ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Video Transcript: AIM Clinical Refreshers: Severe Hypertension in Pregnancy

Meg Sheahan [00:00:00] Hi, everyone. My name is Meg Sheahan. I'm a certified nurse midwife and a TA specialist at the AIM TA Center and thanks for joining us for our third of four webinars in the clinical refresher series. This one is focused on severe hypertension in pregnancy. One quick thing as we start, please open this link to our very short eval survey. Your feedback really does help us provide better support to the field. And finally, please feel free to put questions in the chat. We'll do our best to follow up after the webinar. This webinar is brought to you by the Alliance for Innovation on Maternal Health Technical Assistance Center, which is supported by the Health Resources and Services Administration of the U.S. Department of Health and Human Services. The contents are those of the authors. They may not reflect the policies of HRSA, HHS, or the U.S. Government. This series is part of our mission to support best practices that make birth safer, improve maternal health outcomes, and save lives, and we thank you for your work in this shared mission. Please check out the AIM Severe Hypertension in Pregnancy Patient Safety Bundle to learn more about this topic.

Meg Sheahan [00:01:20] By the end of this session, you'll be able to describe strategies for early recognition and management of hypertensive disorders in maternal health settings. You'll be to integrate clinical guidance into your practice and describe strategies for supporting implementation of the Severe Hypertension Patient Safety Bundle. It is truly my pleasure to introduce today's speaker, Dr. M. Kathryn Menard. Dr. Menard is a distinguished professor of obstetrics and gynecology in the division of maternal and fetal medicine at the University of North Carolina's School of Medicine. She's worked to highlight the shared goals of clinical medicine and public health, promoting collaboration and realizing synergy between the two. She's elevated attention to maternal health needs by advancing systems development including strengthening regional systems by defining levels of maternal care, providing foundational leadership for the broad dissemination and implementation of patient safety bundles through AIM, thank you, Dr. Menard. And being a leader in the design and implementation of North Carolina statewide pregnancy medical home programs. Her current research includes a study funded by the National Heart, Lung, and Blood Institute to test community-informed strategies to implement a safety bundle for recognition and management of pregnancy-related hypertension in the outpatient setting. We are so fortunate to have you with us today, Dr. Menard, and I pass it over to you now.

Kate Menard [00:02:53] Well, thank you. Thanks, Meg. It's a pleasure to be with you all today. I am going to, in a very short time, provide an overview that I hope is helpful to all of you as you work in this field. But one thing we start with when we try to engage teams in quality improvement related to any of our bundles, any of our maternal and infant is to really start with why? And this audience probably does not need to be reminded. But hypertension in particular is one of the leading causes of maternal morbidity and mortality. It affects the health of both the mother and the infant and much of the morbidity related to this. We learn this over and over again when we do maternal morbidity and mortality

reviews that much of morbidity related to this is preventable with early recognition and evidence-based response. We also know that QI initiatives that we've implemented, particularly in the inpatient setting: they work. They work to, at the end, not only, you know, improve timely treatment of hypertension, of severe hypertension, but also it's been demonstrated in a number of different institutions and in statewide programs and system-wide programs to impact the morbidity associated with hypertension. So very much a worthy cause and focus for us. And that will motivate people.

Kate Menard [00:04:20] Well, I think hypertensive disorder, it's important that we use a shared language, but truly I think the language of the hypertensive disorders of pregnancy for some people can be quite, whoops. A word salad, right? These terms are all, they all have specific definitions, but we use them and we're all using them the same way. So we're gonna spend some time going through this, chronic hypertension, gestational hypertension, all the way down to severe hypertension. And all of the ones on the top are a little different, but severe hypertension and the response to that really is the same, whether it's any of these conditions, whichever the response to severe hypertension is the thing.

