



Indian Health Service

Division of Diabetes Treatment and Prevention

Advancements in Diabetes Seminar Implementing a Diabetes in Pregnancy Program

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Karen Bachman-Carter:

I am a Diabetes in Pregnancy Public Health Nutritionist at Northern Navajo Medical Center in Shiprock, New Mexico, and I actually just joined this fantastic Diabetes in Pregnancy team in late December. So this is an area focus for me that I'm really passionate about, the preconception, prenatal, post-partum: opportunities to intervene both for the immediate health of mom and baby but I think an intervention that could have a long-term benefit in generations to come and breaking that cycle of diabetes and obesity. So, I'm happy to be here with Shelley today and we are trying to share as much as we can as far as practical pearls that you can take home and implement at your site. And with that, I'll turn it over to Shelley for introductions.

Shelley Thorkelson:

Hello! This is Shelley Thorkelson, Nurse Midwife, CDE, here at Shiprock. I've been here a little over 20 years. My background is that I started here as a labor and delivery nurse at night when I first came to Shiprock from California all those years ago. I went back to midwifery school a couple years into my tenure here and then eventually dedicated my professional life to diabetes.

My father was Native and died from diabetes at about three years older than I am right now, and I dedicated my life to taking care of Native families so that they wouldn't have to bury a father as young as we did. I am a voting member of the Chickasaw Tribe of Oklahoma but I also have Choctaw heritage as well. But I guess my family had to choose a tribe when I was a baby for voting purposes so I identify as Chickasaw. But I don't look like twisty wind so I live here and take care of Navajo people in honor of his spirit.

So, today we're going to be talking to you about how to take care of "sweet moms" because that's what I call them. We're going to start off today with Karen, talking about a little about our program and some special food interventions and stuff like that and then I'll get into some of the more nitty-gritty issues with medications and things like that. But mostly, we're just here to give you all the pearls and wisdom that we can possibly do to help you take care of "sweet moms" too. So, hopefully we can help you today. And with that, we'll get Karen started on our first few slides.

Karen Bachman-Carter:

Okay. Thank you, Shelley. Objectives of the session today is to present diagnostic criteria for the diagnosis of preexisting diabetes and gestational diabetes, and sharing the Shiprock Service Unit protocols for gestational diabetes and diabetes screening and pregnancy, and then presenting pearls of



therapeutic interventions in diabetic pregnancy and updating on the HIPP. We call it HIPP, Hyperglycemia in Pregnancy Program, our clinic and resources and then touching on our ideas for preconception goals.

First slide, the old protocol used at Northern Navajo as some of you may remember, the old two-step model, I know that was the test I given 30 years ago when I was pregnant. And moving on to -- so HIPP, Hyperglycemia in Pregnancy Clinic, Shelley really started that here. Coming from California, she knew there was evidence-based way to deal with diabetes in pregnancy and improve the clinical outcomes. When she arrived at Northern Navajo Medical Center, she saw inconsistent care, kind of based on the training that folks had when they're coming out at residency programs. She saw LGA, Large for Gestational Age rate of about 45% in patients whose pregnancies were complicated by diabetes. She saw a long lag time between diagnosis to actual intervention. And as I mentioned, the intervention wasn't consistent, unified, coordinated.

So, Northern Navajo was fortunate to have Shelley begin this program as the Case Manager, and she really has been the heart and soul of creating and helping this program evolve over the years. I'll take you through a couple of slides of how that happened. And fast forwarding to 2011, we went from the two-step to the one-step sort of testing program, and we'll go through all of that with you.

I just wanted to highlight one of the clinical outcomes that we've seen an improvement. And looking at the LGA, Large for Gestational Age rates for Northern Navajo, again as Shelley said, when she started, it was approaching at 45%. And we kind of had a natural experiment. We were heading down and then Shelley left us for a few years.

And then unfortunately we saw the rate, it's kind of creeping back up. We wouldn't have done that intentionally but when we looked at the data, that's what we found. And with Shelley coming back, now we're seeing the rate dropping much lower and being pretty consistent, and she's still not satisfied, I know she's still trying to get us even lower. But just to give you one of the examples of the improvement in clinical outcomes that we're seeing by consistently implementing this evidence-based program.

