Severe Hypertension in Pregnancy and Postpartum Toolkit

Oregon Perinatal Collaborative

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Inclusive language notice:
This toolkit is intended to improve care and outcomes for pregnant and postpartum people who have a wide range of gender identities. For this reason, we use both gendered and non-gendered terms including "birthing person/people," "patient," "mother," and "maternal," to reflect this range of identities. We affirm that respecting individual patient preferences regarding gendered language throughout their care is essential to respectful, patient-centered care.

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Table of Contents

Section I: Purpose and Background

Hypertensive disorders of pregnancy are a leading cause of maternal and perinatal morbidity and mortality in the United States. Oregon's prevalence of hypertensive disorders of pregnancy is 15.7% (Oregon Health Authority Center for Health Statistics, n.d.). Hypertensive disorders of pregnancy have an impact on short term outcomes like seizures and stroke in the birthing person during pregnancy and cardiovascular disease risk after the pregnancy ends. The postpartum period is increasingly recognized as an important time to monitor for symptoms and seek care when needed. Hypertensive disorders of pregnancy can also lead to health problems throughout the person's life after pregnancy, including increased risk of kidney disease and high blood pressure many years later. Hypertension during pregnancy also increases the risk of preterm birth, leading to short- and long-term impact on newborns.

Clinical quality improvement work must be thoughtfully designed and consider the impact of factors, such as housing, social support, reliable transportation, healthy food, and other basic needs. The long history of systemic racism in the United States has shaped the access and experience of Black, Indigenous, and all people of color inside and outside of healthcare. Quality improvement work aimed at the prevention of pregnancy related morbidity and mortality must consider this history. Mirroring available national data, Black, Indigenous, and Pacific Islander mothers and birthing people in Oregon are disproportionately impacted by morbidity from hypertension and preeclampsia (Oregon Maternal Data Center, n.d.). Proposed solutions must be developed with input from those who experience barriers to health.

Perinatal Quality Collaboratives (PQCs), including the Oregon Perinatal Collaborative, are state or multistate networks of teams working to improve the quality of care for mothers, birthing individuals, and babies. Members identify health care processes that need to be improved and use the best available methods to make changes as quickly as possible (CDC).

In 2024, the Oregon Perinatal Collaborative has partnered with the Alliance for Innovation on Maternal Health (AIM) to improve Oregonians' perinatal outcomes related to hypertension. The severe hypertension in pregnancy and postpartum toolkit is designed by and for clinical (doctors, nurses, midwives, etc.) and non-clinical (doulas, community health workers, etc.) individuals and teams caring for pregnant and postpartum people with hypertensive disorders of pregnancy to improve processes, outcomes, and clinical decision making and promote quality and equity statewide. The goal of this project is to

decrease preventable maternal morbidity and mortality from hypertensive disorders in pregnancy and improve the health and wellbeing of birthing people and babies in Oregon.

To support teams implementing this toolkit, quality improvement information and tools are included. Simple tools, like those provided by the Institute for Healthcare Improvement (IHI) can be used by teams with minimal introduction or training. These tools help teams take complex topics like management of severe hypertension in pregnancy and organize them into a simplified workflow that can be implemented, resulting in meaningful change that benefits clinicians, birthing individuals, and our communities.

References

- CDC Press Release Pregnancy Related Deaths
- ACOG Preeclampsia and High Blood Pressure During Pregnancy
- Oregon Health Authority Center for Health Statistics
- Oregon Maternal Data Center
- Healthy People 2030 Social Determinants of Health

Key resources for this toolkit include:

- AIM Severe Hypertension in Pregnancy Patient Safety Bundle
- AIM Reduction of Peripartum Ethnic and Racial Disparities Patient Safety Bundle
- CDC Severe Hypertension in Pregnancy Change Package
- CMQCC Hypertensive Disorders of Pregnancy Toolkit
- IHI Severe Hypertension in Pregnancy Change Package
- OPC Severe Hypertension Focus Group Report

How to Use the Toolkit

This toolkit was designed to be helpful for all roles and settings that support pregnant women and people throughout the pregnancy and postpartum period. Recognizing the different emphasis, roles, and responsibilities, it is organized into sections for different audiences.

Section II is aimed primarily at the hospital Labor & Delivery and postpartum units but has information that will also be useful in other settings. Certain elements included may be outside the scope of care/ responsibilities of a specific role (e.g. diagnosis) but are presented as a part of the total care elements.

Section III provides quality improvement tools, tailored to hospital teams but potentially useful for all audiences.

Section IV contains specific information for:

- Emergency departments
- Prenatal/ postpartum clinics
- Public health home visiting nurses
- Doulas
- Community midwives
- Policy-makers

Section II: The 5 R's

NOTE: *While not repeated in individual sections, teams are encouraged to incorporate trauma informed principles-trauma awareness, safety, choice & empowerment, and strength based—throughout development of tools/ processes/ workflows.*

Readiness: Every Care Setting

Key readiness takeaway:
Readiness requires teams in maternity/labor and delivery units, emergency departments, the community (doulas, community midwives, home visiting RN's, etc.), and prenatal/postpartum/community clinics to engage and work together effectively. Consider the role you play and how to escalate to a higher level of care when needed. Please see section IV for specific tools for emergency departments and community-based providers.

- Develop processes and tools that are readily available and understood by teams for management of pregnant and postpartum patients with severe hypertension including:
    - A standard protocol for maternal early warning signs, diagnostic criteria, monitoring, and treatment of preeclampsia with severe features/ eclampsia,
    - Standardized information on measurement and assessment of blood pressure,
    - Timely triage and evaluation of pregnant and postpartum patients with severe hypertension or related symptoms, and
    - A plan for escalation of care, obtaining appropriate consultation and maternal transfer as needed.
- Provide staff-wide education on:
    - Warning signs for severe hypertension/ preeclampsia in all care settings where people receive prenatal or postpartum care.
        - Ensure all members of the team have role appropriate training.
    - Racial and ethnic disparities in birth outcomes and their root causes, implicit bias, use of cultural humility, and best practices for shared decision making.

