Management of Postpartum Hypertension/Preeclampsia

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STAMPP-htn
Systematic Treatment And Management of PostPartum hypertension

Clinical guidelines and protocols

Hospital level initiatives for management of postpartum hypertension

Funding: Department of OB/GYN, CLI Board, Women’s Board, Omron
POINTS TO DISCUSS

• What is preeclampsia
• Why is it important to worry about preeclampsia
• Why worry about BP after delivery
• What are some local measures one can take to identify preeclampsia to mitigate risk to mothers and babies
PREECLAMPSIA

- Common hypertensive disorder of pregnancy
- 5-7% of pregnancies
- 70,000 maternal deaths and 500,000 fetal deaths/year worldwide
- Associated with long term cardiac and renal complications
  - HTN, CVD risk, stroke, dementia and death
  - Lack of physician awareness
    - 56% of internists and 23% of ob-gyns were unsure or did not know whether preeclampsia is associated with ischemic heart disease
    - Only 9% of internists counseled women who had preeclampsia about cardiovascular risk reduction
- AA women 3-4 times at higher risk of dying from pregnancy related complications and preeclampsia a common cause of serious maternal morbidity and death
Maternal Mortality Is Rising in the U.S. As It Declines Elsewhere

Deaths per 100,000 live births

- **U.S.A.** (26.4)
- U.K. (9.2)
- Portugal (9)
- Germany (9)
- France (7.8)
- Canada (7.3)
- Netherlands (6.7)
- Spain (5.6)
- Australia (5.5)
- Ireland (4.7)
- Sweden (4.4)
- Italy (4.2)
- Denmark (4.2)
- Finland (3.8)
IMMEDIATE COMPLICATIONS OF PREECLAMPSIA

• Placental abruption
• HELLP syndrome
• Eclampsia
• Liver and kidney damage
• Fetal growth restriction
• Preterm birth
• Cardiomyopathy
• Maternal /fetal death
LONG TERM RISKS OF PREECLAMPISIA

• Increased risk of cardiovascular disease (CVD) such as hypertension, myocardial infarction and congestive heart failure, cerebrovascular event (stroke), peripheral arterial disease and cardiovascular mortality later in life

• Women with a hypertensive disorder of pregnancy have 12- to 25-fold higher rates of hypertension than women with a normotensive pregnancy in the year after delivery

• Increased risk of end stage renal disease, stroke and dementia

• Lack of physician awareness
  – 56% of internists and 23% of ob-gyns were unsure or did not know whether preeclampsia is associated with ischemic heart disease
  – only 9% of internists counseled women who had preeclampsia about cardiovascular risk reduction

LIFE SAVING INTERVENTIONS

• What can you do at your hospital level
Our hospital journey

• Participate in ILPQC- treatment of acute severe HTN, huddle and discharge instructions

• STAMPP- HTN- Systematic Treatment And Management of PostPartum hypertension

• >85% of patients are AA and majority are obese
Illinois Perinatal Quality Collaborative (ILPQC):

Severe Hypertension in Pregnancy and Improving Time to Treatment
Goals of the Program

- Improve the timely delivery of antihypertensive therapy for severely elevated blood pressures
- Document potential barriers to care
- Develop potential strategies to improve delivery and quality of care
- Allows for individual hospital and statewide assessment
What is the program?

- Timely administration of IV anti hypertensives for severe range blood pressures in pregnancy
  - Defined as: SBP > 160 or DBP > 110
  - Within 1 hour of identification
    - The sooner the better (within 30 minutes)
- Standardized form outlining recognition and delivery of care
  - Process and timing of initial delivery of care
  - Debriefing process for barriers to care
  - Additional complications and issues encountered during an admission
  - Discharge planning and follow-up
Potential for intervention

- Prior CMQCC Analysis
  - 60% of maternal deaths from preeclampsia had “good to strong chance” of altering outcomes with intervention
- In cases of maternal mortality:
  - Delayed response to warning signs in 90%
  - Ineffective care in 70%
  - Misdiagnosed in 40%