When I mentioned about 2011 going to the one-step methodology for screening, every first prenatal visit, we get an A1C. And then depending on the results of that A1C, you can see the flow of less than 5.7 -- and I won't go in a great deal of detail. You also have this as a handout that you can download, but it shows less than 5.7, normal, go on and screen again with the two-hour glucose tolerance test at 24 to 28 weeks. If 5.7 to 6.4, go through the steps here, two-hour glucose tolerance test and then -- and we have a special -- we have to let the lab know this is for prenatal glucose tolerance test, different cutoffs, different procedures than just the regular type 2 diabetes testing.

And if they are first checking the fasting, and depending on that level, if it's less than 92, go on and get the 75-gram glucose load and perform the glucose tolerance test. And again, depending on results, normal, one to three out one -- if only one of the values is abnormal then diagnosis, gestational diabetes. Again, if the fasting is greater than or equal to 92, you can stop the test right there, you don't have to drink that nasty drink and go on diagnose GDM. If the fasting is greater than 126, it's type 2 diabetes. If the initial A1C was greater than or equal to 6.5, have a lab test to confirm and then diagnosis of type 2 diabetes. Shelley often sees people that very same day that the diagnosis is made, so much better presentation to the diabetes case manager. And I've had some providers ask, "Why do we take the time and expense of doing that initial A1C?" It's because that high glucose early in the pregnancy --

Shelley Thorkelson:

First trimester.

Karen Bachman-Carter:

Right. In that first trimester when the organs are developing, it's so critically important to normal brain and heart development, other potential malformations, and so we want to quickly identify if there are elevated A1Cs and quickly intervene. I'll just give a hint of future comments but as we're seeing those high A1Cs at the first prenatal visit, we're identifying the need to go even preconception, and try to get those A1Cs in and good -- like less than 6%, good control before pregnancy, because we want to prevent those malformations.

So this just goes into a little bit more detail about that two-hour glucose tolerance test. I'm not going to read through this for you but it's here for your reference, pretty much what we saw on that flow sheet, just a little more detail.

Shelley Thorkelson:

Different values.

Karen Bachman-Carter:

Yeah. As you will notice, these are definitely different values, diagnostic values than the regular glucose tolerance test for non-pregnant patients.

This is the 24 to 28-week gestational diabetes screening. Again, 75-gram load, a patient comes in fasting. Again, depending on if fasting is greater than or equal to 92, stop the test, it's gestational diabetes. If it's less than 92, go ahead and give the solution and then perform the test. And again, one to two values abnormal, it's GDM. If all values are normal then they're good to go, normal.

So, a bit about why we use the term "HIPPP" and I think this really came from Shelley, she wanted something really positive. And when the ladies go to the front desk and say, "I'd like to make an appointment," they don't have to say, "diabetes." They can say, "I'd like to make an appointment for the HIPPP Clinic." And it has a positive connotation, and I think really it spills over into the entire clinic. The clinic is a fun, happy place. We have one of our doctors sing sort of and --

Shelley Thorkelson: Badly.

Karen Bachman-Carter:

But it's a place where patients can feel comfortable. They can tell us anything. They're not going to be shamed. We're there to support them to be successful. This is a very happy time in their life and their families' life. So just the whole environment that's created as we carry out the clinic I think is kind of just using that term "HIPPP", that positive fun term kind of describes the whole clinic experience.

So what is Hyperglycemia in Pregnancy? What's it all about? Well, first, it's multidisciplinary. We'll get into a little more detail about exactly who's involved. And Shelley's really created this one-stop shopping where those providers go to the clinic and they're there for the patient. The patient doesn't have to go from department to department to see everyone. And it's really providing comprehensive prenatal, and diabetes care. If a mom has type 2 diabetes, her diabetes standards of care are met. There are frequent glucose assessments, downloading the glucometers and then insulin titration is needed. Again, it's patient-centered. We're there to meet the needs of the patient.