Kate Menard [00:05:06] So let me start by stepping back and reminding everybody why we need to really look at hypertension and hypertension differently during pregnancy than in the non-pregnant state. This diagram gives you an expected kind of trajectory for blood pressure for a healthy pregnancy. Early in pregnancy, the blood pressure is what it is when an individual comes to us early in pregnancy. At about baseline, but then there are physiologic changes where there's a decrease in systemic vascular resistance so the blood vessels relax and blood pressure goes down. And at the same time, there's an increasing blood volume and that's kind of this brown line on the graph here. Increasing blood volume that will eventually result in increasing blood pressure. So there is a decrease in blood pressure from the onset of pregnancy all the way up till 20 weeks where it naters. And then after that, in a healthy woman, it starts to go back up slowly and gradually to the pre-pregnancy level. And then at postpartum, with all the extra fluid that's on board and all the things that happen and there's the vasoconstriction that happens after birth, the blood pressure goes higher in a very normal pregnancy. It will exceed baseline and it will remain high. For up to six weeks postpartum. So this is part of what we see normally and can be exaggerated with hypertensive disorders.

Kate Menard [00:06:44] So keeping that in mind, it really affects how we care for when during pregnancy and certainly through the postpartum period. So let's talk a little bit about definitions. Chronic hypertension is defined as diagnosed before pregnancy or before 20 weeks gestation, before we see that increase that happens physiologically normally. The gestational hypertension aspect, though, is when the systolic blood pressure is greater than 140, or a diastolic blood is greater than 90, on two occasions, at least four hours apart, after 20 weeks' gestation, if they've previously had normal blood pressures. And by normal blood pressure anymore, we're defining that as 130 or 80. So that's where gestational hypertension comes. It's new, it's new during pregnancy. And then the difference between that and preeclampsia, once again, preeclampsia is new onset, hypertension at greater than 20 weeks as well, but then add the proteinuria to that. So, proteinuria can be measured a number of different ways, as you know. It could be a 24 hour urine collection. We used to do this so much in the olden days to see if in a 24-hour collection was greater than 300 milligrams in a 25-hour period. More commonly now though, we have access to a urine test called the urine protein to creatinine ratio. And if you get a urine to creatine ratio greater than 0.3 milligrams per deciliter, it is close enough, essentially equivalent to that 24 hour collection number. And when those resources aren't

available, a urine dipstick is often more readily available. A urine dip stick of two is what we would be looking for. So that's all well and good. Well, what about if they have chronic hypertension? What is chronic hypertension with superimposed preeclampsia? This can get tricky, but it's an exacerbation of hypertension, of chronic hypertension above and beyond what you'd expect that complicates, that it builds upon baseline chronic hypertension and complicates pregnancy. And it may be a new manifestation of proteinuria as well, but not necessarily. So, what about severe hypertension? Severe hypertension and severe preeclampsia with severe features. We thought you'll hear people talk about preeclampsia with severe features. Sometimes you'll hear them say preeclampsia without severe features. It used to be, people used the term mild preeclampsia, and that's kind of fallen out of favor. So we will describe severe hypertension as a systolic blood pressure over 160 and, or one or the other, or both, diastolic over 110. And this should be confirmed if it's one time high, should be conferred within a short interval, even within minutes to facilitate, take us down the path of facilitating timely antihypertensive therapy. It's worth verifying if you get one high blood pressure like this, it's worth verifying a short period of time, just to be sure that it's precise and not necessarily a measurement error. We'll talk more about that. But this definition applies whether they have chronic hypertension or whether they have hypertension whose onset only occurred during pregnancy, i.e. gestational hypertension or preeclampsia. The other aspects of severe features, it could be blood pressure, but you can get severe features in preeclampsia even without blood pressures in that very high range. If we see, on lab studies, if we see thrombocytopenia or a low platelet count that's less than 1,000, If we see renal insufficiency or we see a urine creatinine that's high, 1.1 during pregnancy is a high urine creatinine or doubling what is known to be an individual's baseline creatinines, that's indicating some kidney, some renal deficiency or some kidney dysfunction. Impaired liver function. It could be liver transaminases, ALT and ST greater than twice normal, or it could be persistent epigastric or right up with quadrant pain. Pulmonary edema is a severe feature, and then most commonly people are familiar with the neurologic symptoms, which just could be a new onset headache that's not responsive to medication such as Tylenol, or can't be accounted for by an alternate diagnosis. Or if there are visual disturbances. The other day, I listened to a clinician during a simulation describe an L. She was describing preeclampsia and went from head to toe with an L, and I thought that was pretty helpful to think of neurologic, then lung, then liver, and she went down the symptoms one to the next with the patient as she was counseling them. I thought was helpful.