Severe Maternal Morbidity

- Severe maternal morbidity more frequent in women with severe HTN compared to non-severe HTN
- Frequency of severe morbidity did NOT increase with worsening BP values
  - Suggests that once severe range BPs occur, they require intervention
- Higher rates of maternal morbidity seen with:
  - Lower hospital NICU care levels (Level 3 vs Level 4)
  - Lower delivery volumes (Low vs High)

Call to Action

• ACOG has developed Safety Bundles for Severe Hypertension in Pregnancy
  – Risk Assessment and Prevention
    • Diagnostic Criteria
    • When to Treat
    • Agents to Use
    • Monitoring
  – Readiness and Response
    • Complications and escalation process
    • Further evaluation
    • Change of status
    • Postpartum surveillance

• Bundle
  – A way to describe a collection of processes needed to effectively care for patients undergoing particular treatments with inherent risks
Recognition of Hypertensive emergency

• Measurement of severe hypertension with the patient in either the seated upright position
  – SBP > 160
  – DBP > 110

• Persistent > 15 min from initial measurement

• Recognized as occurring:
  – Antepartum
  – Intrapartum
  – Postpartum
Antihypertensive Agents

- Intravenous medications preferable
  - Labetalol
  - Hydralazine
- Nifedipine (short-acting) has shown effectiveness as an oral agent
  - Less experience with the medication
- Magnesium sulfate and epidurals are NOT considered antihypertensive agents
Discharge and Follow Up

• Discharge instructions
  – Should include review of warning signs and symptoms for severe manifestations of hypertension in pregnancy
• When planning discharge for hypertensive patient
  – Within 3-7 days if discharged without medication
  – < 72 hours if discharged with medication
SEVERE HYPERTENSION DATA FORM

Topic: Maternity service team review and document sequence of events, successes with and barriers to swift and coordinated response to preeclampsia with severe features.

Goal: Reduce time to treatment (<60 minutes) for new onset severe hypertension (≥160 systolic OR ≥110 diastolic) with preeclampsia or eclampsia or chronic/gestational hypertension with superimposed preeclampsia (include patients from trials, L&D, Antepartum, PP, ED) in order to reduce preeclampsia morbidity in Illinois.

Instructions: Complete within 24 hrs. after all cases of new onset severe hypertension (≥160 systolic or ≥110 diastolic) event in pregnancy up to 6 wks postpartum. Debrief should include primary RN and primary MD to identify opportunities for improvement in identification and time to treatment of HTN.

Date: GA at Event (weeks & days) OR # Days PP:

Patient Location (check all that apply) □ Triage □ L&D □ Postpartum □ Antepartum □ ED

Maternal Age:_________ Height:_________ Current Weight:_________

Diagnosis: □ Chronic HTN □ Gestational HTN □ Preeclampsia
□ Superimposed Preeclampsia □ Postpartum Preeclampsia □ Other _________

PROCESS MEASURE (P1): Medical Management

Time: hh:mm

Measure
BP reached ≥160 or diastolic ≥110 (sustained ≥15 min)
First BP med given
BP reached <160 and diastolic BP <110

OB Complications (check all that apply) Transport In? □ YES □ NO Date: _________

GA at Delivery (weeks & days):
Transport Out? □ YES □ NO Date: _________

Adverse Maternal Outcome:
Date: _________

□ OB Hemorrhage with transfusion of ≥ 4 units of blood products
□ Intracranial Hemorrhage or Ischemic event
□ Pulmonary Edema □ ICU admission □ HELLP Syndrome
□ Oliguria □ Eclampsia □ DIC
□ Renal failure □ Liver failure □ Ventilation
□ Placental Abruptio □ Other □ None

Adverse Neonatal Outcome:
Date: _________

□ NICU/SCN admission □ IUFD □ Other _________ □ None

Maternal Race/Ethnicity (check all that apply):
□ White □ Black □ Hispanic □ Asian □ Other

PROCESS MEASURE (P2): Discharge Management

A. Discharge Education: Education materials about preeclampsia given? YES □ NO

B. Discharge Management: Follow-up appt scheduled within 3-10 days (for all women with any severe range hypertension/preeclampsia)

Was patient discharged on meds?

