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Enhancing Clinical Understanding and Management of Hypertensive Disorders of Pregnancy Among OB-GYN Providers

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Executive Summary: Staff Education Project

Enhancing Clinical Understanding and Management of Hypertensive Disorders of Pregnancy Among OB-GYN Providers

by

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Summary

Hypertensive disorders of pregnancy (HDP), including gestational hypertension, preeclampsia, and chronic hypertension, are among the leading causes of maternal and neonatal morbidity and mortality globally, affecting approximately 10% of pregnancies (Cífková, 2023). Despite established clinical guidelines, a significant gap remains in provider knowledge and the consistent application of evidence-based practices, particularly during the postpartum period and among marginalized populations (Chambers et al., 2022). This Doctor of Nursing practice (DNP) project addressed this gap by implementing a staff education program using the evidence-based California Maternal Quality Care Collaborative (CMQCC, 2021) toolkit. The intervention consisted of a pretest to assess baseline knowledge, an interactive PowerPoint presentation based on the CMQCC toolkit, and a posttest to measure knowledge retention. Results showed an increase in average test scores from 77.5% to 91.7%, representing a 14.2% improvement. Findings suggest the intervention was effective in enhancing clinical understanding and management of HDP among participating providers. The project could support earlier clinical interventions, more accurate diagnoses, and greater consistency in care. HDP remain a leading cause of preventable maternal mortality worldwide, particularly in low-resource settings and among women of color, who continue to face systemic disparities in diagnosis and treatment (Chambers et al., 2022; World Health Organization, 2024). This educational model is scalable and adaptable, providing a practical framework for enhancing provider preparedness and promoting equitable, evidence-based maternal care across diverse health care settings.

Background

A growing body of evidence supported the urgent need for provider education in early recognition of HDP to prevent maternal and neonatal morbidity and mortality. According to Luger and Kight (2022), up to 0.6% of women with preeclampsia without severe features may develop eclampsia, with serious complications occurring in up to 70% of those cases. Further, Black women in the United States are 3 to 4 times more likely to experience severe pregnancy-related complications and maternal mortality compared to White women, in part due to delayed recognition and inadequate management of HDP (Chambers et al., 2022). The World Health Organization (2025) and Souza et al. (2011) also emphasized the importance of early detection strategies and standardized training to improve maternal outcomes worldwide. The need for this DNP project stemmed from the persistent gap in health care provider knowledge and clinical management of HDP, which continues to be among the leading causes of maternal and neonatal morbidity and mortality globally (Rajkumar et al., 2024). Many cases of severe maternal morbidity and mortality are preventable (Smith et al., 2023).

Implementing obstetric early warning systems that promptly alert health care providers to signs of clinical deterioration can significantly improve maternal safety by enabling earlier recognition and intervention (Friedman et al., 2018). HDP affect approximately 10% of pregnancies and include conditions such as gestational hypertension, chronic hypertension, and preeclampsia, all of which can lead to severe complications, including eclampsia, stroke, HELLP syndrome, and maternal death (Cífková, 2023; Radparvar et al., 2024). Despite established guidelines, delayed recognition and inconsistent management of HDP, especially during the postpartum period, remain major contributors to adverse outcomes, particularly in marginalized populations (Chambers et al., 2022).

The central question guiding this project was the following: Can an evidence-based educational intervention using the CMQCC toolkit improve health care providers' knowledge and clinical competence in identifying and managing HDP? The purpose was to strengthen provider understanding of HDP by delivering standardized, evidence-based education to promote earlier detection, accurate diagnosis, and timely interventions. The project targeted clinical staff at Southside OBGYN in North Miami, Florida, a diverse urban setting with high-risk maternal populations, including a large number of Hispanic and Haitian patients.