Kate Menard [00:11:56] So what are the consequences of preeclampsia? They are great. It can affect so many organ systems and can be very devastating, really. I think people pull forward most commonly the eclampsia as the severe consequence of severe hypertension, but it's much broader than that. There can be other neurologic changes that result in visual changes, temporal blindness, and in severe situations, stroke. And with timely treatment of hypertension, really the focus of this and the great advantage of this is preventing stroke and its devastating effects. Renal sequelae are real, oliguria being low, low renal urine output, acute renal insufficiency or failure. And then of course the fetal consequences. It can cause uteroplacental ischemia, which can result in growth restriction. But even without growth restriction, it can compromise placental function and result in non-restoring fetal tracing or abruptio placentae or oligodrame news. All of those things are consequences. It used to be that we counted growth restriction as one of the severe features for preeclampsia, but in the most recent recommendations related to criteria for severe preeclampsia growth the restriction is not included. HELLP syndrome is less frequent. More often when it appears it's in the third trimester, but it's where on the spectrum of preeclampsia where we see hemolysis, we see elevated liver enzymes, and the low platelet count, all in combination. And it can happen, it typically happens in the 3rd

trimester but can also occur in the postpartum period. So it's worth keeping that awareness of that on a radar screen. It can have any typical presentation because the HELLP syndrome can can can manifest itself even when the blood pressures are just mildly high or and not in the severe range. This is something that fools people in the emergency department sometimes where a pregnant or postpartum patient can present with right upper quadrant pain just feeling bad malaise or nausea. They may have real high blood pressures. But they've got this going on. An ED doc might think, oh, it's colostasis, I need to get an ultrasound. It's a number of times in my career, I've seen people transfer to us later because they stayed in the ED, had a workup for gallbladder disease. It just wasn't in their front of the mind that that right upper quadrant pain could be HELLP syndrome. I had a teacher once say to me, the mind don't see, you know. The I don't see what the mind don't know. We have to have everybody thinking about these things that are seeing our patients in various settings. There's also subsequent consequences of preeclampsia. And this has become much more apparent over time and very, very important for us to keep in mind for our patients that hypertension during pregnancy, new onset hypertension, preeclampsia, individuals that manifest this during pregnancy are at substantially higher risk later in life for hypertension. For cardiac conditions, myocardial infarction, congestive heart failure are more common, or even mortality related to cardiovascular disease. Stroke is more common. Heart failure is more common and peripheral vascular disease is more common. This is becoming, as we across the country, there's cardio-obstetric units are coming up one one with this expertise. In collaboration with obstetricians in collaboration with cardiologists, seeing these people postpartum and making sure they have a surveillance plan in place, that the hypertension that they experience resolves or is treated over time and that they are informed of the preventive strategies that are in place to prevent subsequent events. One question that I think remains, and I had the privilege to go to a cardio-obstetric conference this past spring where this was brought forward, and an answer I'm not sure that we're really going to sort out, but is preeclampsia a manifestation of underlying risk, or does it causally lead to cardiovascular remodeling that increases risk later in life? I think people are thinking the former, but I think it would be a hard thing really to kind of sort out over time. But in any case, anybody who experiences hypertension during pregnancy should have follow-up. It should go on that problem list as something that we should be watching and educating them about.

Kate Menard [00:17:07] So what about the risk factors for preeclampsia? Many of these are commonly known, but some of them perhaps less known. We think of it more frequently in nulliparous individuals, age greater than 35. Certainly more common with multi-fetal pregnancies or if there's been preeclampsia in a previous pregnancy. Those with chronic hypertension or gestational diabetes, pre-gestational diabetes at higher risk. On the right side are things that are perhaps less frequently recognized. Those that have lupus, for example, or those that have obstructive apnea, these are all things that put individuals at higher risks for pre-eclampsia. Excuse me.