- Clearly post warning signs for severe hypertension/preeclampsia in all care settings where people receive prenatal or postpartum care.
    - Seek expertise from diverse groups that have built trust within your community in sharing information about hypertension warning signs and response.
- Ensure rapid access to medications used for severe hypertension/eclampsia with a brief guide for administration and dosage in all areas where patients may be treated.
- Conduct interprofessional and interdepartmental team-based drills with timely debriefs that include the use of simulated patients.
    - Incorporate importance of not making assumptions that a patient's hypertension is being caused by something else (e.g. pain, anxiety, obesity, drug use, etc.).
- Develop and maintain a set of referral resources and communication pathways between obstetric providers, community-based organizations and state and public health agencies to enhance services and supports for pregnant and postpartum families.
- Ensure that self-identified race, ethnicity, and language data are accurately captured and documented with attention to training and support for those gathering.
- Foster a diverse workforce that is representative of the communities you serve.

Recognition & Prevention: Every Patient

Key recognition & prevention takeaway:
Recognition and treatment require that all teams – including those in the emergency department, clinics, community-based care (community-based midwives, community health RN's, doulas, etc.), and labor and delivery – are aware of the signs and symptoms of hypertension in pregnancy and postpartum. Please see appendix for specific tools for emergency departments and community-based care teams.

- Assess and document if a patient presenting is pregnant or has been pregnant within the past year in all care settings.
- Ensure accurate measurement and assessment of blood pressure for every pregnant and postpartum patient.

- As indicated, assist patients in acquiring a home blood pressure monitoring device and educate on accurate blood pressure monitoring at home (e.g. how to take accurate blood pressure, when to call doctor or seek care).
- Assess for risk and prescribe low-dose aspirin for patients with a high risk of preeclampsia per ACOG recommendations.
- Screen for community support needs and support connection to resources.
    - Consider barriers such as transportation, or instability in housing/ food/ social support that might impact clinical recommendations or treatment plans.
    - Help address barriers to resources such as blood pressure cuffs (covered by insurance or other financial support), blood pressure log for recording and patient education materials.
        - Make sure resources align with the pregnant or postpartum person's health literacy, cultural needs, and preferred language.
- Provide ongoing education to all patients through a variety of modalities (e.g. written, video, audio) on the signs and symptoms of hypertension and preeclampsia and empower them to seek care.
    - Discharge from the hospital after delivery is an important time to emphasize the warning signs to look for, who to call and where to go if they have questions/ concerns.
- Ensure that people who experience severe hypertension/ preeclampsia during pregnancy and/or post birth know about long term complications and have information on importance of ongoing monitoring in primary care.
- Provide ongoing education to all health care team members on the recognition of signs, symptoms, and treatment of hypertension.
- Establish a mechanism for patients, families and staff to report inequitable care and episodes of miscommunication or disrespect.

Response: Every Event

Key response takeaway:
Standardized tools and checklists for each care setting should be readily available/familiar to and used by all team members to support consistent response. Continued monitoring in the postpartum period is increasingly recognized as critical to identify hypertension disorders of pregnancy/postpartum – even in those who did not have any during pregnancy or delivery. Examples are available in the appendix.

- Utilize a standardized protocol with checklists and escalation policies including a standard response to:
    - Maternal early warning signs,
    - Listening, and investigating patient reported and observed symptoms, and
    - Assessment of standard labs for the management of patients with severe hypertension or related symptoms.
- Coordinate with the neonatal team related to specific needs related to gestational age and/or newborn respiratory effects of magnesium sulfate (when used).
- Initiate postpartum follow up visit within 3 days of birth post hospitalization discharge date for individuals whose pregnancy was complicated by hypertensive disorders.
    - Emphasize importance of postpartum care for all postpartum people.
- Provide trauma-informed support for patients, including identified support people, and staff for serious complications of severe hypertension, including discussions regarding birth events, follow up care, resources, appointments, and referral to therapy and/or peer support groups.
    - Consider referral for support groups/ short term therapy for all patients with preeclampsia diagnosis, regardless of complications.

Reporting & Systems Learning: Every Unit/Care Setting

Key reporting and systems learning takeaway:
Multiple measures-including outcome and process – as well as a culture of briefing/debriefing/case reviews support teams in reporting and systems learning. Specific information on recommended measures and examples of tools are available in the appendix.

- Establish a culture of multidisciplinary planning, huddles, and post-event debriefs for every case of severe hypertension, which identifies successes, opportunities for improvement, and action planning for future events.
    - Include patient, doulas and family when able.
- Perform multidisciplinary reviews of all severe hypertension/ eclampsia cases per established facility criteria to identify systems issues.
- Monitor outcomes and process data related to severe hypertension, with disaggregation by race and ethnicity due to known disparities in rates of severe hypertension.

Respectful, Equitable, and Supportive Care

Key respectful, equitable and supportive care takeaway:
Respectful and equitable care requires attention to communication (verbal and nonverbal), shared decision making and inclusion of pregnant or postpartum person's values and goals.

- Engage in open, transparent, and empathetic communication with pregnant and postpartum people and their identified support network to understand diagnoses, options and treatment plans.
- Include pregnant and postpartum persons as part of the multidisciplinary care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.

Section III: Quality Improvement and Data

Quality Improvement Overview

As teams begin their work to prevent morbidity and mortality related to severe hypertension in pregnancy and postpartum, it can be hard to know where to start. Organizing the toolkit into sections related to Readiness, Recognition & Prevention, Response and Reporting, and Respectful, Equitable and Supportive Care helps teams consider all the areas necessary to systematically address this topic. It is recognized, though, that teams cannot implement every aspect of a toolkit at the same time, and it is important to prioritize and build on early success. Your commitment to improving is the only ingredient that can't be learned simply through one of the below tools—if you have this, you can be successful!

One of your first steps is to confirm who is on your team and ensuring you have key roles and voices at the table to be successful. Once you have your team organized (consider a charter, if possible) and support from leaders who can help you if you experience barriers or challenges during your work, your team will review the toolkit and your local data to help you prioritize where to start. The tools and resources below can help you create a clear approach to the work and ensure you are prepared to try small tests of change and build momentum.

Example Quality Improvement Tools

A number of validated tools are available from the Institute for Healthcare Improvement to support QI processes.

1. Driver Diagram
2. Flowchart
3. PDSA Worksheet
4. Project Planning Form

Key quality improvement resources are also listed here for easy access/ review:

- Video: An Illustrated Look at Quality Improvement in Health Care
- Video: Perinatal Quality Collaboratives
- IHI Essentials Toolkit
- IHI Forming the Team

- IHI QI Workbook: Better Maternal Outcomes: Reducing Harm from Hypertension During Pregnancy
- Strategies to Promote Maternal Health Equity-The Role of Perinatal Quality Collaboratives

Data Collection & Analysis Overview

The Oregon Perinatal Collaborative uses the Oregon Maternal Data Center (OMDC) to measure and report on perinatal outcomes The OMDC is a dynamic, Web-based tool launched in 2015 that helps hospitals calculate, report and improve performance, in a way that is low-burden. Participating hospitals submit patient discharge data—that they already collect—along with a limited set of clinical data to the OMDC's secure website, which automatically generates a wide range of perinatal performance metrics and patient-level drill-down information. The OPC, March of Dimes of Greater Oregon, and Comagine Health are primary sponsors of the OMDC.