The project drew on high-quality Level I and II evidence, including clinical guidelines, systematic reviews, and expert consensus embedded within the CMQCC toolkit. This toolkit offers a structured approach to HDP education, including diagnostic criteria, management pathways, and follow-up strategies. Additionally, the CMQCC toolkit provides structured algorithms and protocols that align with international standards, making it a valuable resource for provider education and training. Its use ensured that the intervention was rooted in best practices and widely accepted clinical standards. The project was designed using strong evidence highlighting the clinical severity of HDP and the preventable nature of many related complications through enhanced provider education. By implementing this change, the project not only addressed a local practice gap but may also contribute to national efforts to reduce maternal mortality and promote health equity by delivering standardized, evidence-based care.

Staff Education Project Development

This project engaged health care providers in an educational session focused on HDP. Participants included front desk staff, a medical assistant, a registered nurse, and three nurse practitioner clinical students. The goal was to improve health care providers' ability to recognize, diagnose, and manage HDP through structured training. The implementation process began with a pretest to assess baseline knowledge of HDP, covering topics such as early recognition, pathophysiology, risk factors, diagnosis, and management. An interactive PowerPoint presentation, developed using the CMQCC toolkit, was then delivered to support evidence-based learning. Following the session, participants completed a posttest using the same multiple-choice format to evaluate short-term knowledge retention. Educational handouts were also distributed to reinforce key concepts. Pre- and posttest scores were compared, demonstrating a measurable increase in participant knowledge. This quantitative approach offered a straightforward method for evaluating the effectiveness of the intervention. The findings confirmed that the educational session enhanced provider understanding of HDP, highlighting its potential value for ongoing and future training efforts aimed at improving maternal care outcomes.

Results

Following the implementation of an educational intervention on HDP, health care providers demonstrated a significant improvement in knowledge, as evidenced by pre- and post-assessment results. Pretest scores were 60%, 75%, 75%, 95%, 80%, and 80%, with an average of 77.5% (see Table 1 and Figure 1). Posttest scores increased to 75%, 90%, 100%, 100%, 95%, and 90%, resulting in an average of 91.7%. This reflected a 14.2% overall improvement. The most substantial gains were observed among participants who initially scored between 60% and 75%, with improvements of up to 35 percentage points. These results suggest the intervention enhanced understanding of HDP, including early recognition, pathophysiology, risk factors, diagnosis, and evidence-based management strategies.

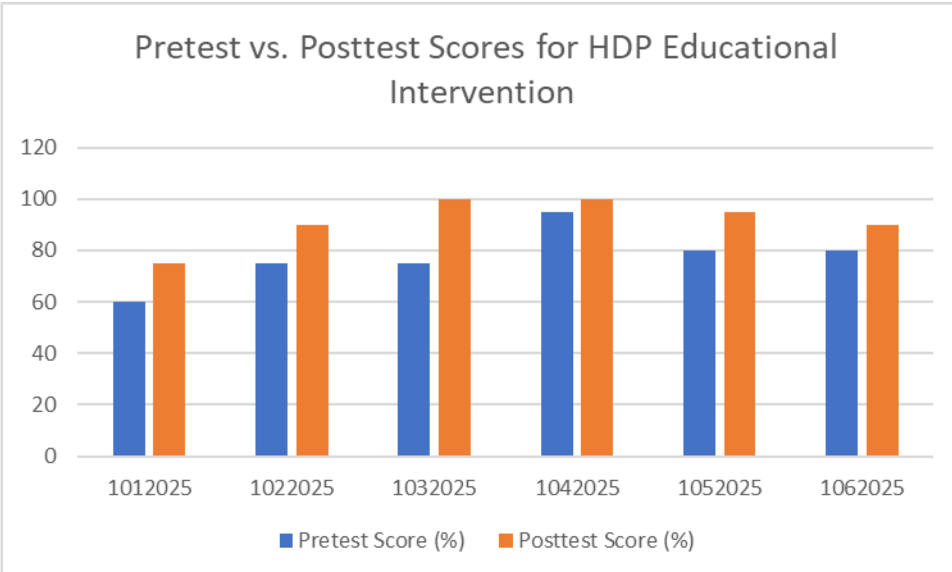
Table 1

Pretest vs. Posttest Scores for HDP Educational Intervention

Participant	Pretest score (%)	Posttest score (%)	Score improvement (%)
1	60	75	+15
2	75	90	+15
3	75	100	+25
4	95	100	+5
5	80	95	+15
6	80	90	+10
Average	77.5	91.7	+14.2