If YES: Was follow up appointment scheduled in <72 hours?

□ YES □ NO

COMMENTS about Medical Management, Monitoring, Discharge

Opportunities for improvement to reduce time to treatment (identification severe HTN to treatment goal <60 minutes): Debrief

Debrief Participants: Primary MD: □ YES □ NO Primary RN: □ YES □ NO

TEAM ISSUES Went well Needs improvement Comment

Communication

Recognition of severe HTN

Assessing situation

Decision making

Teamwork

Leadership

SYSTEM ISSUES Went well Needs improvement Comment

HTN medication timeliness

Transportation (intra-, inter-hospital transport)

Support (in-unit, other areas)

Med availability

Any other issues:

ILPQC DATA FORM
(Modified 4/19/16)

Adapted from CMQCC’s Preeclampsia: Debrief and Chart Review Tool
Death can happen up to a year after delivery.

- 33% 1 week to 1 year after delivery
- 31% During pregnancy
- 36% During delivery and up to 1 week afterward

CDC 2019
PROBLEMS AT THE LEVEL OF THE HOSPITAL

➢ At the time of admission and discharge
  • General lack of knowledge among patients about long term effects of preeclampsia
  • No organized effort for education to patients
  • Discharge instructions not universally given
  • No dedicated postpartum clinic for easy access to care

➢ Problems with readmissions in ED
  • Identifying post partum patients
  • Incorrect Treatment of PP HTN
  • Poor knowledge about definition of severe for PPHTN
  • Calling medicine or cardiology instead of OB
  • Delayed transfer to L/D
  • Delay in recognition and treatment of severe PPHTN

➢ No standardized management for readmissions for PPHTN
Preeclampsia Educational Video

https://www.youtube.com/watch?v=hVPxFZDEFZI
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STANDARDIZED PROTOCOLS FOR MANAGEMENT OF PPHTN
PPHTN clinics

- Follow up in PPHTN clinic
  - Appointments before discharge
  - Standardized Protocol for treatment of HTN
  - Patient to be sent to L/d for severe HTN
  - Long term follow up with cardiology
Management of BP’s postpartum and discharge after delivery-
IMMEDIATE PP

Mild Hypertension (<160/105)
- Chronic hypertension
- Gestational hypertension
- Pre-eclampsia without severe features

Goal BP 140-150/90-100
Treat with PO antihypertensive if BP >150/100 persistent and 4 hours apart

Severe hypertension (>160/105)
- Magnesium for 24 hours with anti-HTN medications per protocol.
- Discharge PPD#3
  - Give preE instructions
  - Give BP cuff
  - Follow up in PPHTN clinic in 7-10 days

Discharge PPD#2
- Followup in 1-2 weeks with PCP
- Give written preE instructions
- Write prescription for BP cuff if patient doesn’t have one

Mild gHTN
- Discharge PPD#2
  - Given preE instructions
  - Give BP cuff
  - Follow up in PPHTN clinic in 7-10 days

Severe GHTN
- Same as severe preE
- Discharge PPD#3
  - Give preE instructions
  - Give BP cuff
  - Follow up in PPHTN clinic in 7-10 days

PreE without severe features

ALL patients with gHTN or PreE
- Watch the preE video on the care network
- Give written preE instructions- tearpad sheet
- Give BP cuff
- Follow up in PPHTN clinic in 7-10 days
READMISSIONS
The PRICE study: Pre-eclampsia Readmission Inpatient Care Evaluation
Postpartum hypertension (>140/90) measured twice at least 4 hours apart, between delivery and six weeks postpartum
All patients should be admitted to MFM

Mild Hypertension (<160/105)
- Chronic hypertension
- Gestational hypertension
- Pre-eclampsia without severe features
  
  Labs/ BP monitoring in triage for 2 hours

Non severe BP+ known diagnosis no symptoms

  YES
  - Follow up primary OB/ PCP in 1-2 weeks for CHTN
  - Follow up in 7-10 days in PPHTN clinic for GHTN and PE
  - Can start on PO antihypertensives if BP >150/100

