#254 Hypertension Update with Dr. Wanpen Vongpatanasin

Mon, 2/1 9:29AM • 56:40

SUMMARY KEYWORDS

blood pressure, patient, hypertension, people, home, clinic, pill, guidelines, Hyde, dose, drugs, readings, combination, measurement, systolic blood pressure, arb, treatment, tend, renin, white coat hypertension

SPEAKERS

Matt, Dr. Wanpen Vongpatanasin, Paul, Stuart

Matt 07:28
So, we're going to talk about Mr. Theo Zhi Hyde is a 67-year-old man who's come to your practice routine health maintenance examination. The medical assistant takes his blood pressure before the appointment and reports it is elevated at 142/94. Our friend Theo had a heart attack requiring one stent last winter, and he's excited to tell you about some of the lifestyle changes he's made since his last visit. He started to limit his alcohol intake. So, no more than two beers in the weekend, which is a decrement for him. He has quit smoking, and he is taking up cycling. So, he is doing terrific, even offers to share his recipe for cauliflower rice, which is one of the ways that he has been eating more vegetables. So, this is our updates in hypertension talk. So, before we dig into our management of Mr. Hyde and sort of where to go from here, I wonder if you could just talk us through the very basics, we like to define our terms, because you just talk to us about what is hypertension, when we talk about hypertension.

Dr. Wanpen Vongpatanasin 08:19
Hypertension is presence of elevated blood pressure, which is recently defined by the, at least by the most recent ACC/AHA guidelines to be defined as systolic blood pressure of at least 130 millimeters of mercury or diastolic of at least 80 millimeters of mercury in the office setting. I will say that this is at least endorsed by several of the professional society but not all uniformly, the American College of physician and the Academy of American family physician still stay at 140/90 as a threshold. So, but at least I will say that in the US, most of the majority of US organizations, particularly in the high-risk population, there is more movement towards the lower threshold/lower goal.

Matt 09:18
And I think that we've talked about this on the show before Wanpen, correct me if I'm wrong, but I think in addition to the whole lower treatment goals in the SPRINT trial, there was also there's just also, I guess, evidence that even pre-hypertensive patients have worse outcomes if you follow them for long

enough and isn't that why we've tried to lower the treatment threshold? To try to just have in general more people started on medicine to try to prevent this hypertension mediated organ damage is what I'm told it's now called in the literature.

Dr. Wanpen Vongpatanasin 09:50
Yes, so absolutely. That it's been shown that the people in the what we call high-normal, pre-hypertension, blood pressure, there's still the risk of cardiovascular events. And so that's part of it and then with the clinical trial data of the SPIRT, showing even lower target, then you still see a significant benefit in terms of improving cardiovascular outcome. And also, the meta-analysis showed that the - first, SPRINT is not the only trial, but with total evidence showing that even on people who achieved a blood pressure in lower range in various clinical trial, they still do better than the higher blood pressure. So, I think that that leads to a movement toward a lower goal, particularly in the high-risk population.

Matt 10:43
Why don't we take it back to Mr. Theo Zee hide cue? So, we've told you, he's 67, his blood pressure was 142/94. In general, now, for our primary care audience, how are you recommending, let's say we're using a threshold of 130/80, how are you recommending that people diagnosed hypertension? Is it with multiple readings? Do you do you prefer to have people bring in readings from home? Can you talk about a little bit about the just the logistics of measuring blood pressure and which readings you value most when you're dealing with patients?

Dr. Wanpen Vongpatanasin 11:24
Sure, so the guidelines now recommend out of office measurement as to actually confirm diagnosis of hypertension and to treat and, and we have two ways of doing our office measurement. So, you can do either a home measurement or ambulatory blood pressure study. I usually try to at least one in our office in the hypertension clinic, we do very careful measurement. Meaning that we know I'm following five minutes of rest and using all proper technique, and we usually measure three times actually an average, on average, a second third. And also do both seated and standing blood pressure. And partly, but even with those careful measurement, there's many patient particularly older adults, they tend to have white coat hypertension and white coat effect, or vice versa, or having mass hypertension. So, in doing home blood pressure measurement is very important. It's helped them I think that it provides a feedback to both the patient and physician to treat to the proper goal. And then that in turn, also avoid over treatment of hypertension and why side effects associated with the drug treatment. We also do absolute Blood Pressure Monitoring in our clinic and the advantage of doing blood pressure is you can do it and you can get how much the blood pressure at night is which cannot do although there's some home monitoring now that propose they're trying to actually have a home measurement that way you can put it on at night and he will automatically inflate which I'm sure it's coming. But for the time being most of the time you cannot get those kinds of data, but you can get more accurate information from home or ambulatory Blood Pressure Monitoring if you do it properly. So, we try to try to get our patient to learn how to do a proper technique and particular now in the setting of COVID It makes no sense in particular for encourage older adults to come to the clinic just to get a blood pressure check.