Figure 1

Pretest vs. Posttest Scores for HDP Educational Intervention



At the organizational level, the intervention had a meaningful impact. The training improved clinical staff's competency in identifying and managing HDP, which is expected to facilitate earlier intervention, reduce complications, and improve maternal health outcomes. Enhanced provider confidence and the adoption of standardized care practices may also contribute to improved team communication and more consistent clinical decision making. Enhancing staff knowledge of HDP may help facilitate the timely detection and management of this high-risk condition, thereby leading to improved outcomes for patients. Moreover, the emphasis on education may reinforce a culture of continuous learning and evidence-based practice within the organization.

Despite these positive outcomes, the project had several limitations. The small sample size restricts the generalizability of the findings, and the use of identical pre- and posttests may have introduced recall bias. Additionally, the absence of long-term follow-up limits the ability to assess sustained knowledge retention over time.

Nevertheless, this initiative has relevance beyond the local setting. HDP remains a leading contributor to maternal morbidity and mortality in the United States, particularly among vulnerable populations. The scalability of this educational model makes it a valuable tool for broader maternal health quality improvement efforts, offering a practical approach to enhancing provider readiness and reducing preventable outcomes associated with hypertensive complications in pregnancy.

Conclusions

This DNP project addressed a critical gap in provider knowledge and management of HDP by implementing an evidence-based educational intervention grounded in the CMQCC toolkit. The intervention resulted in a significant improvement in clinical knowledge among health care providers, underscoring the value of structured, evidence-based training in enhancing the early recognition and management of HDP. Although factors such as a small sample size and short-term evaluation limit the generalizability of the findings, the results suggest that this educational approach holds promise for broader implementation. As HDP continues to contribute significantly to maternal morbidity and mortality, especially in high-risk and underserved populations, this scalable educational model offers a promising strategy for enhancing provider readiness, promoting clinical consistency, and improving maternal health outcomes. Future efforts should focus on expanding this model across diverse health care settings and incorporating long-term follow-up to evaluate sustained impact.

References

California Maternal Quality Care Collaborative. (2021). *Improving health care response to hypertensive disorders of pregnancy* | https://www.cmqcc.org/resource/improving-health-care-response-hypertensive-disorders-pregnancy

Chambers, B. D., Taylor, B., Nelson, T., Harrison, J., Bell, A., O'Leary, A., Arega, H. A., Hashemi, S., McKenzie-Sampson, S., Scott, K. A., Raine-Bennett, T., Jackson, A. V., Kuppermann, M., & McLemore, M. R. (2022). Clinicians' perspectives on racism and Black women's maternal health. *Women's Health Reports*, *3*(1), 476–482. https://doi.org/10.1089/whr.2021.0148

Cífková, R. (2023). Hypertension in pregnancy: A diagnostic and therapeutic overview. *High Blood Pressure & Cardiovascular Prevention*, *30*(4), 289–303. https://doi.org/10.1007/s40292-023-00582-5

Friedman, A., Campbell, M., Kline, C., Wiesner, S., D'Alton, M., & Shields, L. (2018). Implementing obstetric early warning systems. *American Journal of Perinatology Reports*, *08*(02), e79–e84. https://doi.org/10.1055/s-0038-1641569

Luger, R. K., & Kight, B. P. (2022, October 3). *Hypertension in pregnancy*. StatPearls - NCBI Bookshelf. https://www.ncbi.nlm.nih.gov/books/NBK430839/

