

Handout for Hypertension and Homebirth : The Last Taboo

Taking blood pressure accurately

The center of the cuff should be at the level of the right atrium. Reading should be done on both arms at the initial visit at least. They recommend a mercury sphygmomanometer over any automatic device. The IDEAL cuff should have a bladder that has a length of 80% and a width of 40% of the arm's circumference.

Having the arm above the right atrium will give too low of readings and below the right atrium will give too high of readings. Sitting pressure is about 5 mmHG higher than supine. Diastolic may be up to 6 mmHg higher if the back is not supported, and systolic may be 2-6 mmHg higher if the legs are crossed! The tech needs to palpate the brachial artery and center the bladder over it. The bottom of the cuff should be 2-3 cm from the antecubital fossa. The cuff should be inflated 30 mmHG over the point where the radial pulse disappears, and then deflated at 2-3 mmHg per second.

NO ONE SHOULD TALK DURING THE READING. At least two readings should be taken, at intervals of at least a minute, and then they should be averaged. If there is a 5 mmHg or more difference between the first two readings another reading or two should be done and then averaged.

- "Recommendations for Blood Pressure Measurement in Humans" - VERY specific and one of the best resources for taking blood pressure.

I have included my notes from a variety of sources. Some of these suggestions are conflicting. I encourage you to do your own research as well, and decide what you think the best practices are!

Korotkoff phase V sounds are most precise for measuring diastolic numbers (when the sound disappears instead of muffles).

- "Controlling Chronic Hypertension in Pregnancy" Sibai

ACOG Practice Bulletin No 29: Chronic Hypertension in Pregnancy – We should use Korotkoff V sounds, a cuff that is 1.5 times the upper arm circumference, patient should be sitting upright or in the left lateral recumbent position, and the reading should be taken after at least 10 minutes of rest with her arm supported at the level of her heart, and should be taken with a mercury sphygmomanometer ideally rather than an electronic machine. No caffeine or tobacco in the 30 minutes prior to the reading.

Automatic machines that take measurement without anyone in the room can help reduce white coat effects and observer errors. The averages of readings taken that way and at 1 to 2 minute intervals correlates well with the mean value while awake with ambulatory readings. MAJOR issues that I've seen very commonly are not

waiting long enough for the person to rest before the reading, talking to the person while doing the reading, not supporting the forearm fully and at heart level, and rounding off by large amounts. There are studies that have shown that 24 hour ambulatory monitoring and home measurement more accurately predict the risk of future cardiovascular events, as opposed to in office readings.

- "Taking blood pressure: Too important to trust to humans?"

Blood pressure in the left arm in the right lateral position (this position had the most significant difference) is about 10mmHg or more lower than BP in other positions, like the right arm in a supine position, and this should be noted. The upper arm in the lateral positions gets a lower reading than that same arm in a supine position. Using the legs should really not be done.

- "Blood Pressure Variation on Each Measuring Site in the Right Lateral Position"

There is debate about using Korotkoff 4 or 5 sounds. It is the only time the phase 4 sounds are suggested for use since some pregnant women have sounds all the way down to zero, but it is rare (not even once in 197 women in one study). Since diastolic readings are thusly difficult/controversial in pregnancy, it makes sense that systolic readings should be of more concern, though studies are inconclusive about which number or average, etc, is most predictive of risk.

- "How Should Blood Pressure Be Measured During Pregnancy?"

Prevention of Hypertension and Pre-eclampsia

Sabine Kuse has worked with over 20,000 women with high risk pregnancies, and has seen that additional salt is helpful for many women showing signs of preeclampsia, and has never had a negative effect. Dr. Margaret Robinson also showed the importance of salt in her studies in 1950's - low salt diets led to higher rates of preeclampsia, placental abruption and perinatal death. These studies were recreated but using rats instead of humans, and the results again showed that low salt diets profoundly affect pregnancy, leading to low birth weight and organ damage.

"Salt is vitally important for a healthy pregnancy" Brewer Site

It seems obvious, but physical activity, especially during pregnancy but also before (and best combined), is protective and lowers the risk of developing hypertensive disorders in pregnancy. Some women get nervous about being active if their blood pressure is already high or getting higher, but staying active is important.

"Physical Activity and Hypertensive Complications During Pregnancy" Chantel Martin

Aspirin appears to reduce the risk of preeclampsia, particularly for women at higher risk of developing it. One case of preeclampsia is prevented for every 114 women treated with antiplatelet agents. It also appears to reduce the risk of preterm birth before 37 weeks. "High risk" in this context meant having chronic hypertension, or normotension but with previous severe preeclampsia, diabetes, kidney disease or

autoimmune disease. They recommend that women at high risk for preeclampsia and women with more than one moderate risk factor (first pregnancy, over 40, last pregnancy more than 10 years ago, BMI 35 or more at first visit, family history of pre-e, multiple pregnancy) for preeclampsia take 75mg aspirin from 12 weeks until birth. "Reducing the Risk of Hypertensive Disorders in Pregnancy" NICE Clinical Guidelines

Holistic Treatment

It seems that L-arginine supplementation may help prevent some complications (superimposed preeclampsia, neonatal complication) and make it so less antihypertensives are required, but more research is needed.