Matt 13:45

So, you mentioned in your clinic you're taking multiple readings is that an automated that you have the patient sit for five minutes and you do an automated cuff that that takes three readings automatically and then you take the average of the second two readings Is that correct? Or is it being it someone taking it manually three times

Dr. Wanpen Vongpatanasin 14:04
We're no longer doing manual blood pressure. Actually, I'm part of the committee to improve blood pressure measurement. Part of the problem is the reason we don't do manual anymore is A.) you have to calibrate find a way to calibrate it and you know we can use mercury anymore this is toxic to environment. So, we become harder and harder to calibrate. We can sell those and send it to the company. If you have an older model of automatic devices, it's harder and harder to find a company to calibrate your device every year study. So, we're using an automatic measurement and the also it also eliminates the training and careful you do manual you have to deflate no more than two to three millimeter per second. Imagine I think that's hardly follow when you have blood pressure 200 you Imagine; how long does it take to measure blood pressure? multiple times? So, it's not feasible or practical anymore. Yes.

Matt 15:11
Paul, have you had people say this to you where they're like, we took a manual? So, you know, it's so you know, it's really. Laughter

Paul 15:18
Laughter. Just the gold standard is involved such human error as humanly possible. Yeah.

Matt 15:25
So, Wanpen, I'm just gonna paraphrase for the audience, you're essentially saying that manual cuffs are, it's hard to keep them calibrated, and there are some maybe inherent problems with them. So right as of right now, automated blood pressures are the recommended if you have it available to you, that's the recommended way to have the blood pressure checked.

Dr. Wanpen Vongpatanasin 15:46
Yes. And now I also emphasize that the model of the monitor is important. Actually, , now, even the machine is very expensive in the hospital might not be accurate. And that is the body of organization that validate the machine for hospital health care organization, as well as home blood pressure monitors that you can look up it's developed by AHA, called validatebp.org. So, I encourage all the all my patients and even anyone who asked me what accurate monitors is go to validatebp.org and find it they have all kinds of monitor, ambulatory blood pressure office or clinic that they can they can select and use from. So, it doesn't matter how much you pay for it. It could be very inaccurate monitor because it's not? Well, it's not well vetted by FDA.

Stuart 16:45
In general, is there is there any significant trend versus say wrist versus arm blood pressure cuffs? Because that's a common thing that we see.

Dr. Wanpen Vongpatanasin 16:53
Yes. So, the problem with the wrist and I'm actually I'm recently joined the Committee of Unvalidated BPR as well. The problem with the wrist device is that aided the validation protocol has not been developed. It's hard to there's twofold one is how do you validate it actually be put the outline. These come up all the time, whenever on the CCU. It comes up all the time, you have all the risks, and you'll have a cutter in the arm and the rest will retire then by like 1020 points and it asks the restaurant which one's accurate. And they tell them actually it's both of them. Because if you have if you have a catheter a simultaneous measurement in the in the reverse on the radio brachial, and you can put in carotid or you can put in a central aorta simultaneously we know that the distal the artery or the systolic blood pressure will be high compared to the more proximal location diastolic blood pressure is pretty much constant throughout the arterial tree. But that is a phenomenon known as pulse wave amplification. Just think of it as like when you toss a stone in the ocean and the pulse will be reflected back and up meant a tie up when the current so and the more positive amplification the higher the distal artery is so but what we care for is what is the pressure level of which that target organ is saying what is the blood pressure of which our brain our kidney and heart muscles saying it's more it's more closer to carotid? So, I think that I would actually I would trust the brachial blood pressure and the wrist blood pressure. And therefore, people say well we can develop any kind of mathematical algorithm to make the risk blood pressure look like a break your blood pressure. But I have to say that I do not believe that there's one equation that makes one women man, Asian, you know, Black and white have followed the same equation and say that race blood pressure must be equal to the blood pressure of this much. That is the challenge of the risk monitoring. Not to mention, sorry, okay.

Matt 19:14
Oh, yeah, what were you gonna say, "not to mention..."

Dr. Wanpen Vongpatanasin 19:15
Oh, not to mention that also depends on whether you have measurements when the wrist is pronation or supinated and it can make a difference. So

Matt 19:25
I, Paul, I don't know about you, but I could talk about blood pressure measurement all day. It is just like endlessly deep. Something that seems so fundamental.