AIM Severe Hypertension in Pregnancy measures are built into the OMDC and available to all enrolled hospitals to use for data collection and analysis. The AIM measure set includes three measure types: Process, Structure, and Outcome Measures.

Type of Measure	Description	Example
Process	Used to monitor the adoption and implementation of evidence-based practices. *By using data to track processes of care and examining these data disaggregated by race, ethnicity, and other social and structural drivers of health, facility teams can identify areas for improvement and intervention.*	Timely treatment of persistent acute hypertension
Structure	Used to assess if standardized, evidence-based systems, protocols, and materials have been established to improve patient care. *Through adoption and regular review of structures, facility teams improve their readiness to respond to an obstetric event and provide high quality care to every patient, every time.*	Unit policy and procedure in place
Outcome	Used to examine changes that occur in the health of an individual, group of people, or population that can be attributed to the adoption of clinical best practices. *Outcome measures should be disaggregated by race, ethnicity, and other social and structural drivers of health to examine inequities.*	Severe maternal morbidity

Section IV: Focused Area Content

Emergency Department Severe Hypertension Toolkit

Emergency departments are often where patients with symptoms or signs of severe hypertension come for care after delivery-especially in the first 6 weeks-and is therefore a key clinical arena to prevent morbidity and mortality associated with severe hypertension during pregnancy and postpartum.

To support timely identification, assessment and appropriate consultations, each unit will:

- Develop processes and tools to:
    - Identify pregnant/ postpartum patients up to 6 weeks after pregnancy ends (including live birth, stillbirth, miscarriage, etc).
        - NOTE: While morbidity and mortality from hypertension occurs most frequently in the first 6 weeks after the end of pregnancy, screening for pregnancy within 12months is important for other complications.
    - Triage and evaluate pregnant and postpartum patients for severe hypertension or related symptoms using an evidence-based algorithm created with OB team (see example algorithm below).
        - Blood pressure readings of systolic >= 140 or diastolic >=90 (with previous normal blood pressure) warrants additional evaluation
        - Blood pressure readings of systolic >= 160 or diastolic >= 110 persisting for 15minutes or more is a hypertensive emergency and requires treatment
        - Timely OB consultation and labs are important
            - Hospitals without onsite L&D units need to confirm plan for timely external OB consultation.
- Provide role specific education on:
    - Warning signs for severe hypertension/ preeclampsia.
    - The hospital's evidence based severe hypertension/ preeclampsia procedure.
- Clearly post warning signs for severe hypertension/ preeclampsia where visible to all patients.

- Ensure rapid access to medications used for severe hypertension/ eclampsia with a brief guide for administration and dosage.
- Participate in interprofessional and interdepartmental team-based drills with timely debriefs that include the use of simulated patients.

Key resources that were recently developed by ACOG with support of the CDC include:

- ACOG. CDC Sign Pregnancy Status
- ACOG CDC Acute Hypertension Pregnancy Postpartum Algorithm
- ACOG CDC CVD in Pregnancy Postpartum
- ACOG CDC Eclampsia Algorithm
- ACOG EMS Information Sheet

Additional resources:

- CDC Hear Her Campaign Resources for Healthcare Professionals
- Preeclampsia Foundation Resource for Healthcare Providers
- AIM Obstetric Emergency Readiness Resource Kit

Prenatal/Postpartum Clinic Severe Hypertension Toolkit

Readiness

- Develop:
  - Process for identification of undiagnosed chronic hypertension prior to pregnancy with adequate plans for monitoring pregnancy according to risk factors.
  - Processes for timely identification, evaluation, and treatment of severe hypertension/ preeclampsia.
  - A plan for escalation, obtaining appropriate consultation and maternal transfer as needed.
    - Confirm a process for direct admission to the hospital following confirmation of need through clinic evaluation to avoid delays in ED when appropriate.
- Provide staff-wide education on:
  - Warning signs for severe hypertension/ preeclampsia.
    - Ensure all members of the team, including administrative staff (receptionist, etc.) have role appropriate training.
  - Racial and ethnic disparities in birth outcomes and their root causes, implicit bias, use of cultural humility, and best practices for shared decision making.
- Clearly post warning signs for severe hypertension/ preeclampsia.
  - Seek expertise from diverse groups that have built trust within your community in sharing information about hypertension warning signs and response.
- Develop and maintain a set of referral resources and communication pathways between obstetric providers, community-based organizations and state and public health agencies to enhance services and supports for pregnant and postpartum families.
- Foster a diverse workforce that is representative of the communities you serve.

Recognition and Prevention

- Assess and document if a patient presenting for care is pregnant or has been pregnant within the past year.
- Screen all pregnant people for preeclampsia risk and consider low dose aspirin per ACOG Practice Advisory .
- Ensure accurate measurement and assessment of blood pressure for every pregnant and postpartum patient.
- Screen for community support needs and resources provided.

    - Consider impact of access to transportation, social support, cost to the individual for medication/ blood pressure cuffs, and other social drivers of health as treatment plans are developed. Partner with the pregnant or postpartum person on addressing any barriers that are identified and ensure health literacy, cultural needs, and language proficiency are addressed.
- Provide ongoing education to all patients through a variety of modalities (e.g. written, video, audio) on the signs and symptoms of hypertension and preeclampsia and empower them to seek care.
- Assist patients in acquiring a home blood pressure monitoring device and clear education on correctly monitoring blood pressure at home (e.g. how to take accurate blood pressure, when to call doctor or seek care).
    - Oregon Health Plan (Medicaid) provides coverage for blood pressure cuffs through durable medical equipment (DME) coverage.
        - Example: CareOregon DME benefit explainer
- Ensure that people who experience severe hypertension/ preeclampsia during pregnancy and/or post birth know about long term complications and help connect to primary care for ongoing monitoring.