Kate Menard [00:17:57] It's certainly important for all of us to be measuring blood pressure accurately. When we first implemented the hypertension bundle at our institution in the inpatient setting, it was a game changer to have all of our physicians and our nurses really appreciating all the different. Aspects of measuring blood pressure that can actually affect the number you get. We don't want to overcall it, and we certainly don't wanna undercall it. This is a resource that's available to our... in the study that we're doing in the outpatient setting, we prepare a hang tag that goes on the blood pressure measurement cart just to help people remember all the things they should do and put in place to get an through blood pressure. Cuff size is important. Too small, too big. It doesn't get you the actual blood pressure. Using an average size blood pressure cuff on someone who has a

larger arm will get you a falsely high number. Patients should come in and rest before they have their blood pressure taken. If they've just come up the stairs or they're stressed, you're gonna get a number that's not accurate. So let them sit for a while. Be sure that they've had, ask if they've have tobacco or nicotine recently, because that, within 30 minutes, can affect the blood pressure. And have them empty their bladder recently. These things can all, you can see on the slide here, a full bladder can raise your blood pressure at 10 milligrams. We don't wanna have, you know, reach that severe pressure and send them to the hospital only to find that their bladder was. Not emptied when they can, and we did that unneedlessly. No conversation. We always chit chat with our patients, right, but no conversation during blood pressure measurements. The arm should be at the level of the heart. So you can see here it's elevated on the table, not dangling, and the cuff should be placed on a bare arm. Legs should be fat on the floor, not crossed. Can you imagine that just crossing your legs could increase the blood pressure eight milligrams? Add all these things up and we're getting to about 20 or 30 milligrams above what we might get otherwise. In practice, we don't see that much variation, but every little difference can make a difference. So just always keep that in mind when you're as a training thing for our staff.

Kate Menard [00:20:20] I'm gonna spend a little bit of time here rather than talk specifically about the labor and delivery setting, which many of you are familiar with. The principles here apply to all settings really, but there's a need to focus on this in the emergency setting, in the non, where there may not be firsthand obstetric providers, and certainly in the outpatient setting. I'm doing a lot of work now in the patient setting with clinic environments where it's primary care providers that are, That, you know. To seeing and they see some pregnant patients but not as many so you're used to seeing very high blood pressures in men with kidney disease and 160 over 110 doesn't get them particularly excited until we're encountering somebody who's pregnant and that needs to get us excited, right? That's an obstetric emergency. So I'm going to kind of review algorithm for hypertensive treatment in that setting and take us through that. And these materials are all available to you through AIM and the AIM website and the ACOG website. But this is an algorithm for acute hypertension. This is everything on it. I made it really squeeze it all onto one side so you could see it all together, but I'm gonna break it down into parts. In the emergency department setting or the acute care setting, if we can encourage providers, are you pregnant or have you been pregnant within the last six weeks? Then we follow down this algorithm of different thresholds for what's concerning blood pressure, right? And if so, are they... Is it, you know, is it 20 weeks, are they less than 20 weeks or greater than 20 weeks? If the blood pressure is greater than 150 over 190, then that blood pressure needs to be monitored, if that's new onset. And over here on the right hand side are the symptoms that should be assessed. Headache, visual disturbances, right upper quadrant pain, shortness of breath, oliguria, all those things I talked about related that are signs and symptoms of preeclampsia or severe preeclampsia. So We should also consider whether what whether and labs should be done and and the labs that should be done would be things that would indicate help you make the diagnosis of preeclampsia or help you nail down the diagnosis of severe preeclampsia. So if if the repeat if you do a repeat blood pressure in that setting and it's less than 140 over 90 and the lab's look normal and there's no symptoms then then we can rest right there's nearly no no more no more unusual care. You know, regular follow-up with therapy is fine, but if the repeat is in the systolic 140 to 149 or diastolic 90 to 110 and it persists, then we need to be considering the diagnosis of preeclampsia and ruling out severe features. The labs on the right, the CBC is gonna get you a platelet count and sometimes you're gonna see hemoconcentration or a higher hemoglobin on that. ALT-AST is liver function, creatinine is going to help us understand if there's renal dysfunction. The simple test, of course, is urine