And on Navajo where we have difficulties for patients traveling to clinic or whatever barriers are, Shelley and the staff are flexible. When we see these various methods of communication, if a patient needs to call Shelley, we know where to text Shelley. Whatever it takes to communicate, what's going on with her, and be able to provide the assistance that the patient needs. That's what we work to do.

We don't make it convenient for us. We're trying to make it convenient for the patient. So you can see the list of physicians, nurse midwives, diabetes educators, dietitians, physical therapy, social work.

So, a typical prenatal visit in the HIPP Clinic, Shelley is really the core of that. She's the Nurse Case Manager, downloading the glucometers, reviewing those closely, looking at the fasting values, the postprandial values, seeing if titration needs to be done as far as medication, doing any antenatal monitoring that might need to be done. As a dietitian, I'm meeting with all of our patients during assessment and counseling and follow up, and I'll be getting into a little more detail about what I do later. The providers, the physician or nurse midwife of course is just taking care of all the routine and the comprehensive care that needs to be done. And any other lab test or specialty workouts that are needed, we either have it there or can refer out to a specialty center if we need to.

And of course case management and social work as needed. Case management always, but social work as needed. So, what are the Best Practices for care during pregnancy, and we have a strong motivational interviewing for framework that we work out of and so doing lots of self-care education and support. The home glucose monitoring is essential, and using the targets of less than 90, fasting, less than 130, one hour postprandial, and working towards having 80% of these values within the goal range.

And to do that, medical nutrition therapy, the diet, physical activity, and we have our physical therapy department for support, and our staff all reinforce the need for physical activity. The care is very coordinated. It's very collaborative. We're constantly huddling to discuss patient care, sharing information. Okay, again, very creative and doing what we need to do to meet the needs of our patients.

So, medical nutrition therapy, I'm looking at weight goals based on the preconception BMI and developing very individualized, nutritionally balanced meal plans. So we need to look at all the normal prenatal needs. Sometimes we have moms with multiple -- they have twins, and so doing all the normal prenatal care but also providing information about how to have optimal glycemic control. Of course limiting hypoglycemia, and more commonly, what we see is hyperglycemia, working to eliminate that, and preventing excessive weight loss or weight gain.

So, our GDM meal planning guidelines -- and I did -- in the chat box, include some references to sweetsuccessexpress.com or cdappsweetsuccess.org, and you can download detailed guidelines at those sites. Also, one of the best books I found is "Healthy You, Healthy Baby" by Susan Dopart, a registered dietitian. If you go to any of the Sweet Success trainings, you'll frequently see Susan there as one of the trainers. So you can get very detailed information at those sites. But just basically in our guidelines with patients, we have a carbohydrate focus looking at milk, starches, fruit, especially fruit juice and starchy vegetables.

Many people are surprised to find that -- they just think of sugar. In fact, I had a woman come in just yesterday, "I was just told my A1C is high but I don't eat sugar, how can that be?" So, just explaining the carb sources in various foods but still -- then we have the other extreme of patients and being afraid to eat hardly any carbs and say, "No. You need some of these foods that are providing fiber and vitamins and minerals." But at a minimum of about 175 to 180 grams of carb per day which works out to be about 12 carb servings per day. And then spreading that carbohydrate load over the day, three meals, three snacks, and having that bedtime snack, spacing the meals apart and no more than 10 hours between bedtime snack and morning breakfast.

The other thing we really mention, we use the glucometer download to see trends in either fasting values or one hour postprandial and if we're seeing after-breakfast trending high, that's the time when due to placental hormones, moms might be especially sensitive to carbohydrates. So we might be getting down to only one or two carb servings for breakfast. So we talk about that and give moms a heads up. It may not happen to her but if it does, it's expected, we know how to deal with it. The other

thing that I found that moms really like, I have a handout with sample snack ideas that include some protein and one carb serving, and our patients seem to really appreciate having some ideas of what would be a healthy appropriate snack and not just eating a carb all by itself.