Response

- Have clear protocol for escalation to a higher level of care (labor and delivery and/or emergency department) for additional monitoring and evaluation of severe hypertension during pregnancy and postpartum.
- Arrange for postpartum follow up visit within 3 days of birth post hospitalization discharge date for individuals whose pregnancy was complicated by hypertensive disorders.
    - Follow up if patient does not make it to their follow up appointment.
- Provide trauma-informed support for patients, including identified support people, and staff for serious complications of severe hypertension, including discussions regarding birth events, follow up care, resources, appointments, and referral to therapy and/or peer support groups.
    - Consider referral for support groups/ short term therapy for all patients with preeclampsia diagnosis, regardless of complications.

Reporting and Systems Learning

- Monitor outcomes and process data related to severe hypertension, with disaggregation by race and ethnicity due to known disparities in rates of severe hypertension.

    - **NOTE:** Smaller numbers may prevent trending/ themes but will still allow individual level learning.

Respectful, Equitable, and Supportive Care

- Engage in open, transparent, and empathetic communication with pregnant and postpartum people and their identified support network to understand diagnoses, options and treatment plans.
    - A 2023 CDC report noted that ~40% of patients hold back from asking questions (for multiple reasons), so it is important for care teams to use tools such as the AHRQ's Teach Back to confirm understanding.
- Include pregnant and postpartum persons as part of the multidisciplinary care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.

Public Health Home Visiting Nurses Severe Hypertension Toolkit

Readiness

- Train to understand severe hypertension and preeclampsia, including warning signs.
  - ACOG Preeclampsia and High Blood Pressure During Pregnancy FAQs
- Learn how to use a home blood pressure monitor correctly.
  - Home blood pressure monitoring instructions
- Develop a plan for escalation of care as needed.
- Learn about racial and ethnic disparities in birth outcomes and their root causes, implicit bias, and the use of cultural humility.

Recognition & Prevention

- Ensure accurate measurement and assessment of blood pressure for every pregnant and postpartum client.
    - NOTE: Morbidity and mortality from postpartum hypertension occur most frequently in the first 6 weeks of delivery.
- Check in with clients who are doing home blood pressure monitoring about technique and offer instructions.
  - Home blood pressure monitoring
- Assist clients in acquiring a home blood pressure monitoring device.
  - Oregon Health Plan (Medicaid) provides coverage for blood pressure cuffs through durable medical equipment (DME) coverage.
    - Example: CareOregon DME benefit explainer
- Teach clients about hypertension and preeclampsia warning signs and when to call their OB provider (doctor or midwife).
  - Preeclampsia signs and symptoms
  - Verify that clients know what phone number to call with urgent symptoms.
- Ask postpartum clients about signs and symptoms of preeclampsia.
  - Facilitate client contacting OB provider if signs or symptoms present.
- Screen for community support needs and resources provided.
  - Consider impact of access to transportation, social support, cost to the individual for medication/ blood pressure cuffs, and other social drivers of health as treatment plans are developed. Partner with the pregnant or postpartum person on addressing any barriers that are identified and ensure health literacy, cultural needs, and language proficiency are addressed.
- Ensure that people who experience severe hypertension/ preeclampsia during pregnancy and/or post birth know about long term complications and help connect to primary care for ongoing monitoring.

Response

- Facilitate client in contacting OB provider and accessing care for additional monitoring and evaluation of severe hypertension during pregnancy and postpartum.
- Provide trauma-informed support for patients, including identified support people, and staff for serious complications of severe hypertension, including discussions regarding birth events, follow up care, resources, appointments, and referral to therapy and/or peer support groups.
    - Consider referral for support groups/ short term therapy for all patients with preeclampsia diagnosis, regardless of complications.
    - Preeclampsia Foundation Birth Trauma Resource site may provide helpful links.

Reporting & Systems Learning

- Monitor data related to severe hypertension, with disaggregation by race and ethnicity due to known disparities in rates of severe hypertension.
    - NOTE: Smaller numbers may prevent trending/ themes but will still allow individual level learning.
- Review cases of severe hypertension or preeclampsia with a supervisor, mentor or trusted colleague to improve care.

Respectful, Equitable, and Supportive Care

- Refer clients to culturally matched resources (providers, community-based support, etc.) when possible.
- Engage in open, transparent, and empathetic communication with pregnant and postpartum clients and their support people.
- Advocate for inclusion of pregnant and postpartum persons as part of the multidisciplinary care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.

Doulas Severe Hypertension Toolkit

Readiness

- Train to understand severe hypertension and preeclampsia.
  - ACOG Preeclampsia and High Blood Pressure During Pregnancy FAQs
  - Hypertension Doula Toolkit, Wisconsin
  - Preeclampsia Foundation Doula Resources
- Become familiar with correct home blood pressure monitor use to support clients who are taking their own blood pressure at home.
  - Home blood pressure monitoring instructions
- Learn about racial and ethnic disparities in birth outcomes and their root causes, implicit bias, and the use of cultural humility.
- Refer clients to culturally and linguistically matched doulas when possible.

Recognition & Prevention

- Teach doula clients about preeclampsia warning signs and when to call their doctor, midwife, nurse practitioner or physician's assistant.
  - Preeclampsia signs and symptoms
  - Verify that clients know what phone number to call with urgent symptoms.
- Check in with clients who are doing home blood pressure monitoring and refer them to instructions if they have questions.
  - Home blood pressure monitoring
- Ask postpartum clients about signs and symptoms of preeclampsia.
  - Facilitate client contacting provider if signs or symptoms present.

Response

- Help clients with warning signs to access care quickly.
- Emphasize the need to contact their care provider right away with symptoms of preeclampsia.
- Provide trauma- informed support for clients who experience serious complications of severe hypertension or preeclampsia.
  - Consider referral for support groups/ short term therapy for all patients with preeclampsia diagnosis, regardless of complications.
  - Preeclampsia Foundation Birth Trauma Resource site may provide helpful links.

Reporting & Systems Learning

- Review cases of severe hypertension or preeclampsia with a doula mentor or trusted doula colleague to improve care.

Respectful, Equitable, and Supportive Care

- Engage in open, transparent, and empathetic communication with pregnant and postpartum people and their support people.
- Advocate for inclusion of pregnant and postpartum persons as part of the multidisciplinary care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.
- Connect clients to community resources (such as housing, food, support groups) that may improve social determinants of health.

Community Midwives (Home Birth and Freestanding Birth Center) Severe Hypertension Toolkit

Readiness

- Participate in continuing education on evidence- based diagnosis and treatment of severe hypertension and preeclampsia.
    - ACOG Practice Bulletin: Gestational Hypertension and Preeclampsia
- Review blood pressure techniques to ensure accurate blood pressure measurement during prenatal and postpartum care.
    - Target BP measure accurately resource
- Identify the resources for consultation, referral, and transfer of clients with hypertension in the community you serve.
    - Special focus on pathways for consultation and referral for postpartum clients may be needed as there may be more barriers to care for postpartum clients, especially those who gave birth outside of a hospital.
    - Create a transfer plan prenatally with each client.