Radparvar, A. A., Vani, K., Fiori, K., Gupta, S., Chavez, P., Fisher, M., Sharma, G., Wolfe, D., & Bortnick, A. E. (2024). Hypertensive disorders of pregnancy. *JACC Advances*, *3*(3), 100864. https://doi.org/10.1016/j.jacadv.2024.100864

Rajkumar, T., Hennessy, A., & Makris, A. (2024). Remote blood pressure monitoring in women at risk of or with hypertensive disorders of pregnancy: A systematic review and meta-analysis. *International Journal of Gynecology & Obstetrics*, *169*(1), 89–104. https://doi.org/10.1002/ijgo.16059

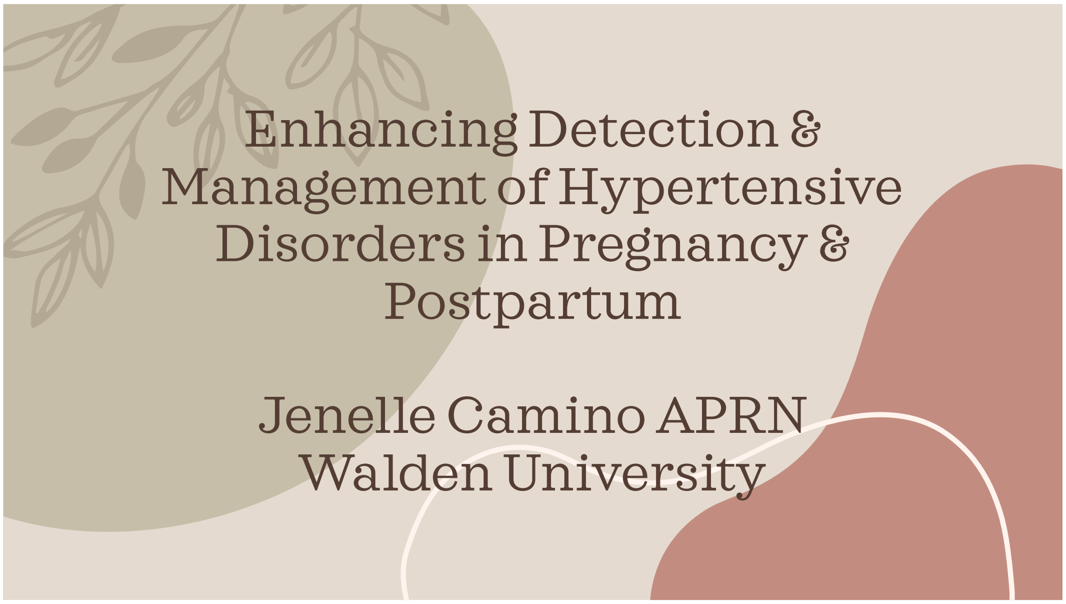
Smith, S., Kim, P., Wolff, S. F., Ramaswamy, M., & Collins, T. (2023). Hypertension in pregnancy and preeclampsia: Variation in clinical management strategies among obstetric/gynecologic provider type. *Women's Health Reports*, *4*(1), 517–522. https://doi.org/10.1089/whr.2023.0031

Souza, J. P., Say, L., & World Health Organization. (2011). *Evaluating the quality of care for severe pregnancy complications The WHO near-miss approach for maternal health*. World Health Organization.

World Health Organization. (2024, April 26). *Maternal mortality*. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

World Health Organization. (2025, March 8). *Many pregnancy-related complications going undetected and untreated – WHO*. https://www.who.int/news/item/08-03-2025-many-pregnancy-related-complications-going-undetected-and-untreated--who

Appendix



DNP PP.pptx

Click on the link above for PowerPoint Presentation

DNP Pre/Post Test

- **Pre- and Post-Training Survey:**
  Assess baseline knowledge before the training session and evaluate knowledge retention after the session using a multiple-choice test, the focus will be on HDP types, complications, and management strategies.