- "L-arginine supplementation in women with chronic hypertension" Isabella Neri

This is not "natural" but giving women with gestational hypertension a volume expanding infusion leads to a reduction in blood pressure for up to 72 hours. This points again to Dr Brewer's approach and theory about blood volume constriction being the cause of preeclampsia rather than a secondary symptom. The authors of this study think that the blood pressure reduction is related to more than just the volume expansion, and is perhaps related to a fall in prostaglandin levels triggered by the volume expansion.

"Fall in blood pressure in response to volume expansion in pregnancy associated hypertension (pre-eclampsia): Why does it occur?"

Chinese medicine sees hypertensive disorders as an issue of kidney yin deficiency, and corresponds to the Chinese disease categories slippery fetus and fallen fetus. This is not my area of specialty at all, but wanted to note that they have treatment protocols and they seem quite promising. One small study with 16 women with hypertension in pregnancy had 14 of them "cured" with a treatment of a special formula.

- "Lei Wei Di Huang and Hypertension in Pregnancy"

Hypnosis and self hypnosis can be useful for reducing blood pressure.

- "Why hypnosis can reduce high blood pressure and how to do it"

<http://www.uncommonhelp.me/articles/reduce-high-blood-pressure/>

- "Hypnosis for high blood pressure" - a script to use for hypnosis, would be great for clients who may have rising bp

There are many herbs which can be useful for managing blood pressure in pregnancy. Cramp bark, black haw, garlic, hawthorne, reishi. One daily protocol outlined is 5 ml twice daily of a hawthorne, crampbark or black haw, and passionflower tincture, 1 clove of garlic, 2 ml reishi tincture twice a day, 2 g calcium citrate, 5000 mg magnesium citrate, 1000 mg Vit C, 400 iu Vit E, 30 minutes of walking, daily yoga, biofeedback, meditation, and warm baths 2-3 times a week with epsom salts and lavender essential oil.

- "Botanical treatment of hypertension in pregnancy"

Susun Weed's suggests to avoid stimulants, drink nettle and red raspberry leaf infusions, exercise, manage emotional stress, maintain a healthy weight but also not obsess over weight, practice biofeedback, take garlic (oil capsules are effective for some), parsley, onions, a cucumber a day (or juice), juice of half a lemon + 2 tsp cream of tartar in some water for three days at a time with a rest of two days between, hops tea, passionflower tincture, skullcap tea (1-2 cups a day), hawthorne infusion or tincture (15 drops 2-3 times a day).

- "Preventing and managing high blood pressure during pregnancy: The Wise Woman Way" Susun Weed

Dr Tori Hudson's supplement recommendations (NOT SPECIFICALLY FOR PREGNANCY SO SAFETY SHOULD BE CONFIRMED) are calcium, magnesium (400-1200 mg a day), potassium, CoQ10, fish oils, garlic, hawthorne, mistletoe, and Rauwolfia (more on that next).

- "High blood pressure - lifestyle considerations" Tori Hudson

Rauwolfia is a great treatment option for non-pregnant people, and one midwife/herbalist I know has used it successfully for pregnant women as well. Most sources state not to use in pregnancy, but it appears that is founded on a lack of studies rather than studies which has shown problems. For mild cases they start with 2 drops, 3 times a day, and adjust up until they reach the blood pressure target or they reach the maximum dosage (12 drops 3 times a day according to this source). I wouldn't use it as a first line option, but think it is worth considering later in pregnancy if medication is the next option. Doctor's have isolated the elements in Rauwolfia to create pharmaceuticals (Reserpine).

"Rauwolfia Root" - Great source on this herb with history, how it works, dosage and side effects.

HUGS!!! Frequent hugging with a partner/spouse was associated with lower blood pressure and higher oxytocin levels in one small study. I think prescribing more hugging for women in healthy relationships is a great idea.

"More frequent partner hugs and higher oxytocin levels are linked to lower blood pressure and heart rate in premenopausal women" Kathleen Light

Eating watermelon and taking valerian tincture/capsules is also recommended. "Remedies for High Blood Pressure" - source geared towards midwives

Essential oils can be used safely to help manage blood pressure, though the extent to which this is possible is debated. At the very least, inhalation is a safe and effective method, and which oil doesn't seem to matter much, though recommended oils include lavender, ylang ylang, and bergamot. One study on essential hypertensives found once daily inhalation caused significant decreases in blood pressure, pulse, subjective stress, state anxiety, and serum cortisol levels.

- "The effects of inhalation method using essential oils on blood pressure..." JH Hwang

Reassuring Lab Work

- Serum albumin above 3
- Normal HCG levels
- Low creatinine levels/high creatinine clearance levels
- Low uric acid levels
- All metabolic labs normal
- Ultrasound for fetal growth, amniotic fluid volume and umbilical artery doppler velocimetry between 28-30 weeks, and between 32-34 weeks. If results are normal, don't repeat.

Pre-eclampsia Diagnosis

High Blood Pressure + Any of these

- BP over 160/110 – repeated 4 hours apart and while resting
- Proteinuria over 300mg/24 hours
- Protein/creatinine ratio of at least .3
- Thrombocytopenia (platelet count <100,000).
- Impaired liver function (liver transaminases 2X normal), severe persistent RUQ pain
- Serum creatinine greater than 1.1mg/dL, or serum creatinine doubled in the absence of other renal disease.
- Pulmonary edema.
- New-onset cerebral or visual disturbances.