Recognition & Prevention

- Screen all pregnant people for preeclampsia risk factors prior to 16 weeks and consider low dose aspirin per the ACOG Practice Advisory.
- Ensure accurate measurement and assessment of blood pressure for every pregnant and postpartum client at every visit.
- Screen for signs/ symptoms of preeclampsia at every visit.
- Screen for community support needs (such as housing, food, mental health) and provide resources.
- Provide client education on the signs and symptoms of hypertension and preeclampsia and when to call the midwife.
- Assist clients with elevated blood pressure in acquiring a home blood pressure monitoring device and provide clear education on correctly monitoring blood pressure at home.
    - Home blood pressure monitoring

- Obtain labs for preeclampsia when clients have elevated blood pressure and/or symptoms of preeclampsia but do not yet meet diagnostic criteria.

Box 2. Diagnostic Criteria for Preeclampsia

Blood pressure

- Systolic blood pressure of 140 mm Hg or more or diastolic blood pressure of 90 mm Hg or more on two occasions at least 4 hours apart after 20 weeks of gestation in a woman with a previously normal blood pressure
- Systolic blood pressure of 160 mm Hg or more or diastolic blood pressure of 110 mm Hg or more. (Severe hypertension can be confirmed within a short interval (minutes) to facilitate timely antihypertensive therapy).

and

Proteinuria

- 300 mg or more per 24 hour urine collection (or this amount extrapolated from a timed collection) or
- Protein/creatinine ratio of 0.3 ~~mg/dL~~ or more or
- Dipstick reading of 2+ (used only if other quantitative methods not available)

Or in the absence of proteinuria, new-onset hypertension with the new onset of any of the following:

- Thrombocytopenia: Platelet count less than 100,~~000~~ $\times 10^9$/L
- Renal insufficiency: Serum creatinine concentrations greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease
- Impaired liver function: Elevated blood concentrations of liver transaminases to twice normal concentration
- Pulmonary edema
- New-onset headache unresponsive to medication and not accounted for by alternative diagnoses or visual symptoms

(2020). Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin, Number 222. *Obstetrics & Gynecology*, *135*, e237-e260. https://doi.org/10.1097/AOG.0000000000003891 Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin, Number 222. (2020). *Obstetrics & Gynecology*, *135*, e237-e260. https://doi.org/10.1097/AOG.0000000000003891

- Establish a mechanism for clients and families to give feedback to the practice, or report, experiences of inequitable care, miscommunication or disrespect.

Response

- Consult with a hospital-based physician or nurse-midwife with questions or concerns related to client care around hypertension or preeclampsia.
    - Transfer care of clients who meet diagnostic criteria for preeclampsia to the hospital.
- Provide a summary, complete records and a warm-handoff to the receiving provider.
- Advocate for postpartum clients with blood pressure 140/90 or greater to be seen and treated quickly through the emergency department, clinic, or hospital Labor & Delivery.

    - Provide information on postpartum blood pressure treatment criteria if needed. ACOG Practice Bulletin 222: Gestational Hypertension and Preeclampsia
- Make a coordinated plan for postpartum follow-up when a client has had severe hypertension or preeclampsia during pregnancy, labor, or the immediate postpartum. These clients should be seen at a minimum by day 3 after hospital discharge for blood pressure check and evaluation and should be given education about warning signs and when to call.
- Provide trauma-informed support for patients, including identified support people, and staff for serious complications of severe hypertension, including discussions regarding birth events, follow up care, resources, appointments, and referral to therapy and/or peer support groups.
    - Consider referral for support groups/ short term therapy for all patients with preeclampsia diagnosis, regardless of complications.
    - Preeclampsia Foundation Birth Trauma Resource site may provide helpful links.

Reporting & Systems Learning

- Debrief after cases of preeclampsia in your practice.
- Collect and review data in your practice on hypertension and preeclampsia.
- Peer review cases of preeclampsia to identify systems issues and areas for improvement.

Respectful, Equitable, and Supportive Care

- Engage in open, transparent, and empathetic communication with pregnant and postpartum people and their support people to understand diagnoses, options and treatment plans.
- Include pregnant and postpartum people as part of the care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.

Recommendations for Policy Change

While it is urgent that we improve care and outcomes for people who develop severe hypertension or preeclampsia during pregnancy or postpartum, it is also important that we make upstream policy and structural changes to so that people enter pregnancy in greater health and fewer people develop these complications. The following population-based policy changes are needed to improve the health of our communities and to reduce hypertension, not just in pregnancy but over the whole life cycle.

Policy changes to reduce hypertension and/ or morbidity from hypertension:

- Policies that reduce structural racism and address social determinants of health
  - Healthy People 2030 Social Determinants of Health
- Policies that increase physical activity and healthy eating
  - Community design (city planning) to increase physical activity
  - Creation of activity-friendly routes to common destinations
  - Policies that increase access to healthy food and drink such as decreased sodium in packaged foods and school meals
- Policies that decrease the use of tobacco
- Universal insurance coverage of home blood pressure monitors for pregnant and postpartum people

Surgeon General's Call to Action to Control Hypertension

In addition to these population-based policy changes, people with lived experience of severe hypertension and preeclampsia have identified health system, state, and federal policy changes that could improve health, access to care, and quality of care. The following policy recommendations are from the OPC Black, Indigenous, and Pacific Islander Severe Hypertension focus group.

Policy changes recommended by OPC Black, Indigenous, and Pacific Islander Severe Hypertension focus group:

- Increase access to culturally matched providers through policies that support Black, Indigenous, and people of color to become physicians and midwives.
- Provide access to continuity of care with midwives and/or doulas.

- Structure provider schedules so that there is time for unhurried discussion of patient questions and fears.
    - This could be accomplished through changing reimbursement models to prioritize visit lengths that support education and discussion.
- Improve access to therapy and peer support groups for patients with severe hypertension, preeclampsia and other pregnancy related complications.
- Provide comprehensive reproductive health education in school, in communities, and online.
- Increase the length of protected maternity leave.
- Provide free access to high quality physical and mental health care for people with limited resources.

Zhou, B., Perel, P., Mensah, G. A., & Ezzati, M. (2021). Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension. *Nature Reviews Cardiology*, *18*(11), 785-802.