- Multiple choice tests are commonly employed in medical education and research to assess various aspects of training and performance. They are frequently used to measure the effectiveness of educational interventions. For this project, outcomes will be measurable and will include a pre/post-test education survey. The results from these surveys will be compared to assess changes in knowledge providing a clear evaluation of the effectiveness of the educational intervention.

  The pretest and posttest will be the same in order to evaluate the percent difference between them.

Pretest instructions

Directions: This assessment is designed to identify your current knowledge of Hypertensive Disorders in Pregnancies and Postpartum as well as obtain your perspective on SPECIFICS following the provider education presentation. Please respond to all items.

Identification Number: Please place a six-digit identification number on this test that you will remember as you will need to use it again following the presentation. Do not use consecutive numbers. Use a unique string of numbers (e.g., 357834). Only place the number on the test – not your name or any other personal information.

Six Digit Identification Number: ____________________________

Instructions:

- Read each item carefully.
- Answer all the items honestly.
- Do not leave any items blank.

Submission: After completing this post-questionnaire, submit your form to the designated collection point.

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Posttest Instructions

Directions: This assessment is designed to identify your current knowledge of Hypertensive Disorders in Pregnancies and Postpartum as well as obtain your perspective on SPECIFICS following the provider education presentation. Please respond to all items.

Identification Number: Use your six-digit identification number created during pre-test as your identification– not your name or any other personal information.

Six Digit Identification Number: ________

Instructions:

- Read each item carefully.
- Answer all the items honestly.
- Do not leave any items blank.

Submission: After completing this post-questionnaire, submit your form to the designated collection point.

Hypertensive Disorders in Pregnancy and Postpartum – Multiple Choice Test

1. Which of the following is classified as a hypertensive disorder of pregnancy?

A. Gestational diabetes
B. Hyperemesis gravidarum
C. Preeclampsia

D. Placenta previa

2. What blood pressure reading is the diagnostic threshold for hypertension in pregnancy?
A. 120/80 mmHg
B. 130/85 mmHg
C. 140/90 mmHg
D. 150/100 mmHg

3. Preeclampsia is defined by new-onset hypertension after 20 weeks gestation and:
A. Hyperglycemia
B. Proteinuria or end-organ dysfunction
C. Vaginal bleeding
D. Decreased fetal movement

4. Which of the following is a risk factor for preeclampsia?
A. Multiparity
B. Teenage pregnancy
C. Chronic hypertension
D. Hypothyroidism

5. Which test is commonly used to assess proteinuria in preeclampsia?
A. Fasting glucose test
B. 24-hour urine collection
C. Amniocentesis
D. Pap smear

6. Eclampsia is characterized by:
A. Hypertension and edema
B. Seizures in a woman with preeclampsia
C. Fetal bradycardia
D. Loss of consciousness due to hypotension

7. What is the first-line antihypertensive agent commonly used in pregnancy?
A. Lisinopril
B. Methyldopa
C. Losartan
D. Hydrochlorothiazide

8. What outcome is most appropriate for evaluating a clinical practice change targeting improved early recognition of gestational hypertension?
A. Reduced time to delivery
B. Decreased NICU admissions
C. Timely diagnosis prior to onset of proteinuria

D. Reduction in prenatal visits

9. Which of the following is a potential complication of severe preeclampsia?
A. Respiratory alkalosis
B. HELLP syndrome
C. Hypokalemia
D. Polycythemia

10. HELLP syndrome includes all EXCEPT:
A. Hemolysis
B. Elevated liver enzymes
C. Low platelet count
D. Elevated creatinine

11. Which of the following postpartum conditions should raise concern for undiagnosed hypertensive disorder?
A. Mild headache
B. Swelling that improves overnight
C. Seizure
D. Diuresis

12. In managing postpartum hypertension, which medication is commonly used and safe during breastfeeding?
A. Labetalol
B. Enalapril
C. Atenolol
D. Nifedipine