So, initiating therapies, medical nutrition therapy, is the foundation for care, and in the literature, you might see up to 50% of patients could be managed just by MNT alone. In our particular population, we have a lot of moms with type 2 diabetes who might be coming to us with a very high preconception BMIs. And we're finding that our rate that can be managed only with MNT is on the lower end of that, most -- about half of our moms are going to need some kind of medication.

And we're seeing a change in our patient population with more and more type 2, in not only one pregnancy, they might be coming in with several pregnancies after they've developed type 2 diabetes, and they even have complications related to that type 2 diabetes. So, we're finding that we need to initiate medication support. Sometimes I find moms just really, really being careful with their carb intake, and I'm grateful that we have the medication that can give them support so that they can eat and have an adequate intake of food and not have their glucoses be out of control.

We also talk to moms about exercise. We know that regular exercise can really help lower the glucose levels. And in our log books that we use, I'll see moms who identify that for themselves that they'll see that maybe in one week they haven't exercised like they usually have and they notice their glucoses are going up. But we recommend at least like three nonconsecutive days a week, more than that is better. And we're finding even a 10 to 15-minute walk after meals really can make a difference in the glucose levels.

And then of course, insulin is really the gold standard for medication and preferred is a long-acting insulin BID with rapid-acting insulin analogue so Detemir and NPH Novolog are primarily what we're using, and with that, Shelley will give you some pearls of insulin titration.

Shelley Thorkelson:

Okay. So, let's talk about some medication. I want to start off this with a little midwife caveat. The thing that kind of drives my practice is that what I tried to do when I take care of these "sweet moms" -- really in the utmost importance is to preserve her birth story. I don't want diabetes to be the center of her birth story 20 years from now. And when she looks back on her birth story, I'm hoping that she looks back on the memory of her birth story and all of the providers that were involved in that, and she looks back on us with a smile. So I hope in your practices, when you're taking care of your "sweet moms", your mothers have that same memory, and that diabetes is not the center of their birth story. So if we can somehow make diabetes just something that she could take care of and not have to worry about, let's all please try to do that for these women, because it can be done but let's not make it a huge deal for her that she have to be afraid of.

Okay. So, pearls of insulin titration. So, when do we start insulin? Well we give MNT a little bit of a trial but let's remember where we all are, I know everybody that's on the call is probably in a very, very different demographic and a different place in the United States, but we happen to be on the Navajo Reservation, in a food desert. We have like -- I think what they tell me, 11 grocery stores serving 30,000 people. Now, somebody that lives in town probably would be appalled at that statistic but we literally are in a food desert out here.

So, I'm not going to preach some pretty plate and some beautiful food pyramid to somebody who literally does not have access to that kind of food. So I'm not going to beat somebody up -- well, that's just not how I roll anyway. But I'm not going to beat somebody up for not being able to meet some food prescription, or I'm not going to beat somebody up who literally can only afford to live off of someone's dollar menu. I am literally going to fix it with medication if she can't either socioeconomically, traditionally, or logistically do anything else but what she can do. So, let's just fix it with medication.

So if we're going to use insulin, what I'm going to do from a decision tree standpoint is I'm going to watch for trends in blood sugars. And a trend is not an isolated potluck at church or, "Oh my God, I have to eat that Twinkie or somebody is going down." No, that's an isolated day and we don't really care about that. But what we do care about is if there's a trend that's usually driven by either pancreatic function or placental hormone effects or whatever, and it's something that has reared its head and it's showing you that it's going to stay there, and that's usually two or three days of elevated blood sugars.

We watch fasting really closely because that's most predictive for baby outcomes. Fasting values tell you what happened all night long while mama was sleeping, and that's a long time to have an effect on a baby. So two to three days of those elevated fastings, and remember our fasting value, 60 to 89 is what we're shooting for. That's the most recent data from evidence that gives us the best baby outcomes. So we're going to look for two to three days of trends that are higher than 60 to 89, and we'd want to start insulin in the evening time to work all night long or a basal insulin like NPH or Detemir, depending on what you have on formulary. And then, we're looking for post-meal trends above targets too. So then, we want to start some meal time insulin for those.

