Management of Blood Pressure in Pregnancy: New Perspectives from the CHAP Trial
Virginia Lowe, DO, Gabriella Nonni MSIII, Texas A&M Medical School, Kerry Holliman MD Austin Maternal Fetal Medicine

Introduction
- In the United States chronic hypertension is defined as elevated blood pressure occurring pre-pregnancy or that is recognized prior to 20 weeks gestation and affects up to 10% of pregnancies.1 2 3
- Chronic hypertension is associated with increased risk of adverse pregnancy outcomes and its prevalence has nearly doubled in the United States from 2007 to 2019.2 4 5
- Improved treatment of hypertension in pregnancy has been hypothesized to result in improved outcomes, but the recommended goal for blood pressure during pregnancy differs among international societies.4 6
- There is universal agreement that anti-hypertensive agents should be administered for persons experiencing severe hypertension (>160/110 mm Hg), however opinions differ regarding the role of antihypertensive medication in those with mild chronic hypertension (<160/110 mm Hg).4 5

Treatment for Mild Chronic Hypertension during Pregnancy (CHAP) Trial
- Published in The New England Journal of Medicine online in April 2022
- Multicentered, pragmatic, open-label randomized control trial conducted across 70 recruiting sites in the US.
- Hypothesis: The treatment for mild chronic hypertension early in pregnancy would lower the incidence of adverse maternal and perinatal outcomes related to hypertensive disease.6

Long term Effects of Hypertensive Disease in pregnancy
- The risk of hypertensive disorders of pregnancy is not only associated with poor pregnancy outcomes, but also has long-term impacts on maternal and child health.
- Women affected by HDP have been shown to have an increase in early mortality with the strongest relations with cardiovascular disease related mortality.5

Table: International Guidelines for Hypertensive Treatment

<table>
<thead>
<tr>
<th>Institution</th>
<th>Blood Pressure Parameters</th>
<th>Additional Management/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>American College of Obstetricians and Gynecologists</td>
<td>Antihypertensives should be initiated to obtain a goal of &lt;140/90 or 135/85 in pregnancy</td>
<td>Stress that optimal BP goal in pregnancy is uncertain, BP level at which FGR may be at risk is not established</td>
</tr>
<tr>
<td>American College of Cardiology/American Heart Association</td>
<td>Diagnoses HTN as &gt;130/80</td>
<td>State that it is &quot;beyond the scope of the present guideline to address the management of hypertension during pregnancy in detail&quot;</td>
</tr>
<tr>
<td>Society of Obstetric Medicine of Australia and New Zealand</td>
<td>Blood pressures &gt;170/110 require urgent treatment</td>
<td></td>
</tr>
<tr>
<td>Brazilian Guideline of Arterial Hypertension</td>
<td>Initiated antihypertensive therapy &gt;150/100</td>
<td></td>
</tr>
<tr>
<td>The Institute of Obstetricians and Gynaecologists, Royal College of Physicians of Ireland</td>
<td>Antihypertensive treatment with goals: • SBP &lt;150 and DBP 80-90 in patients without comorbidities • SBP &lt;140 and DBP &lt;80-99 for pts with risk factors</td>
<td></td>
</tr>
<tr>
<td>The International Society for the Study of Hypertension in Pregnancy (ISSHP)</td>
<td>Thresholds for initiation of therapy to &gt;140/90 or &gt;135/85 mm Hg measured with a home device</td>
<td>Treatment goal of 110-140/85 mm Hg</td>
</tr>
<tr>
<td>Queensland Maternity and Neonatal Clinic</td>
<td>Treating postpartum blood pressures to a goal of &lt;140/90</td>
<td></td>
</tr>
<tr>
<td>The European Society of Cardiology/European Society of Hypertension</td>
<td>Initiation of antihypertensives for blood pressures persistently greater than 150/95 with a goal of &lt;140/90 in pregnant patients</td>
<td></td>
</tr>
</tbody>
</table>

American Heart Association Scientific Statement: recommend the initiation of antihypertensives for women with chronic hypertension starting at BP >140/90, citing evidence that this may prevent severe hypertension and preeclampsia, which is associated with poor long-term health effects, such as increased risk of stroke, early mortality and long-term cardiovascular disease.8
- Society for Maternal-Fetal Medicine Statement: recommend treatment with antihypertensive therapy for mild chronic hypertension in pregnancy to a goal blood pressure of <140/90 mm Hg. While the study results can be generalized due to the diverse study population, the results did not show significant difference in treatment groups in populations of newly diagnosed chronic hypertension or with a BMI >40.21.11

Conclusion
- As seen in the April 2022 CHAP trial, treating chronic hypertension at earlier stages (BP>140/90) was shown to lead to better maternal and fetal outcomes.
- Based on the results of the CHAP trial and other supporting evidence from recent studies, and with the further recommendation from SMFM and ACOG, we recommend initiating and titrating antihypertensive medications in patients with chronic hypertension at a lower BP threshold of 140/90.
- Additional studies are needed to determine the optimal treatment recommendations however for gestational hypertension and preeclampsia.

References