13. When is postpartum preeclampsia most likely to present?
A. Immediately after delivery
B. Within 48 hours
C. Within the first 6 weeks
D. After 3 months

14. HELLP syndrome is most accurately described as a:
A. Subtype of chronic hypertension
B. Complication of eclampsia with no systemic involvement
C. Variant of severe preeclampsia with multisystem involvement
D. Postpartum-only hypertensive condition

15. Which of the following lab findings is most consistent with HELLP syndrome?
A. Hematocrit of 45%
B. ALT of 15 U/L
C. Platelet count of 75,000/mm^3

D. Sodium of 140 mEq/L

16. When evaluating disparities in hypertensive disorder outcomes, which population experiences the highest maternal mortality rate in the U.S.?
A. White women over age 40
B. Hispanic women with multiple gestations
C. Black women of reproductive age
D. Asian women with gestational diabetes

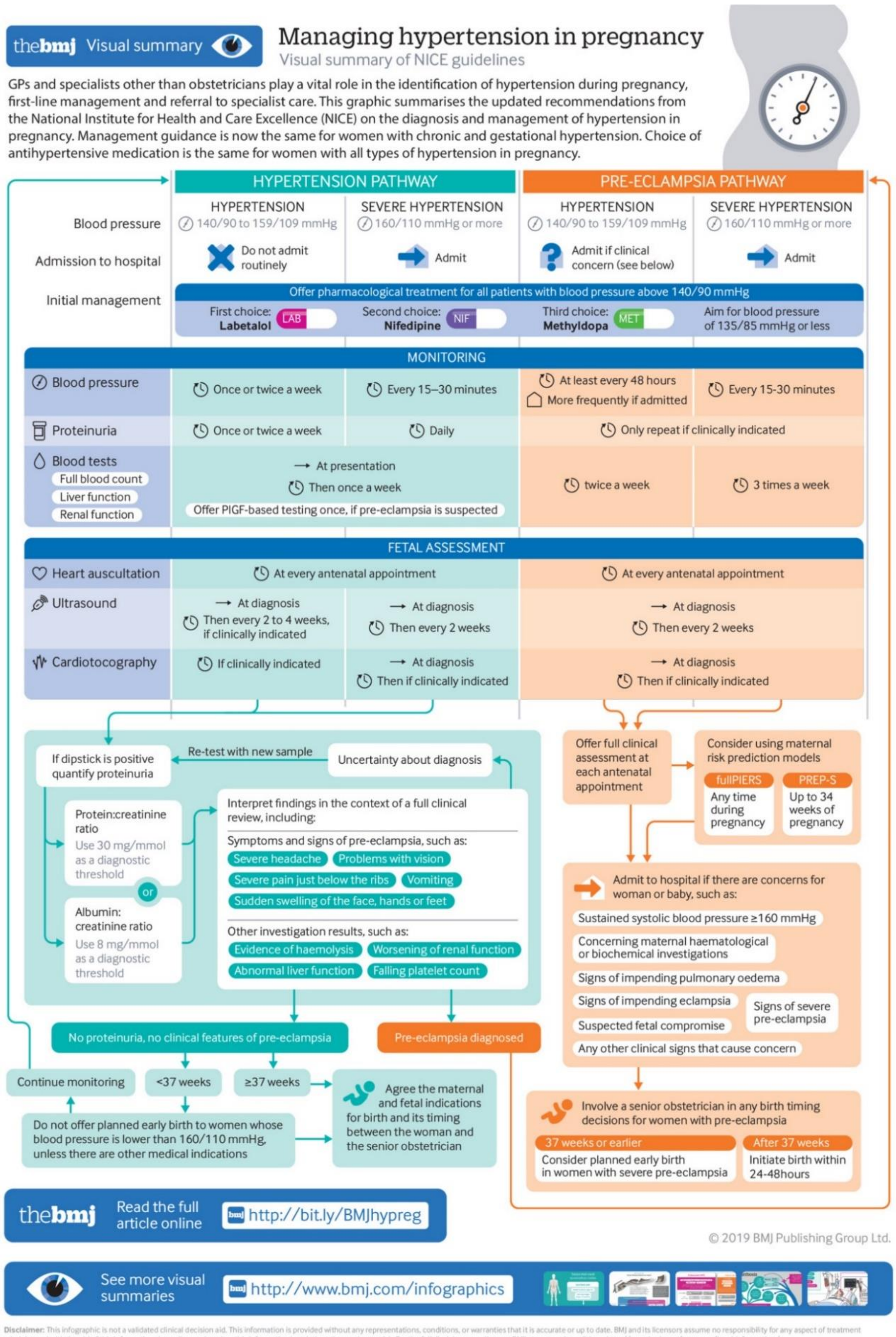
17. What is the goal of managing gestational hypertension without severe features?
A. Immediate delivery
B. Maintain BP <160/110 mmHg and monitor closely
C. Bed rest for remainder of pregnancy
D. Begin anticoagulation therapy