Paul 19:34
Well, sure, let's make this point. So, because I mean, we're obviously I'm not I've only done an outline in the clinic just a couple of times relying on machines. So, it's a sick population. But for the most part, it sounds like in your in your in your hypertension clinic. The technique is also sounding like it's good like the patients are sitting for five minutes, their back is supported, their arm is rested their bladders empty. They're not talking so it sounds like an addition to all the fancy calibration and using the correct machines, but the fundamentals are correct to which is also probably pretty important when you're actually making a diagnosis and treating it sounds like I would like to go back if you don't mind while I'm still talking. And just clarify some points because I'm the resident dummy of the show. So, I wonder if you mentioned mass hypertension, you mentioned white coat hypertension, sort of the benefit of this out of office blood pressure monitoring, if you could just define those terms for us, just for the sort of

people like myself, that would be helpful in the new we can move forward and talk about how the nighttime readings are also helpful.

Dr. Wanpen Vongpatanasin 20:30
Sure, so, whitecoat hypertension is mean elevated blood pressure in the office, but normal at home and, and elevate and normal depends on what guideline you use. So, if you use 2017 ACAH, it was a 130/80. So that if you have normal, less than 130/80 in at home and high in the clinic, that that's why I call it but it's reverse, meaning elevated blood pressure at home, but normal in the office, that's mass hypertension, this mass retention phenotype has been associated with close to about two-fold increases and cardiovascular events. It's not as high as sustained hypertension, meaning elevated blood pressure both in the office and at home. But definitely it's a phenotype that is associated with increased risk and target organ damage. Yeah, so the whitecoat , most studies showed that if your white coat hypertension while on treatment, the risks of the cardiovascular risk is not different than people with control hypertension in both know at home in the office. Because partly because the doctor sees and enter try to intensify the treatment to control the clinic, in which in turn make the office the whole blood pressure looks better. But people whose untreated people with whitecoat hypertension in the absence of treatment, it's also shown to have increased risk of cardiovascular risk, actually an LDL Dallas Heart Study, we found a similar pattern that boasts massive retention and white coat hypertension have increased cardiovascular risk, but not as high as sustained hypertension. Wanpen, I know that you published a study, I think it was in 2018 in hypertension, just discussing that home blood pressure, the threshold might need to be lower than what let's say we were using 140 over 90 for the clinic blood pressure set the home blood pressure should probably be 130 over 80. For your patients in your clinic. Is that something that you follow? And I think that this was based on patients with out of office blood pressure's above 130 over 80 had more. What was its hypertension mediated organ damage and cardiovascular mortality? Well, yes, when we use the older 140/90 in the office, the study showed that when they use the target organ damage approach, you can use several approaches to link up what does that look like at home. And there are several approaches people use. That is regression approach, like the same person what it looked like at home correlated, what they look like in the clinic. The other approach would be like, if you look at LV mass of people who have this much of office blood pressure, what we look like in terms of correlation with the that level of LV mass to the home blood pressure. But we did look at that in the Dallas Heart Study. And we when we use the interestingly, when we used 130/80 in the office, it actually correlates pretty well to 130/80 at home study the 141 90 was correlated in the previous study with 135, or 85. But if you use 130/80e the lower, it's not as proportional like you can subtract five in the two you can subtract. So actually, at the lower the lower that threshold goal, actually that is very little difference start to kind of curve start to diverge, and it looks very similar to and then home of 130/80 as well.

Matt 24:16
So, for Mr. Theo, let's say he came into your clinic has average blood pressure was this 142/94. And we need some more readings. So, you'll tell him to go home and how, how many? How do you tell him to check his blood pressure at home? Let's say he has an automated cuff, he buys an automated cuff that can take three readings, how often do you want him to check it before you're gonna make your treatment decision for him?

Dr. Wanpen Vongpatanasin 24:42
So usually, I'm actually that is the reason I'm self-guided AHA guidelines on how to do self bp monitoring and naturally, you can get three good information within one week worth of monitoring. So usually, I tend to do two in the morning and two in the evening, for seven days, so you get about 28 readings, again, after following a five-minute rests and you know, monitored level, at the level of the heart and all that stuff. And that's a recent data that's published, actually this year, that show that that actually predict LV mass even stronger than the 24-hour blood pressure. I think it's just probably one isolated study. But this is a US study that the look at this in the same person. So you can get pretty good information in terms of doing a careful reading for one week and be pure westsail. I can't do it like this for everyday the rest of my life. Oh, you don't have to the nice thing is you can get you probably can do once a month and pick one week a little bit and do get two the morning, two evening,

Matt 25:52
Paul and Stuart, I just wanted to poll you guys since we're all doing primary care. Yeah. How often are you guys getting ambulatory? Like the 24-hour ambulatory blood pressure monitoring versus just like what Wanpen was saying about the two in the morning, two in the evening for a week and call you with the results? Paul Do you did? Are you able to easily get the 24 hour and then Stewart new?