protein to help diagnose preeclampsia. And if there are concerning neurologic symptoms that might, then occasionally with a severe headache, a neurologic evaluation or head CT is indicated. That I've used in my practice more frequently in the postpartum period than during prenatal. Not because I'm afraid to do a CT, but that's just when those different entities tend to manifest themselves. Okay, so let's go down the middle column here where we see protein area and we see moderately high blood pressures. We see protein area. We make the diagnosis of preeclampsia and we move down the path of getting serial blood pressures and if OB consultations available involve the obstetric team. On the right side is severe preeclampsia. Now this is the severe high blood pressure or high blood pressures with these severe features that I reviewed, thrombocytopenia, transaminases that are high, et cetera. In that situation, then treatment, escalation and treatment is indicated. Okay, so how are we gonna treat? We can treat in a number of ways. In the inpatient setting, so, Once we've diagnosed severe features, high blood pressure, extreme high blood pressures or severe features we treat, right? So in the inpatient setting, traditionally we've used IV, Hibatolol, Lebetolol or Hydralazine. In the outpatient setting or even in the patient setting, in the emergency room setting, nifedipine is totally appropriate. And this is what we're trying to encourage stocking nifetipine in the clinics too, for the less frequent presentation where someone comes into the clinic and we can treat right there. Nifedipine is used orally. It's 10 milligram immediate release. Many of you might be more familiar with nifedepine as an XL drug. That's not the one you want. You want the immediate release, 10 milligram orally, and it works quite quickly. And you can, it'll bring the blood pressure down within 20 minutes, repeating in 20 minutes to ensure that you're adequately treating is fine. And if you're not, getting adequate treatment with that, you can repeat the treatment with nefetapine. Inpatient, the doses for libidolol here, if that's held closely in some sort of hang cart or something that's readily available in order sets and that sort of thing in the inpatient setting or in the emergency department setting, that's ideal. I'm not a fan, hydrolysis is not my favorite only because it can cause hypotension. But it's certainly acceptable and using it in small doses is acceptable. Um So treat the hypertension, treat the, and if facilities are available to you, maybe some sulfate treatment and the doses are there. Our target blood pressure is 130 to 150 over 80 to 100 in the urgent situation, and monitor until we're sure we're in that range. If it pops back up again, then you repeat.

Kate Menard [00:26:49] When to deliver is another thing to consider. We're gonna be, this is a whirlwind of going over things, but gestational hypertension preeclampsia 38 weeks, severe preeclampsia, expected management till 34 weeks is often satisfied, but there's a number of situations here as listed on this slide, where you would not want to manage expected and deliver the premature baby. The postpartum period is important to keep in mind that the time when that, remember that graph I showed you, the postpartum time when the blood pressure's peak is three days, postpart of three to 10 days, follow-up is indicated and then long-term follow-ups at six weeks and six months is indicated. Blood pressure medications, here's some choices. Nifedipine's a great choice, easy to take, but all of these are acceptable and safe in breastfeeding. And on this next slide are an abundant list of resources, both through AIM, through AHI, through SMFM, for your reference to help you implement, and I get to hand it back to Meg.

Meg Sheahan [00:27:58] Thank you. Thank you so much, Dr. Menard. I thought that was great, a great balance of content that was new to me and a refresher. So please join us, everyone, next week for the final session in the clinical refresher series next Wednesday, 12:30 Eastern. Our topic is safe reduction of the primary cesarean birth. And if you registered for today's session, if you're here, you're registered for the next one as well. Look for the invite on your calendar or in your inbox, and please share the link in the chat

for colleagues who may want to jump in on this. It's not too late for them to register. The webinar recordings and slides for all of the clinical refresher series webinars will be available on saferbirth.org within about a week of each session. And if you like this content and you're interested in learning more, please join us at the AIM annual meeting in a couple weeks, June 15th through the 17th in Arlington, Virginia, the D.C. Area, use the QR code or link in the chat to learn more. And thank you everyone so much for joining us and thank you again Dr. Menard for sharing your expertise. Again, everyone, a final plea, please complete the very short email form linked in the chat and check out saferbirth.org and sign up for the AIM newsletter. Have a great day everybody. Thank you.