Colvin, C. L., Kalejaiye, A., Ogedegbe, G., & Commodore-Mensah, Y. (2022). Advancing equity in blood pressure control: a response to the Surgeon General's Call-to-Action. *American Journal of Hypertension*, *35*(3), 217-224. https://academic.oup.com/ajh/article/35/3/217/6544842

Section V: Operational Considerations

Operational Considerations for Hospitals

Each site will need to evaluate local resources/ infrastructure to support successful implementation of toolkit. Below considerations/ questions are not exhaustive but are provided as a prompt for local teams to begin the necessary detailed discussions and generation of additional questions that will support successful implementation of the toolkit.

- Do you have access to baseline data that help objectively describe current state so you can prioritize quality improvement efforts? If not, who can help you access? Below are good measures to start with:
    - Timely treatment for severe hypertension
    - Severe maternal morbidity
    - Scheduled postpartum visits
- Who are the team members you need to involve if there are changes to clinical practice and workflows?
    - If the following roles care for birthing patients at your hospital, consider how they will engage in this work: Maternal fetal medicine physicians, OB hospitalists, OB/GYN physicians, Family Medicine physicians, CNM's, anesthesia physicians, CRNA, RN, RN leader, social workers, community midwives who accompany patients during transfer, doulas, peer support
    - Consider additional departments: Pharmacy, lab, informatics, ICU, ED
- What tools and information should be incorporated into the EMR and how is this accomplished at your facility?
- Are tools (algorithms, order sets, protocols, etc) known by all multidisciplinary team members?
    - How are they introduced to multidisciplinary team members?
    - How often are they reviewed and confirmed to be aligned with professional organization recommendations?
    - How are new multidisciplinary team members oriented to them?
    - Is this audited/ tracked in any way to confirm introduction/ awareness? If not, does team feel this is necessary?
- Are all team members aware of local criteria, resources and process for internal consultation and support for higher level care? (RN, CNM, Family Medicine, OB generalist, OB hospitalist, Anesthesia, Maternal Fetal Medicine, etc)

    - Are there any barriers that need to be addressed to reliably access?
- Are all team members at both the transferring and receiving hospitals aware of local criteria, resources and processes for transferring a patient for a higher level of care?
    - Are there any barriers that need to be addressed to reliably transfer?
- What systems/ structures do you have or need to ensure providers have adequate time to ask about and respond to patient questions and fears in the hospital?
    - Does a diagnosis of preeclampsia or hypertension reliably trigger asking patients about fears and questions?
    - Are there barriers other than time (knowledge, comfort, material, etc) that would prevent providers and all clinical team in engaging in individualized teaching/ discussions in the hospital?
- What training and support is needed to screen for and address social determinants of health (SDOH)? Who screens? Who responds if patient identifies need?
- The Oregon State Board of Nursing and Oregon Medical Board have cultural competency requirements for licensing that allow for a wide array of courses to meet this requirement. It is recommended that hospitals recommend/ offer a common perinatal specific training that multidisciplinary team members can utilize to meet this requirement.
- Are there barriers that need to be addressed to consistently schedule postpartum blood pressure and symptom check 7 days a week for individuals whose pregnancies were complicated by hypertensive disorders?
- Do you have a process established with clinics for direct admissions of patients (pregnant and postpartum) who have been evaluated in clinic and do not require additional evaluation in the emergency department?
- What is the process for reviewing and updating patient education?
- What languages are most common at your facility and how do internal documents get translated?
    - Does translation support include ensuring appropriate reading level?

Operational Considerations for Clinics

- Do you have a process established with hospitals for direct admissions of patients (pregnant and postpartum) who have been evaluated in clinic and do not require additional evaluation in the emergency department?
- What role in the clinic is best to track and follow up if patients do not come to their scheduled postpartum appointment?
- Who are your partners who support patients that you care for in the community (i.e community health/ home visiting nursing, community-based programs, etc) and do you have effective communication channels with them?
    - Is there a direct invitation to these partners to accompany patients to appointments if acceptable to patient and/or discussion about their role with patients to ensure coordination?
- What barriers need to be addressed prior to supporting home blood pressure monitoring?
    - Equipment, standard protocols, staffing, etc
- Who can support patients with challenges accessing primary care in your community?
- What is the process for reviewing and updating patient education?
- What systems/ structures do you have or need to ensure providers have adequate time to ask about and respond to patient questions and fears in the clinic?
    - Does a diagnosis of preeclampsia or hypertension reliably trigger asking patients about fears and questions?
    - Are there barriers other than time (knowledge, comfort, material, etc) that would prevent providers and all clinical team in engaging in individualized teaching/ discussions in the clinic?

Appendix

Readiness

- Accurate Blood Pressure Measurement (toolkit pdf) | California Maternal Quality Care Collaborative (cmqcc.org)
- POST-BIRTH Warning Signs Education Program – AWHONN
- CDC Urgent Maternal Signs
- ACOG Practice Bulletin 222, Gestational Hypertension and Preeclampsia
- CMQCC Simulation Examples
- CMQCC Professional Education Slides
- Diversity Science Dignity in Pregnancy and Childbirth
- CMQCC Example Medication Kit Acute Onset Severe Hypertension

Recognition and Prevention

- CDC/ ACOG Pregnancy Sign
- CDC Urgent Maternal Signs
- Accurate Blood Pressure Measurement (toolkit pdf) | California Maternal Quality Care Collaborative (cmqcc.org)
- Preeclampsia Foundation Cuff Kit Project
- How to take your blood pressure-Preeclampsia Foundation
- Blood Pressure Log-Preeclampsia Foundation
- Preeclampsia Foundation Signs and Symptoms
- ACOG Practice Advisory-Low Dose Aspirin Use for the Prevention of Preeclampsia and Related Morbidity and Mortality
- Ask About Aspirin (preeclampsia.org)
- 211-Community Resource Information
- Preeclampsia Foundation Patient Education Long Term Risk
- CMQCC Patient Education Checklists

Response Appendix

- ACOG Practice Bulletin 222, Gestational Hypertension and Preeclampsia
- CMQCC Suspected Preeclampsia Algorithm

- Baby Blues Connection
- Preeclampsia Foundation Birth Trauma Resources

Reporting and Systems Learning

- CMQCC Sample Debrief Form
- AIM Revised SMM Review Form 2024
- AIM Revised SMM Condition Specific Questions
- AIM Revised SMM Factors Worksheet
- AIM Revised SMM Guide to SMM Chart Reviews
- AIM Revised SMM Implementation Resources
- Perinatal Quality Improvement 2022 Webinar on improving data collection and review process by race/ethnicity
- AIM Severe Hypertension Bundle Measures