Paul 26:15
No, I've never successfully done it. It sounds wonderful. But I've only heard of it in theory, I've never actually accomplished it. Okay.

Stuart 26:21
Yeah, as you know, in my Kashlak - super south, we can get ambulatory , the 24-hour ambulatory blood pressure monitors pretty easily. But, you know, I kind of scratched my head as to saying, how accurate is it that night when it's going off when the poor guy or gal is trying to sleep at night. And so, I tend to rely more on the home blood pressure monitoring, have them drop off about a week or two. And then I review that, in addition to evidence or absence of end-organ damage to differentiate who I treat and who I don't.

Paul 26:59
Actually, I'm really glad that you mentioned that Stuart, because I actually had a question about the natural readings because I some of what I'd heard is there's this sort of looking at the non-dippers and the possible prognostication for that so I'm just, I'm wondering if you could talk to us a little bit about if there is specific relevance to the nighttime blood pressure readings, as opposed to those that happened during the day when the patient's awake.

Dr. Wanpen Vongpatanasin 27:18
Sure, so. So, I, I definitely wear 24 blood pressure myself, because I do this do clinical research. So, I whatever procedure I subject the patient to I usually do it myself first.

Matt 27:30
Wow, good thing you're not a pulmonologist. Laughter

Dr. Wanpen Vongpatanasin 27:35
Well, I did have a transesophageal echo. Laughter Again, yes, I can tell it like it was Oh, is it gonna hurt like I did I have it done. So, I can tell them I should have at the beginning, it's a little bit annoying, but I was about to fall asleep. So, I do believe that it's valid. And studies have shown the correlation between nocturnal blood pressure and kind of vascular events stronger than daytime. And on 24-hour blood pressure, I think is a legitimate an independent prognostic indicator. What I use it more often in in older people, particular people who tend to have orthostatic hypotension and form particularly from autonomic failure, they tend to have more supine hypertension, some even have a reverse dipping higher blood pressure at night than during the day. And so, I tend to use that a bit more and not only trying to help in terms of diagnosis, and also looking at overall blood pressure control, but perhaps helped me try to come more dosing of blood pressure medication for people with automatic failure with predominantly supine hypertension, for example, who have like diabetic autonomic neuropathy for 10 years and have like all kinds of organ damage and including nephrosclerosis. And at the same time, they might have COPD and other things I but they, they have terrible symptoms, we treat blood pressure aggressively during the day, I tried to it helps me to convince the patient more and try to treat blood pressure more aggressively at nighttime.

Paul 29:18
So, you kind of anticipated my next question was going to be for your patients is there a best time of day for all comers? Or do you individualize it? Like if they're non dippers, you might be more likely to give them blood pressure meds at night, or Can people just take it in the morning? Where is some better than none? Is there? This is a question that comes up fairly often when I'm precepting. In clinic and for the residents, I I'm just like, well, let's just if we can get him to take the med let's That's good. That's a win to start. We can fine tune from there. But how do you approach it?

Dr. Wanpen Vongpatanasin 29:52
Sure. So, I agree with you. I think adherence is an issue. So I usually tell them at what's most convenient For them, I would tell them to use it first, at that that time of the day and certain drugs that were very long Half Life, actually you don't have to take at bedtime to achieve greater reduction in blood pressure at bedtime, for example called chlorthalidone that was being given in the morning you actually can have a greater blood pressure reduction at nighttime and because what contributed to nocturnal hypertension is several things is, can be salt sensitivity CKD sleep apnea, so you don't have to have your undertake necessarily take the blood pressure medication at bedtime. The only group of people that tend to concentrate more blood pressure medication and bedtime are people with automatic failure with reverse dipping. That's when I start to use shorter acting drugs which will not linger around as much during the day and then I tell them to take it at bedtime. So, for most general people outside those ultimate failure categories, you choose long acting drug to be consistently consistent taking that same time of day I think is more important. And if the mechanism of hypertension at night is salt sensitivity, I think having a diuretic without taking a knife from it will work as well.

Matt 31:22
Hey audience, there are plenty of options when it comes to your next career move in medicine. But just like every patient is different. Each physician forms their own personal definition of success. Whenever your next career move happens. You deserve a job search partner who considers who you are before

looking for your next role. provider solutions and development are a group of empathetic experts in career coaching who help physicians like you find the place they really want to be. And it starts by learning what matters most to you. Whenever you're ready for next, they'll help you find it with no quotas or commissions to get in the way. You can start talking with someone today or anytime by reaching out at PSD recruit.org forward slash curb ciders. That's PST, recruit.org, forward slash curb ciders.