Now, another thing is, if you have pretty okay numbers but then you have an ultrasound that is showing you that you have a fat baby in there, and the way that you can tell if you have a fat baby is if the baby's belly is measuring farther along than the baby's head. So you want that abdominal to head circumference ratio to be one to one because heads very rarely get fat but belly's do.

So, if your baby's head to abdominal circumference is one to one, in other words, they're both measuring the same gestational age, then you know that your glucose control is probably pretty okay. But if your baby's belly is kind of getting that kind of beer belly syndrome for a lack of a better way to describe it, then you know that even if your glucose control is not giving you a whole lot of trending but your baby's belly is fat? Because remember, blood glucose testing is only as good as momma is doing it. It's not a perfect animal, but a baby with a big old fat belly in there is telling you that the baby is getting overfed. Babies don't get fat by accident. So, if your baby is getting too fat but your glucose readings are all normal, maybe mom is missing the peak of her blood sugars. Give that woman some basal insulin, she's not going to bottom out, she's pregnant, she's insulin resistant. Help this baby, the baby is trusting us to look at all of the assessment parameters.

So if you have a fat kid in there, fix mom's hyperglycemia even if she's not showing you that on her glucose readouts because look at her A1C, look at some other assessment parameters because you have a baby with a fat belly. That is an assessment parameter. So that's another way to tell you, you need to start some insulin even if it's just basal insulin to cover her 24/7.

Okay let's see what this next slide is. Okay, this is one of my very favorite pictures and if anybody wants this, I didn't put this on our handouts but I have this particular picture laminated all over the clinics and I whip this off the wall and show it to moms and -- let me grab this little pointer thing and I will use this and show moms. Okay, I'm starting your insulin right here but insulin requirements from the pancreas changes throughout the entire pregnancy as much as 400%. So your dose of insulin today will naturally increase overtime so as we increase your doses, do not feel like your flunking momma because it would naturally increase if your pancreas could make enough insulin so don't feel like you're doing anything wrong as we increase your doses.

So I use this picture all the time to teach moms about insulin changes during pregnancies so they always know that more insulin is not a bad thing, it's normal if we're changing doses. So that's what I use this picture for all the time when I'm talking to a mom about titrating doses and the frequency that we do it often. And I teach them how to change their own doses because I want to give them their power back. They often feel so powerless when we're doing so many things. And so any time I can have the opportunity to give a mom back her power, I totally do that.

Yeah, that's what -- so twice weekly we evaluations like which also corresponds with antenatal testing in moms who require insulin is also the perfect way to also do that frequent evaluation of their blood sugars. We don't want to titrate or change insulin doses any more often than about 72 hours because insulin changing -- insulin dose changing any more often than that, you really -- if you do it more often than that, then your dose changing can be more frequent that you can really change or figure out the effects of those dose changes and those changes can sneak up on you and it can cause what we call stacking to where you get all those changes too frequent and you could kind of shoot yourself in the foot and cause yourself some hypoglycemia and you don't really know which dose change caused it. So you really don't want to do it anymore than every 72 hours.

All right, so let's go to the best -- kind of the best way for those really stubborn women, and that is our insulin pump and I'm going to show you the insulin pumps that we use here. The ideal candidate for an insulin -- and all the insulin pumps is just an insulin drip, it's not anything too exciting other than it does break through those really stubborn glycemic control patients. And what we do here is, this is for the high dose user. That would be your ideal candidate. The person who is really on a hundred units or more per meal or the patient who is a dedicated self-blood glucose checker and someone who you are just repeatedly titrating insulin and you're just really not getting anywhere in improving her control. And let's say you're getting some hypos at some weird times and you're moving around your basal and maybe she's a nightshift worker or maybe she's got some other challenges and you're just not really breaking through in the control that you are trying to achieve and you just need to do some special basal segment or for lack of timing, I don't want to get into the intricacies of running pumps, we're going to do another webinar on that that I can help people with. But essentially, it's super simple to switch somebody over from multiple daily injections to a pump. All you do is take half of their total daily dose and divide that by 24 hours and that's her basal rate which would be like -- I don't know, two units an hour, whatever. That's her basal rate and it's just like a constant little drip that runs all day and all night.