Respectful, Equitable and Supportive Care

- OPC Severe Hypertension Focus Group Report
- CMQCC webinar Let's Talk Perinatal Equity Webinar and slides that also include data considerations
- IHI Achieving Health Equity: A Guide for Health Care Organizations
- AWHONN Respectful Maternity Care Toolkit
- Family to Family Support Respectful, Equitable Care Certification
- IHI Black Maternal Health: Reducing Inequities through Community Collaboration
- Trauma Informed Oregon
- Cultural Humility TEDx_Mosley
- Preeclampsia Foundation Birth Trauma Resources
- Diversity Science Dignity in Pregnancy and Childbirth

2024 OPC Black, Indigenous, and Pacific Islander Severe Hypertension Focus Group Report

Background:

In April 2024 the Oregon Perinatal Collaborative conducted a focus group for Black, Indigenous, and Pacific Islander mothers and birthing people who had experienced pregnancy-related severe hypertension or preeclampsia in Oregon. We chose to focus on these communities because Black, Indigenous, and Pacific Islander people in Oregon are disproportionately affected by perinatal mortality and morbidity and we wanted their lived experience and expertise to directly inform our work to improve care and outcomes for severe hypertension and preeclampsia.

Nine people participated in this 2-hour focus group facilitated by Crystal Coyazo, Senior Healthcare Evaluation Associate with Comagine Health. Participants self-identified as Black (both African immigrant and African American), Pacific Islander, or Indigenous and had given birth in Oregon within the past 3 years. Participants were given a $100 gift card. This report is a summary of their responses for use in the program and toolkit development of the Oregon Perinatal Collaborative severe hypertension initiative.

Focus group participant experiences of severe hypertension & preeclampsia:

The focus group participants shared information about their experiences with severe hypertension and preeclampsia, the care they received, and their recommendations for improvement. The following are the core themes that emerged from the focus group.

Lack of knowledge about hypertension and Preeclampsia before diagnosis:

Most participants were unfamiliar with hypertension and preeclampsia before their own diagnosis. In retrospect they were concerned about how little information they had. When a participant had information about hypertension it was from previous experience with a family member.

“I had no basic knowledge prior to pregnancy.”

“I only heard of preeclampsia during my pregnancy. I feel like people are not enlightened enough. And this may be a barrier to proper self-care or seeking medical care.”

Anxiety around diagnosis:

Participants reported high anxiety around their diagnosis and what it might mean for their pregnancy.

"I went to the hospital, and I was having different symptoms, and I was examined I was checked, and they came up with a diagnosis of preeclampsia. I was so devastated because I didn't expect that to come up with my pregnancy."

"When I was first diagnosed with preeclampsia, I really was worried. I was worried to the point that I sometimes went online to search for different remedies… and check for different options during pregnancy… So I discovered that 75 to 80% of pregnant women with preeclampsia, most of them, go through cesarean section. Yeah, that got me worried."

Need for more clear and complete information about preeclampsia:
Participants frequently returned to their desire for more clear and complete information about their diagnosis and what to expect.

"[We need] clear and detailed explanations from healthcare providers about the condition, its progression, and potential risks to help the patient understand what to expect."

"I had to change doctors when the preeclampsia began. The first doctors didn't really explain it. I didn't feel like they fully explained what was going to happen or what caused it. So most of the time I'd find myself googling my symptoms and what is preeclampsia because personally I like knowing stuff."

Provider communication challenges:
Some participants experienced challenges communicating with their providers and one described the need to keep asking questions even in the face of barriers.

"The doctors acted busy and overwhelmed and I felt they were being standoffish."

"I can relate to [another participant] saying the doctors can be busy and give you that attitude... but when it's important you don't let that stop you from asking questions."

Fear of death:

Some participants shared about their fear of dying from preeclampsia. It will be important for providers and nurses to understand the profound impact of this fear during and after the experience of preeclampsia.

[Speaking about an interaction with her midwife] *"I told her, I'm scared for my life. Will I make it? She said. Yeah, you will make it sure. I had to pull myself together. I had to sum up courage. with her words of encouragement."*

"So, it's just how your body can pretend to be responding to treatment today, and by the time it's evening it's worse. Your life is in the balance. It's that lethal."

Midwife and doula support:
Participants described feeling supported, understood, and comforted by their doula or midwife.

"My doula was really kind and patient with me. Having her, I was able to really discuss explicitly and conveniently with her as compared with the doctors."

[About her midwife] *"I got so close to her because… she also had preeclampsia during pregnancy that she really understood how the condition is… She was always there for me, giving me a lot of information, advice, and everything. So, I was just so close to her, to the point that I couldn't hold back any information. I was free to open everything to her."*

"One of the midwives in my case was friendly and supportive. You know, giving you that extra help, listening to you, and not being so professional… [It] just made it a lot easier for me."

Postpartum recovery:
Participants described how important a period of rest and recovery was after their experience of preeclampsia and birth. They also described challenges, especially around mental health, during this time.

"I really needed to rest. I was told I needed to take maternity leave before my time…for preeclampsia… I wish the duration of the leave could be extended. I really needed time to rest and take care of myself and recover fully, so that I will not break down, because my health is very, very important."

"When you're feeling bad, when you're feeling down, whether mentally or physically … it can cause a major malfunction and emphasizing of how useful it can be to have people who

support you because at that time we might be pushing people away. the feeling of helplessness, and yet not wanting pity, you know, and then you don't, sometimes you don't want to recover. It's you embracing the darkness and the helplessness, and you just wanna manage. Trust me, it can be a very thin line between depression and ...how bad can it get?"

Need for family/community support:
Participants shared how important family and community support is when going through preeclampsia and especially during recovery postpartum.

"It's really nice that you have your family who can look after you post birth because then it gets even worse. You will have to take care of yourself. You have to heal."

"[Not having family nearby for postpartum support] really got me worried cause you know with cesarean section you still need people around to help you do things until you are fully recovered... and I didn't really have anyone around, and I didn't really have that as an option. I really wanted something different."

Mental health support during and after preeclampsia
Participants shared that mental health support was essential during and after recovering from preeclampsia. They described the mental health impacts of the experience in their lives and advocated for therapy and support groups to be a regular part of treatment offered for anyone with preeclampsia. This was one of the strongest themes of the focus group.