Paul 32:13
All right, so let's get back to our case. So, we have as a reminder that the lovely Mr. Hyde, who sounds like he's making a really good faith effort to make all the lifestyle changes, he's cut back on his alcohol intake, he's quit smoking, he's eating right. But his blood pressure nevertheless is still elevated by whichever kind of guideline that you might go for it. And we talked about sort of the diagnosis of blood pressure of hypertension being made at different thresholds, agreeing different guidelines. But I wonder, I'd like to hear specifically your approach to treating what blood pressure targets you treat patients to so for instance, in this patient who has known coronary artery disease, does that change the target you would treat to and sort of how do you think about what your blood pressure goals are for your patients?

Dr. Wanpen Vongpatanasin 32:49
Yes, so this will be definitely a high-risk patient. So, I definitely would push for up to 130/80. These other studies, including in a SPRINT that showed that the lower is the better, before I go there, I want to make sure that he doesn't have a comorbidity like orthostatic hypotension we're talking about, because keep in mind that SPRINT trial excludes upfront people with standing systolic blood pressure less than 110. And that's why the orthostatic hypotension is not as much of a problem because they already screened those people out and so that's one and given him as an older adult. The ACA guidelines said that at least for older adults, you should have a shared decision making to consider in very frail, older adults, like for example, in a nursing home or dementia, who really are more prone to have side effects then you probably don't want to push it that hard, but it doesn't sound like this case was for the patient. You present them and he is a high-risk patient and see seems like he is capable, he is still an active older adult and able to manage his medication. I definitely would try to go for a lower goal. And in his case

Matt 34:12
yeah, he's still he's still he's cycling this. He's out there. He's living his best life. He's making cauliflower rice, apparently according to him. Laughter

Dr. Wanpen Vongpatanasin 34:21
Yes. Laughter

Matt 34:22
Really, he's doing he's doing a great job. So, the ISH guidelines, the International Society for hypertension guidelines came out in 2020. The meds for the ISH guidelines are the same as the other guidelines, ACEs and ARBs or calcium channel blockers or diuretics, those tend to be the first three classes. What I thought was interesting about the ISH guidelines is that they mentioned using a single,

single combination pill and a low doses first line and they specifically said ACE or ARB plus a calcium channel. I wonder what you do in your clinic, if you're initiating blood pressure for someone with a pressure like, like our gentleman in the 140, over 90 range? Do you use the combination pills, even when you're still titrating? Because I find that to be challenging.

Dr. Wanpen Vongpatanasin 35:14
So usually, the patient who comes to me is already on a lot of drugs. So, they are more than two. So, I think for general practice, I think it makes a lot of sense to use two in one combination. And I think we just have to get used to it. I think the experience that I'm from Kaiser Permanente, actually, what part of the success in the program is to use to upfront two in one combination pill lisinopril/HCTZ. they actually have only one strength actually, is very interesting that they have only the 20/25 they have only one strength. And they said that if you have mild hypertension, you get half a tab, if you have averaged like say a 10 millimeter above that, you get the full tab. If you have very high potential, you get two tabs. And actually, they're just they show that studying with simple a patient is less confused and the patient does not - They really don't know how many drugs are in the pill, they just say I take one pill to grade if you have to take five pills, I feel really bad. Because if you're really sick, so the acceptance is great and a less switching. There's some data that published recently from Kaiser Permanente of Southern California that adopt this process, and they found that the blood pressure control is better. They are less switching's. What do you mean by less switching? You the physician themselves get called less because you get the right the first time and you get it down? You don't have to get Friday and a prescription Jenga dose get the patient confused? And I don't know you have the same experience sometime would you patient get multiple prescription from a few different pharmacies, the old ones still there, and then they get renewed, it's very confusing. Patients forget where they picked up the Oh, and we go up with a dose and they go back to the old dose and a new dose. I'll take them both at the same time. So, I think by data is an advantage to any one combination pill in terms of getting a blood pressure faster. The heart data, it's a little bit less lagging behind but I think with that is a solid data in terms of adherence. There's solid data and getting a blood pressure down quicker that the challenge also the copay and the copay of most of the two in one combo pill, like ACE or ARB plus a diuretic is probably actually the same or cheaper than you order the separate?

