we couldn't take her to a dentist. So she was kind of stuck. And you know, once we actually got a dentist into the hospital and they removed that, that disease tooth. Her service which had dilated and are serving her uterus, which had



been contracting, everything stopped, and went back to normal. And so her preterm labor reversed and we were actually able to send her home. And she was able to finish up her pregnancy normally. So you know, that's something to you know, everyone thinks about going to the gynecologist, but the dentist is very, very important to be going to during this time,

21:27

it's amazing story. And I think it just shows how your body's interconnected. And dental infection or any type of infection could be a big problem and a big concern. So, as you say, just trying to stay healthy. I'm trying to keep that pregnancy as close to that 37 to 40 weeks as possible. That's so important. So can you talk a little bit about if a child infant is born prematurely said there are, of course the hope that will develop normally still, but the earlier they're born, the bigger the concern is, so One of the things that parents can do, of course, starting out with loving their child accepting this they are, but trying to continue to help them as much as possible.

22:09

I think you know, one of the things is, that's a very stressful time for a family. So trying to keep up with your own mental sanity is going to be the biggest thing because if you're, if you're kind of worn out and stressed out, you're not going to be able to be there for the your child the way your child needs it. So you know, take advantage of if your baby's in the ICU, definitely go and visit the baby but don't stay there 24 hours if you're having the ability to go home, because you need to, you need your sleep you need to eat you need to be able to be there, you know, whether you know it or not your your child can sense you know, we all have the sixth sense so the baby can sense when things are going and when things are stressful. So you want to be it as healthy as you possibly can be as calm as you possibly can be. And then you know When you get the child home I mean that's also you know, something you want to try to carry on at home. I tell any, any newborn any new mother is that you know you want to sleep when the baby's sleeping you know a lot of people try to use that time to get things done now there's there's time to get things done in the future you sleep on the baby sleeping. But the biggest thing is your child's at more risk for infection than a newborn. But newborns just a healthy newborn full term newborn is also at risk. So you really want to limit the number of people that are coming into the house. I know this is the time that everybody wants to be like all let's go see the newborn baby. Well, you know, you're exposing that child to so many more diseases and infections and right now we have coronavirus so it's a little bit easier to keep people away. You know, you can just go on zoom and show the baby but you really want to limit the number of visitors that are seeing and in handling that child Also you want to make sure that youth is the anyone who's handling the child is washing their hands. When I remember when I had my little ones, we used to keep a giant thing of hand sanitizer near the front door. And you know, you came in the front door, you had to, you know, sanitize your hands or you had to go wash your



hands before handling the baby. And then also, if anybody is sick you on if you're known to be sick, you want to keep them away from that child. And then anybody also who has you know, maybe there's grandparents or other relatives or friends that want to come see the baby, you want to make sure that they're up to date on their vaccines, except especially one called t dahp, which is the tetanus diphtheria, and pertussis, which is whooping cough, and that can put the baby at risk. And so you know, we know that the preterm babies are much higher risk than a full term baby. So those you know with dealing with visitors, also you don't want to try to take the babies out too crowded. Places, you know, yes, you might want to get out into the mall or grocery stores. But you know, the more people that are around, the more that they can pick things up. So, you know, unfortunately, if you're delivering during the winter, you probably want to stay a little house down during the winter. And then once the weather's nice in the spring, you get out even you know, get outside, but you want to try to keep them out the newborn babies out of crowded places and enclosed places. And then just other things that you would normally do for a baby. A newborn is you want to make sure they're sleeping on their back. You know, you don't want to you don't need all these blank. You don't need blankets or toys or the bumpers around the sides because you don't want anything that the baby can suffocate on. I know there's a lot of out there about sharing a bed with a baby. From a medical standpoint, I'm going to say that it's not the best idea because there have been cases where parents have fallen asleep and rolled on top of the child. Try and killed them. So it's better to have the baby sleeping in its own separate area. You know, you can do your bonding other ways, you know other than sleeping. So you know, and just keeping up with your nutrition keeping up because you're neutral. If you're breastfeeding, your nutrition is going to feed the baby. So you want to make sure you're still continue to eat healthy. And of course, I mean through pregnancy after pregnancy, avoiding smoking, drinking any kind of drugs, because those things can affect not only you but also the baby.

26:32

That's very good point. So again, trying to keep yourself as healthy as possible. You can keep your baby as healthy as possible. I think it's insightful to for parents to realize that preterm births are one of the biggest expenses for hospitals and each preterm birth costs, I believe, have ordered 50 to \$100,000. And in the US, we spend about \$25 billion a year on preterm birth, and so anything we can do to reduce those costs. That just shows how major the medical care is that some of these children need early on. So trying to prevent it by staying as healthy as possible during pregnancy, following all the different advice you gave on regular prenatal checkups, dental visits, trying to stay healthy, eating well, keeping good diet, those are all very important things that they can do, to try to help prevent preterm birth and have a healthy baby. So thank you very much. You've given us a lot of information and a lot of insight. We really appreciate it. Any parting words of wisdom you'd like to give to new mothers? You know,



27:40

I think that the biggest thing is that, you know, things are going to happen just in life. And, you know, unfortunately for somebody who goes through preterm labor and preterm birth, you know, it's hard not to be stressed out about this and it's hard not to, you know, kind of worry, but the best thing you can do for yourself is to try to find ways to calm yourself down, whether it's listening to guided meditation or music, or because really we know that the effects of stress on the body can do so many different things not only to our own house, but to the baby, but can worse than a preterm labor. So really just kind of find your own ways to kind of go with the flow and figure out how to reduce stress and read a book, you know, whatever you can do, but not, you know, not focus on it and, you know, things will work out the way they're supposed to. So and just, you know, take every day the way you know, as it is.

28:42

Great. Well, thanks so much.

28:45

Thank you so much for having me.