"And when the society looks at it as, oh, you're a woman, this is what you were created to do, to give life, so it's not big to you. But it really is a big deal [tears up]. Sometimes you ...lose control of your feelings... you are unable to perform your duties as a mother, you might resent having your kids around."

"Alongside medications that you have to take it should be very recommended, like there should be prescribed therapy for mothers. I know not everyone wants to do therapy and therapy doesn't exactly work for everyone the same way but it's useful and time and again, little traumatic events add up."

"It's true that therapy should be paramount in after pregnancy care, it did work for me."

Making sense of the experience:
Even months to 2 years out from the birth, participants were still deeply affected by, and making sense of their experiences of birth and preeclampsia.

"At least I gave birth successfully. I am alive. My kids are alive."

"I'm grateful for the little moments of joy that my babies give me and I'm happy that I'm like on my way to healing and reconnecting with friends and family. Just getting back to how I used to be. It was really crazy."

Traditional Medicine:
A participant described the conflict between traditional medicine and modern medicine and expressed the desire to be able to access both with ease.

"Your question brought something to my mind about traditional medicine like being in conflict with modern medicine. So it's like, we can do better together. We don't have to be at war. ...I feel like we could do it if we tried to blend things together. We all have different perspectives and, you know, beliefs, and this is what has been working for this group of people for a long time."

Recommendations for improving care for severe hypertension and preeclampsia:
Focus group participants were asked for their recommendations on how care for pregnant and postpartum people with severe hypertension and preeclampsia could be improved. The following is a summary of their recommendations divided into specific areas for improvement.

Recommendations to improve experiences and outcomes for Black, Indigenous, and Pacific Islander families:

- Provide access to culturally-matched providers.
- Provide access to continuity of care with midwives and/or doulas.
- Provide clear and complete information about preeclampsia diagnosis and disease process.
- Organize community education on pregnancy health and complications in coordination with community leaders and religious leaders.
- Respect traditional medicine and make room for it to be used alongside clinical medicine.

Recommendations for Providers:

- Ask about questions and fears in appointments and inpatient encounters and make time for unhurried response and discussion.
- Connect patients who have severe hypertension and preeclampsia diagnoses to mental health supports such as therapy and support groups.
- Provide evidence-based, high-quality care and careful monitoring.

Health Education Recommendations:

- Provide comprehensive reproductive health education in school, in communities, and online.
- Provide education about hypertension and preeclampsia during early prenatal visits.
- Improve provider education on patient-centered care for severe hypertension and preeclampsia.
- Create and promote easy to access online education materials about severe hypertension and preeclampsia for pregnant people and for healthcare providers.

System-Level Recommendations:

- Improve mental health supports for people with severe hypertension and preeclampsia (especially postpartum support). Participants emphasized the serious toll their experiences with preeclampsia had on their mental health.
    - Provide access to support groups, particularly long-term, not just short-term groups.
    - Provide mental health support to family members of people with these diagnoses.
- Create systems so pregnant people can access continuity of care with a midwife and/or doula.
- Increase the length of protected maternity leave.
    - Educate employers about the importance of maternity leave especially for people with pregnancy complications like preeclampsia.
- Create systems that support high quality, evidence-based care and careful monitoring.
- Provide free access to high quality physical and mental health care for people with limited resources.

Report compiled by Silke Akerson.

Hypertension Definitions

Condition	Diagnostic Criteria
Chronic Hypertension	Hypertension diagnosed or present before pregnancy or before 20 weeks of gestation that does not resolve in the postpartum period. Current diagnosis requires two determinations of systolic blood pressure of greater than 140 mm Hg and diastolic blood pressure of 90 mm Hg on two occasions more than 4 hours apart. *For patients classified with Stage 1 Hypertension (Systolic blood pressure of 130-139 mmHg or diastolic blood pressure of 80-89 mm Hg) it is reasonable to continue to manage the patient in pregnancy as chronic hypertension.*
Gestational Hypertension	Gestational hypertension is defined as a systolic blood pressure 140 mm Hg or more or a diastolic blood pressure of 90 mm Hg or more, or both, on two occasions at least 4 hours apart after 20 weeks of gestation, **in a birthing person with a previously normal blood pressure without proteinuria or severe features.** *Birthing people diagnosed with gestational hypertension who develop severe range blood pressures of 160 mm Hg or the diastolic level reaches 110 mm Hg, or both should be diagnosed with preeclampsia with severe features.*
Preeclampsia	**Blood pressure** Systolic blood pressure of 140 mm Hg or more or diastolic blood pressure of 90 mm Hg or more on two occasions at least 4 hours apart after 20 weeks of gestation in a birthing person with a previously normal blood pressure ***AND*** **Proteinuria** 300 mg or more per 24 hour urine collection (or this amount extrapolated from a timed collection) OR protein/creatinine ratio of 0.3 mg/dL or more OR Dipstick reading of 2+ (used only if other methods are not available) ***OR*** **In the absence of proteinuria,** new-onset hypertension with the new onset of any of the following: • Thrombocytopenia: Platelet count less than 100,000 x 109/L • Renal insufficiency: Serum creatinine concentrations greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease • Impaired liver function: Elevated blood concentrations of liver transaminases to twice normal concentration • Pulmonary edema • New-onset headache unresponsive to medication and not accounted for by alternative diagnoses or visual symptoms.
Preeclampsia with Severe Features	• Systolic blood pressure of 160 mm Hg or more or diastolic blood pressure of 110 mm Hg or more. *(Severe hypertension can be confirmed within a short interval (minutes) to facilitate timely antihypertensive therapy*)

	• Thrombocytopenia: Platelet count less than 100,000 x 109/L • Renal insufficiency: Serum creatinine concentrations greater than 1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease • Impaired liver function: Elevated blood concentrations of liver transaminases to twice normal concentration • Pulmonary edema • New-onset headache unresponsive to medication and not accounted for by alternative diagnoses or visual symptoms.
Chronic hypertension with Superimposed Preeclampsia	Preeclampsia in a birthing person diagnosed with hypertension before pregnancy or before 20 weeks gestation.

American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Obstetrics. ACOG Practice Bulletin No. 203: Chronic Hypertension in Pregnancy. Obstet Gynecol. 2019 Jan;133(1):e26-e50. doi: 10.1097/AOG.0000000000003020. PMID:

Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin, Number 222. Obstet Gynecol. 2020 Jun;135(6):e237-e260. doi: 10.1097/AOG.0000000000003891. PMID: 32443079.