Matt 37:45
You pay two copays for the two pills? Yes, I like that. I guess. And Stuart, this this probably the time now. Everyone knows that Stuart is obsessed with chlorthalidone. Yeah, so Stuart, I'll let you take it because that combination pill, chlorthalidone combination pills tend to be a little harder to come by in my experience

Stuart 37:51
There's only one that I know about and it's made by Takeda pharmaceuticals. It's chlorthalidone and irbesartan. The reason why those are

Dr. Wanpen Vongpatanasin 38:14
No, no, azilsartan, azilsartan

Stuart 38:16

azilsartan! Laughter Oh no! I got it wrong! Laughter.

Dr. Wanpen Vongpatanasin 38:18
Yes, also super expensive. That's right. Actually, there are three. There's one with atenolol. One which I can't find anymore. And then this one, this one with azilsartan which even the last person I prescribed is have a good health insurance. She's a lawyer, she could not afford it. I believe

Stuart 38:39
it was actually provided by Takeda pharmaceuticals in the SPRINT trial

Dr. Wanpen Vongpatanasin 38:46
Right so it's a challenge to this. You cannot use this combo pill because essentially,

Matt 38:52
it's a long half-life. Yeah. And why would they put Atenolol in with it? Because that's not one we're using too much anymore for blood pressure specific - not for blood pressure. So, Wanpen, are there other combination pills that the let's say for some reason. Somebody doesn't want it. We don't want to use a diuretic or someone has an ACE, you know, there they have a cough with that medicine. Are there other combination pills that that you can think of that our audience might want to think of as a first line regimen for patients?

Dr. Wanpen Vongpatanasin 39:23
Well, that's obviously there's an ARB and calcium channel blocker combination. The problem is those are also relatively expensive, even in some of them become generic, but I think the cost is still more than $4 Walmart. I would also say get them in brought up the Accomplished Trial which is published a while back. It shows that the combo is benazepril plus amlodipine is better than benazepril plus HCTZ in lowering cardiovascular events in high-risk hypertension. That's the only one trial that show superiority of one combination over the other. The combo now generic as well. But unfortunately, it's still a little bit a little bit not super, it's not as bad as chlorthalidone/azilsartan. , but it's still a little bit more than more expensive than the ACE or ARB plus diuretic. And I don't understand why someone, even generic I really don't understand, right?

Matt 40:29
Okay. So if we have to, if for whatever reason, the lisinopril/hctz, we don't think it's going to work for our patient, then we could still do to two medications in combination is that is that often your go to try to if you if you can't prescribe a single pill, you'll prescribe two medicines in combination at a lower dose rather than start one medicine, and then go up to the max dose and then start the next medicine and go up to the max dose?

Dr. Wanpen Vongpatanasin 40:55
Yes, so that's the meta-analysis that have shown that using the half dose of two different drugs from different class, you get much more bang for the buck than when people think that you know, double the dose will be you get the same amount, but that's really you get the plateaued, any kind of

pharmacokinetic there, we show the dose plateau response to the high dose and yeah, so I'm not, why did you get the side effects more, but not the blood pressure reduction?

Paul 41:25
I was gonna ask you so at the doubling of the hctz dose to where you're at the 50 mg with that, like I always get squirrely at that particular dose, because it doesn't seem to give me much benefit, but does seem to give me plenty of hypokalemia. Do you see much more of that when you when you're at those far ends of the dosing threshold?

Dr. Wanpen Vongpatanasin 41:40
With which dose?

Paul 41:43
I think you said doubling up on the pill. So, I guess it'd be 40 of lisinopril and 50 of hctz. And that 50 of hctz always makes me a little bit nervous in isolation, I guess maybe combined with the ACE, it's not so bad. But do you see hypokalemia with that more frequently, is that something we should be more mindful of and prescribing?

Dr. Wanpen Vongpatanasin 41:58
No, I agree with you that do get more that's approach the Kaiser Permanente use for the simple simplicity of the protocol. I personally don't use it at that dose myself. And that's the same problem with Chlorthalidone, more than 25 milligram you get much more hypokalemia.

Matt 42:18
So Wanpen, I think, where we wanted to change this case a little bit now would be for, for our patient here, Mr. Mr. Hyde. Let's say that we put him on this, we're using the Kaiser Permanente method, so we put them on a half his blood pressure is not that elevated. So, we put them on just this 20 of lisinopril and 25 of HCTZ combo pill. And when we check his labs in like a week or two, we find out that he's hypokalemic. With a potassium of, let's say, three, what does that make you think of? What does that make you think of for this patient? And let's say he's a little bit more hypertensive this time, for whatever reason, let's say he's still he's in the 150s/90's now. And his home blood pressure logs in that range? When do you start to think about things like secondary hypertension? hyperaldosteronism? Is that common? And do we miss it?