Now, the insulin pump that we use is pictured here, it's called the OmniPod and it looks like a fat little cellphone that she just carries around in her purse and it wirelessly talks to this little bubble of insulin that just sticks on the skin with a little tegaderm edge and that little bubble holds 200 units that she fills herself about every three days.

Now, for the high dose users you can pump -- U-500 insulin in these pumps and I have done it very successfully and it's not a big deal. And then for the insulin to carb ratio that you tell this pump, you just divide the other half, it is for the other calculation for all the CDEs out there, it's just the 500 really, you just divide 500 by her total daily dose and that gives you the insulin to carb ratio so she just tells that pump how many grams of insulin she's going to eat for her meal and that little PDA screen says, "Oh, do you want a bolus of 20 units for this meal?" and she tells it, "Yes." And that little PDA tells that Pod to give her a bolus of insulin and that is essentially how exciting this pump is.

I mean, super simple to use, it's so user-friendly, there's no tubing and so -- and then I'm putting the information here about the cost because I knew that I was going to get a bunch of questions probably of people, "How do I pay for this?" and the cost of the TDA itself, that little cellphone thing is \$700 and the Pods run about 300 a month. Each Pod lasts three days because it has a little battery in there and the funding source that I use is our special diabetes grant money because I get grant money every year to take care of my "sweet moms" and I had pumped in the last year five women, four have delivered already and I got one pump running right now.

So, I'm very picky about the women that I use pumps for. So most of my girls that have to need insulin are on Novolog and Detemir pens that's the majority of my insulin users. But once in a blue moon, I'll get somebody on -- I had one U-500 pumper because she was on, I think like 600 units of U-100 a day so I switched her over to U-500 and pumped it and we got a good baby and a normal size baby. Unfortunately she had to deliver in Albuquerque but that was more because of her severe preeclampsia than her diabetes.

But anyway, so this is just another option of insulin delivery, this is all this is, it's just a delivery device, so it's just another tool to have in your quiver, that's all. And essentially we are all tools in our patient's quiver, if you just look at it that way. So that's the skinny on insulin pumps. But the OmniPod is the name of this particular device. There might be some other pumps out there that are tubing-free but like the MiniMed and all of the other classic insulin pumps.

The pump itself is expensive about \$5,000 for an insulin pump and then the tubing is like a \$1.87. These particular pumps are different and that the PDA is cheap and then the Pods are \$30 a piece because they have a little brain in them. But pregnant ladies will use these because they're not hanging anything with tubing off of an already expanding belly so compliance is huge. They won't hang something off their belly that's connected to tubing, just trust me on this, so that's why I use this one. Okay, so that's the skinny on insulin pumps.

Now, oral medication, I know that there's lots of pearls of wisdom about using oral medications. I wrote a paper for the ADA on oral medications, it just came out a couple of months ago so I had -- and since we have time constraints and we're almost done with this presentation, I just included the paper in your little handouts over here so -- then that has tons of pearls, so it's just over there, so I won't belabor that. But here's the skinny on the two meds that we use. Both, neither one of these meds are FDA approved. They're both off label but they're both used and they're both endorsed by ACOG and the ADA to be used in pregnancy but not FDA approved. Okay so that's my caveat about oral meds.

Metformin crosses the placenta. It talks to the cells and lets insulin drive sugar into the cells, okay? So it reduces insulin resistance. It improves insulin's actions. So a lot of times we will start metformin if we've titrated insulin several times and we're starting to get up there in doses because remember, you don't want insulin to pool. Once you start getting close to 100 units of insulin per dose, it'll just sit there in ladies' tissues and not move anywhere. So once you start titrating insulin and you're just slamming their insulin and then increase and then increase and it's just not working very well, she's probably insulin resistant so start some metformin on her to help her body to recognize that the insulin is there.