18. Which symptom warrants immediate evaluation in a pregnant woman with hypertension?
A. Nausea
B. Mild swelling
C. Severe headache with visual disturbances
D. Fatigue

19. What is the typical duration of postpartum blood pressure monitoring for women with preeclampsia?
A. 24 hours
B. 48–72 hours
C. Up to 7 days
D. At least 6 weeks

20. What is the long-term health risk associated with a history of preeclampsia?
A. Type 1 diabetes
B. Chronic hypertension and cardiovascular disease
C. Autoimmune disorders
D. Breast cancer

Educational Handout


thebmj Visual summary
Managing hypertension in pregnancy
Visual summary of NICE guidelines
GPs and specialists other than obstetricians play a vital role in the identification of hypertension during pregnancy, first-line management and referral to specialist care. This graphic summarises the updated recommendations from the National Institute for Health and Care Excellence (NICE) on the diagnosis and management of hypertension in pregnancy. Management guidance is now the same for women with chronic and gestational hypertension. Choice of antihypertensive medication is the same for women with all types of hypertension in pregnancy.
HYPERTENSION PATHWAY
PRE-ECLAMPSIA PATHWAY
Blood pressure
HYPERTENSION
140/90 to 159/109 mmHg
SEVERE HYPERTENSION
160/110 mmHg or more
HYPERTENSION
140/90 to 159/109 mmHg
SEVERE HYPERTENSION
160/110 mmHg or more
Admission to hospital
Do not admit routinely
Admit
Admit if clinical concern (see below)
Admit
Initial management
Offer pharmacological treatment for all patients with blood pressure above 140/90 mmHg
First choice: Labetalol LAB
Second choice: Nifedipine NIF
Third choice: Methyldopa MET
Aim for blood pressure of 135/85 mmHg or less
MONITORING
Blood pressure
Once or twice a week
Every 15–30 minutes
At least every 48 hours
More frequently if admitted
Every 15-30 minutes
Proteinuria
Once or twice a week
Daily
Only repeat if clinically indicated
Blood tests
Full blood count
Liver function
Renal function
At presentation
Then once a week
Offer PlGF-based testing once, if pre-eclampsia is suspected
twice a week
3 times a week
FETAL ASSESSMENT
Heart auscultation
At every antenatal appointment
At every antenatal appointment
Ultrasound
At diagnosis
Then every 2 to 4 weeks, if clinically indicated
At diagnosis
Then every 2 weeks
At diagnosis
Then every 2 weeks
Cardiotocography
If clinically indicated
At diagnosis
Then if clinically indicated
At diagnosis
Then if clinically indicated
If dipstick is positive quantify proteinuria
Re-test with new sample
Uncertainty about diagnosis
Protein:creatinine ratio
Use 30 mg/mmol as a diagnostic threshold
or
Albumin: creatinine ratio
Use 8 mg/mmol as a diagnostic threshold
Interpret findings in the context of a full clinical review, including:
Symptoms and signs of pre-eclampsia, such as:
Severe headache
Problems with vision
Severe pain just below the ribs
Vomiting
Sudden swelling of the face, hands or feet
Other investigation results, such as:
Evidence of haemolysis
Worsening of renal function
Abnormal liver function
Falling platelet count
No proteinuria, no clinical features of pre-eclampsia
Pre-eclampsia diagnosed
Continue monitoring
<37 weeks
≥37 weeks
Agree the maternal and fetal indications for birth and its timing between the woman and the senior obstetrician
Do not offer planned early birth to women whose blood pressure is lower than 160/110 mmHg, unless there are other medical indications
Offer full clinical assessment at each antenatal appointment
Consider using maternal risk prediction models
fullPIERS
Any time during pregnancy
PREP-S
Up to 34 weeks of pregnancy
Admit to hospital if there are concerns for woman or baby, such as:
Sustained systolic blood pressure ≥160 mmHg
Concerning maternal haematological or biochemical investigations
Signs of impending pulmonary oedema
Signs of impending eclampsia
Suspected fetal compromise
Signs of severe pre-eclampsia
Any other clinical signs that cause concern
Involve a senior obstetrician in any birth timing decisions for women with pre-eclampsia
37 weeks or earlier
Consider planned early birth in women with severe pre-eclampsia
After 37 weeks
Initiate birth within 24-48hours
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Facts Sheet