Dr. Wanpen Vongpatanasin 43:19
Yeah, so, I think that's a great thought, that's what definitely I would look into certainly, of course, I thought I could cause hypokalemia. But it's unusual when you're using a combination formed, particularly that to go down that low range. So, I would definitely look looking through that, particularly for if the patient's You know, one particular to the patient wants to go through to the workup, if they say, I don't want to know anything about this, I just want the treatment and of course, then I will look into it. So, I see. The prevalence of primary though is very high. So, in people who recent data show that in even mild stage-one hypertension, you can find up to 10% of the patient in the among stage two were resistant hypertension 20-25%. So, I definitely, also his on two drugs for his blood pressure. So, this is

not resistant hypertension, but I think it will give me the push me towards doing the work up on this particular patient.

Matt 44:20
Right. So resistant hypertension patients on the three classes I mentioned that ACE/ARB, calcium channel blocker, a diuretic at good doses, and they're still not controlled that that would meet for resistant hypertension, right? And you would think about a secondary hypertension workup for these folks. And this always comes up before previous guests have told us that they will just test the person. They'll test an aldosterone and a renin. Even if the person's already on blood pressure meds, they don't mess around with holding all the medications. What's your practice when it comes to that sending that lab?

Dr. Wanpen Vongpatanasin 44:53
I agree with that. I think that for screening tests. You don't need to stop ACE/ARB, diuretics, and even mineralocorticoid receptor antagonists. What we would look for is, if you still have low, low suppressed renin and despite being an ACE/ARB, diuretics, and that really raises a red flag, I'm not particularly necessarily look for other lessons in the zero, then it might change my mind. But, but if it's, that's a number, but if there's Renin, I'm looking for more of a renin, if the renin is suppressed, is really kind of ring a red flag that should not be suppressed.

Stuart 45:32
So, you're not looking at the ratio?

Dr. Wanpen Vongpatanasin 45:34
I don't I usually don't look at a ratio, because it could be a lot misleading.

Matt 45:38
Yeah.

Dr. Wanpen Vongpatanasin 45:39
Because oftentimes, some lab report PRA a point two, so if you have, if you have a PRA, point two and your, your aldo can be 2, and you get a ratio of 10. And an aldo of two is nothing, you know.

Matt 45:51
Yeah. Right. Yeah. And I think we also when we talked about this previously, I think depending on which renin assay you have, the units could be different. So, you have to just look at the units and what the what the range is to check if it's suppressed. All right. So you mentioned that mineral, even if they're on a mineralocorticoid, so if they're on spironolactone, you could still, if they're, if they're on spironolactone, you could still test you mentioned for patients with resistant hypertension, if we were to change this case again and say, Mr. Hyde, he actually his blood pressure has been like 150 - 160s, despite the fact that he's now on three drugs is, is your next choice usually spironolactone as long as the person isn't like hypercalcemic or has like advanced CKD? Do you did you usually is that has that become your fourth line blood pressure medicine now?

Dr. Wanpen Vongpatanasin 46:47
For women, I wouldn't usually I wouldn't blink of giving someone spironolactone. For men, I think, you know, particularly for the 50s beware of gynecomastia, anti-androgenic side effects. If you tell them that, you know, it could cause all this gynecomastia to a 40-year-old men I think most of them like "No, I don't want to take that." So, I would first before I put them on did, I usually try to do a workup as we talked about it. If it didn't show it? The I will also say that that's for the screening test. You don't have to stop and watch it. You want to do confirmatory tests like oral salt loading and saline, I usually stopped interfering drugs. So just to clarify those but anyway, for in terms of MLRA people who should be taking a little bit of pause because hypertension is a lifelong drug treatment. And people trying to think about giving spironolactone in young men every give it to heart failure people we don't blink across because have in heart failure trails it improves survival. That's usually not a question. But for treating treatment of hypertension in young men. This had to come up and I usually try to use an eplerenone first, because it had less anti androgenic side effects. The eplerenone is the cause when a generic is still a bit costly, and it's usually twice a day drug for hypertension. It's not it's not as strong as spironolactone. And it usually you need higher dose than on a milligram, two milligrams versus you need a higher dose than Aldactone or spironolactone.

Matt 48:29
Are you ever using milrinone or doxazosin, terazosin hydralazine and things like that? Do you ever reach for those?

Dr. Wanpen Vongpatanasin 48:40
Sure, yes. The sub the fifth or the sixth one, that's when I started thinking about adding those kinds of things or particular someone who have you cannot use MRA because of severe renal dysfunction, or history hyperkalemia. So, I would add by the fourth drug, then if we can use that I would think about either, I would look at heart rate as well. So, you know, the heart rate, it's on the low side and you can't really give a beta blocker, then I'm thinking about something like a vasodilator, like an alpha blocker will be the fourth or the fifth.