So when you add metformin, remember metformin causes women to be real gassy and it gives their intestines a run for their money, so be gentle, okay? Start out -- I never messed with the 250 milligrams because remember we're also under the ticking time clock of pregnancy. But a lot of the literature says 250 but I just don't fart around with that so a 500 milligrams po BID for the first seven days then crank her up to 1000 because we're talking about -- I don't know if your population is full blood but ours is. So, Native women are very insulin resistant just by nature so we don't mess around with a low-dose metformin. But maybe in your population it might not be as insulin resistant so maybe you could get away with 250 but here we can't so we just slow titrate for the first week so we don't mess with their guts too bad and then we go up to a thousand after that first week. But metformin will really help you with your insulin being more effective.

The other medication we use is Glyburide. Glyburide, it also crosses the placenta, let me tell you that and I always tell moms that too. Both medications we don't think cause long-term effects but we won't know in 20 years if our stories are going to change but anyway for right now, we don't think. Glyburide is a secretagogue. What that means is it talks directly to the pancreas and tells the pancreas to shoot out more insulin. A healthy pancreas will do it if it can, you will see effects of glyburide right away. If you don't, remember the baby is trusting you to get mom's blood sugar under control. So I wouldn't mess around with glyburide for too long but you want to target the data that is elevated. So if your fasting blood sugar is elevated, give her glyburide at night to work on that blood sugar at night. Start low, start at 2.5 milligrams and move up. Your maximum dose is 20 milligrams a day. If her blood sugars are elevated during the day, give her glyburide during the day, it's all logical. There's no magic to the medications that we use.

If she has a little bit of elevations in the morning and in the evening then start her out at 2.5 BID and then watch her for a few days and increase it. There's no use in watching it for another week at the same dose to see if you're going to get an effect. Use glyburide for a week or two. If it's not working then the pancreas is not responding. You can't ask a pancreas for several weeks to respond if it can't. Remember, the pancreas needs to make about 400% more insulin than when we're not pregnant. If a pancreas cannot make insulin, please don't continue to try to will it to, because it won't. She needs insulin. Either she can make it or she can't, and then we give it to her.

Okay. Antenatal management, oh Best Practices. So we need detailed anatomies, ultrasounds and a fetal echo for our type 2 moms. If you can't do that in-house, send them out. We also need periodic growth ultrasounds. We have to watch our babies. Start doing your antenatal testing on moms who require medications about 32 weeks and monitor closely for preeclampsia. Please, please remember that diabetes and preeclampsia are both hormone mediated issues and they're like kissing cousins. Always watch for one when you have the other and vice-versa.

So, I always talk to my moms about the signs and symptoms of preeclampsia. "Sweet moms" are ripe for blood pressure issues so always, always just plant the seeds of what to watch for, for preeclampsia signs and symptoms. And then we do term ultrasounds for estimated fetal weight and then we discuss our delivery plan. Some docs will offer C-sections for babies that they think are over 4,500 grams. And then if moms are on medications we try to deliver those babies by 39 weeks and 38 weeks if they're uncontrolled for some reason.

Okay, I get a lot of questions about the role of the A1C in prenatal care because why do we do A1Cs every 30 days when we have all these printouts and all these meters flying around getting downloaded at every visit and here is the statement directly from the ADA "managing preexisting diabetes and pregnancy". I don't have to read it to you but here's the essential statement. The maternal glycemia is, when it's elevated and rapidly brought towards normal pregnancy, the A1C reported to show significant decrease in just two weeks so we can watch the assessment of our A1Cs in pregnancy to be one of those assessment tools that we use.

Now, here's another caveat I'm going to tell you about and this is if your program is punitive in any way or if you have a provider that is punitive in any way. If your "sweet moms" are afraid of you, they may be bringing you a meter with all their husband's blood sugars. So you got a printout that looks fabulous. But you have a baby with a beer belly and you can't figure out why. But then you run an A1C and it comes back at 9% which is an average blood sugar of what, 220 or something? Well, your printout shows fastings in seventies, post meal of blood sugar in 110s and you're like, "What's going on?" Well, if she's afraid to tell you what her numbers are because somebody in that office is getting onto her for some reason? Then you have another assessment tool to try to figure out what's really going on. But if you love her into compliance and never make her feel guilty about anything that's going on, then she will give you what her actual numbers are.