This information was obtained from the California Maternal Quality Care Collaborative's resource, *Improving Health Care Response to Hypertensive Disorders of Pregnancy* (n.d.).

Types of Hypertensive Disorders:

- Preeclampsia
- Gestational hypertension
- Eclampsia
- HELLP syndrome

Diagnostic Threshold:

- Hypertension in pregnancy is diagnosed at **≥140/90 mmHg**

Preeclampsia Criteria:

- Onset after **20 weeks gestation**
- Accompanied by **proteinuria or end-organ dysfunction**

Risk Factors for Preeclampsia:

- Chronic hypertension
- First-time pregnancy
- Obesity
- Advanced maternal age

Assessment Tools:

- **24-hour urine collection** is commonly used to detect proteinuria

Eclampsia:

- Defined as **seizures** in a woman with preeclampsia

First-line Antihypertensives in Pregnancy:

- **Methyldopa**, **labetalol**, and **nifedipine**

Complications of Severe Preeclampsia:

- **HELLP syndrome**
- **Preterm birth**
- **Placental abruption**

HELLP Syndrome:

- Involves **hemolysis, elevated liver enzymes, and low platelet count**
- A severe form of preeclampsia with **multisystem involvement**

Postpartum Hypertension:

- Can occur **up to 6 weeks** postpartum
- Symptoms like **seizures** or **severe headache** require urgent evaluation

Safe Antihypertensives During Breastfeeding:

- **Labetalol** and **nifedipine**

Monitoring Duration Postpartum:

- Blood pressure should be monitored for **at least 6 weeks** in women with preeclampsia

Disparities in Outcomes:

- **Black women of reproductive age** have the highest maternal mortality rate from hypertensive disorders in the U.S.

Long-term Health Risks:

- History of preeclampsia increases the risk for **chronic hypertension** and **cardiovascular disease**

Early Warning Symptoms:

- **Severe headache with visual disturbances** warrants immediate attention

□ **Goal of Managing Gestational Hypertension (without severe features):**

- Maintain BP **<160/110 mmHg** and monitor closely

□ **Outcome Measures for Practice Change:**

- Evaluate based on **timely diagnosis before onset of proteinuria** or complications

Reference

Improving health care response to hypertensive disorders of pregnancy | California Maternal Quality Care Collaborative. (n.d.). https://www.cmqcc.org/resource/improving-health-care-response-hypertensive-disorders-pregnancy