Matt 49:15
Okay.

Dr. Wanpen Vongpatanasin 49:16
On the other hand, if the heart rate, it's already fast, I usually using the vasodilator, they usually will have more potentially more palpitations side effects or tachycardiac effects. And I might think about more like no outcome by alpha or beta blocker, like those kinds of things, depending on other comorbidity as well.

Matt 49:38
Paul and Stuart, any last-minute questions before we get some take home points here?

Paul 49:44
I think I have one instance I want to ask about and we can keep this or not. So, a question. A patient that I have questions about is someone who has isolated systolic hypertension. I feel like those are

patients especially your older patients as their diastolic pressure starts dipping down, but their systolic pressure keeps creeping up there, pulse pressure widens, we tend to be a little bit squeamish about pushing the antihypertensives because we're worried, they're going syncope, or we're worried that we're gonna make their diastolic pressure drop to some level, that's not safe. I'm wondering if you have a specific approach to that type of patient or how you think about managing their blood pressure for someone who has isolated systolic hypertension?

Dr. Wanpen Vongpatanasin 50:17
Sure, yes, so that's always a challenge for particular viewers, why pulse pressure, I try to avoid using beta blocker and those kinds of patient. Because people who had isolated systolic hypertension, you slow their heart rate down, they usually they use I'm assuming in setting up normal LV function, what when you slow down write down your stroke volumes go up. And what's that going to do is, it's going to even drive the systolic blood pressure to go up because of the pathophysiology. And those folks stiff stiffening of aorta. So, when you have more stroke volume, your systolic pressures and go way up more, and it's kind of negates all other drugs, you know, in the SPRINT trial, at least show that the lowering of diastolic blood pressure is even in the lowest quintile SPRINT is about less than 68-55 millimeter mercury. Does people derive as much benefit in intensive blood pressure lowering, trying to get the systolic below 120 as much as other group that's an IE there does no interaction in which the J curve of lowering diastolic blood pressure is too much. But of course, up to a point down, you know, I think sometimes I see a patient in intensive care, and they have AI plus in 80, or 90 year old with diastolic of 40. When they have acute coronary syndrome, I, you know, I'm not you know, I'm not I'm not going while trying to load as systolic to, you know, one less than 120 in that setting acute coronary syndrome because I wanted to fuse coronary artery and those kinds of setting. But in the chronic setting, I think it's, I'm not as concerned.

Matt 52:04
Wanpen, can we ask you for some take home points, if there were two or three things that are that you really wanted the audience to remember? What would those be?

Dr. Wanpen Vongpatanasin 52:12
Yes. So, try to first find, and we haven't talked as much as non-pharmacologic intervention, we try to look at control sodium intake, actually, it's a very component in resistant hypertension, it's as good as one drug independent try to get the sodium intake down to less than 1500 milligrams a day. And usually, it's not just by adding salt, salt in the food, avoiding adding salt and food alone is not gonna do it, because it's loaded in our process food. So, I usually tell them to, to look at sodium per serving in the food or read the food label, So that's one point. And studies show that you can get more than 10-millimeter Mercury, if you can try to get sodium intake low and resistant hypertension. The other part would be for workup primary hyperaldosteronism. Assume that you think that we should no. Many people not doing the work up because we have my residents say all the time "well, then this patient doesn't have hypokalemia." So that's by itself, it doesn't mean that the patient doesn't have it. Because in people who had bilateral hyperplasia, bilateral PA only 50% have hypokalemia. And if you have abnormal, you know, 16% 16 17%, people may or may not have hypokalemia, low potassium, depending on how much potassium you eat, and just not having hypokalemia doesn't mean the patient doesn't have primary hyperaldosteronism. So that should not prevent someone to, to not look for it. And

I think that the spending time talking to patient, how to measure blood pressure at home accurately, I think would save us a lot of headaches. And I also would like to let y'all know that, in case you're not aware, the CMS just early, early part of last year, had billing code for primary care physician to be able to bill the patient for the home read, to interpret the home reading and make medication adjustment, because it's not going to, you know, make anyone rich or anything like that. But it will facilitate blood pressure control that you can, you can interpret the monitoring there. And you can make a report and make adjustments based on that you can actually bill for those kinds of things. And that can get the patient to the goal faster waiting than waiting every three months appointment and do something about it.

Matt 54:48
And you'll get your blood pressure cuffs from validatebp.org

Dr. Wanpen Vongpatanasin 54:53
Yes!

Matt 54:54
All right. I think that's a great place to end. Thank you so much, Wanpen.

Dr. Wanpen Vongpatanasin 55:54
Thank you.

Transcribed by MJ Allen, DO