But we have situations where -- it's not our programs because I'm six-foot tall, nobody's going to mess with my girls because you know I love them but you have to always have assessment parameters that can back up your data in other ways. So just use your A1C as one more of those assessment tools and that's all that is. So we do our A1Cs every 30 days as another assessment tool and our goal is to keep our A1Cs under 6. And if we get an A1C or really high periconception A1C then you slowly want to bring those down because don't try to be a cowboy and bring your 11, 12 periconception A1C down to below 6 in the first month of your pregnancy because type 2 diabetics that had been diabetic for a really long time you can't make their retinas bleed if you bring them down too fast.

Okay. And then I know I talk a lot so I'm going to try to go fast here. Antenatal monitoring, so we do twice weekly NSTs on GDMs on meds and type 2 diabetics starting at about 32 weeks and if the type 2 diabetics have a lot of opathies like retinopathy, neuropathy, all those opathies, then we might have to

start those a little bit earlier depending on recommendations from like MSMs or whatever so it just kind of depends on how long that you've been sweet.

Breastfeeding, Karen can -- well, I'll just would give this back over to Karen.

Karen Bachman-Carter:

Okay, thank you Shelley. And so, breastfeeding, of course we know it has many benefits to mom and baby but just early and frequent offering the breast after birth helps with prevention of neonatal hypoglycemia helping to prevent maternal type 2 diabetes if mom had GDM and helping prevent childhood obesity and diabetes later for that child.

Preconception counseling, we have identified this as a need that we want to increase the percent of women. The standard is that all women with diabetes beginning at the onset of puberty or at diagnoses should have education about the risk of malformations associated with poor glycemic control and then offering effective contraceptive use and hopefully waiting until that good glycemic control before trying to conceive. And we know that intensive preconception counseling can lower A1Cs and can decrease the congenital anomalies that are seen.

So, the Northern Navajo statistics current LGA rate 8%, 100% of our patients received MNT. We have -- as Shelley mentioned and just a philosophy of this clinic, we have a tremendous show rate that 98% of all appointments are kept. We're also participating in fruit and vegetable prescription program funded by a CDC grant to try to increase access to healthy foods in our communities and increase vegetable consumption among our moms whose pregnancies are complicated by diabetes.

And then we are an official Sweet Success Associate and so we have access to all the technical systems and evidence-based resources offered by Sweet Success and again, some of those links were listed in the comment box.

Preconception recommendations in getting a folic acid started, optimum glycemic, blood pressure control, assess for complications if the woman has type 2 diabetes, screen for hypothyroidism, give support to stop smoking, like in counseling on glycemic goals. And also if mom is on medications like ACE inhibitors and statins, it's the time to get them off those meds, and it's also a time to switch to insulin so you're not changing medications after the beginning of pregnancy.

And that concludes our presentation. We have reference source that are in the slides as well.

Shelly Thorkelson:

And it looks like we have some questions.

Jan Frederick:

this is Jan Frederick and I want to thank you so much for your presentation. Before we get to questions, I think Dr. Ann Bullock the Director of the Division of Diabetes is on our call and let's see if she has any closing remarks and then I'm going to put up the -- after that I'll put up the link to the evaluation and that way if people have to leave they can and if they are able to stay for questions, we'll do them then if that's okay with you.

Karen Bachman-Carter:

Sure.

Jan Frederick:

Okay good, thank you so much for a great presentation. Dr. Bullock, are you on?

Dr. Ann Bullock:

I am and hi everyone, thanks for joining today. Thank you so much Karen and Shelley for sharing all this great information about diabetes and pregnancy. It's something that we don't pay as much attention to, it seems sometimes in our regular diabetes world because we figure all that, the prenatal clinic takes care of that but indeed, it needs to be a partnership with diabetes programs and the prenatal programs.

So thanks for showing us how that it works and in fact this is so literally true that our dear friend Karen Bachman-Carter used to be the Area Diabetes Consultant for many years for the Navajo Area and is so passionate about this, she left that role to be in this one so indeed, the combination of both the prenatal and the diabetes world personified by these two great ladies today. So thank you both, thanks everyone for joining.