  NO
  - New diagnosis of GHTN, pree or symptoms
  - Admit for BP monitoring

Hypertension + proteinuria + signs of end organ involvement

  Concern for heart failure: pulmonary edema, palpitations, tachycardia, shortness of breath

  Cardiology/Medicine consultation

  Transfer to cardiology if workup positive for cardiomyopathy

  Transfer to medicine if workup positive for other etiology

  Follow-up in 7-10 days in PPHTN clinic

  Neurology consultation

  Transfer to neurology if workup positive for neurological etiology

  Transfer to cardiology if uncontrolled HTN

SEVERE Hypertension (> 160/105) + proteinuria or
Concern for HELLP or partial HELLP

  Magnesium for 24 hours (if never got Mag before) Re-mag per MFM attending preference with anti-HTN medications per protocol.

  Response to treatment?

    YES
    - Follow-up in 7-10 days in PPHTN clinic
    - Transfer to cardiology if workup positive for medical etiology

    NO
    - Cardiology/Medicine consultation
    - Transfer to medicine if workup positive for other medical etiology

Contact information:
PPHTN appointments: x 26118
Cardiology outpatient appointments: x 29461
Cardiology consult: x 3547
Dr. Tamar Polonsky pager: x 9189

ALL patients with GHTN or PreE
- Watch the preE video on the care network
- Give written preE instructions- tearpad sheet
- Give BP cuff
- Follow up in PPHTN clinic in 7-10 days

Notes:
1. All patients admitted with post-hypertension should have at least 24 hours of BP monitoring, with exception being certain chronic hypertensives.
2. Treat BP if >150/100 if persistent or 4 hours apart with PO antihypertensives
3. Examples of etiologies that would be appropriate for transfer to cardiology: thyrotoxicosis, pheochromocytoma, arterial stenosis, adrenal tumors
4. Examples of etiologies that would be appropriate for transfer to neurology: Intracranial process, stroke, non-eclamptic seizures
5. Examples of appropriate transfer to cardiology: inability to control blood pressures despite high doses of Procardia and Labetalol OR requiring IV anti-hypertensive drip
6. Examples of appropriate transfer to medicine: if workup positive for HUS, TTP, exacerbation of lupus, acute fatty liver
Postpartum re-entry into the hospital with hypertension (>140/90)

Patient who are postpartum within six weeks of delivery and have HTN (>140/90)

Calls from Home
- Comes to L&D triage

Comes from ED
- Pivot nurse: patient with hypertension (>140/90) and post partum
  - AMS, clinical suspicion for heart failure or respiratory failure, active seizure?
    - Yes
      - Call OB resident STAT- 55142
    - No
      - Send to L&D triage

Comes from the clinic
- BP ≥ 160/110, send to L/D
- All other patients - if admission needed direct admit to MB or L/D (whichever is available)
  - Call L/D resident to notify
  - Resident to notify charge
Goals
✓ Improve knowledge among providers and patients
✓ Appropriate and timely management of HTN
✓ Reduced rates HTN related complications
✓ Improve rates of PP follow up
✓ Appropriate management of readmissions for HTN
✓ Improve long term BP control
✓ Follow up with cardiology

Sustainability/ Future
- Nurses involvement
- Education of all care providers and competency training (world preeclampsia day, facebook live, webinars)
- Data collection to show quality improvement
Results

N= 495 patients
80% were African-American
68% had Medicaid
Median age was 28 years

• Median [IQR] systolic BPs immediately post-delivery were higher in the beginning of the study period as compared to the end (152 [139,161] vs 139 [133,150]; p=0.0001).

• A significant increase in PP antihypertensive use was also observed (34.2% vs 45.6%, p=0.04).

• Assess engagement with healthcare at 6 weeks and 1 year
**First Trimester**

**Ask About Aspirin**

It may delay or prevent the onset of preeclampsia.

**Talk to your care provider about taking prenatal aspirin**

- High blood pressure
- Diabetes
- Kidney disease
- Autoimmune disorders

*Talk to your care provider about taking prenatal aspirin.*

Start taking 81mg aspirin between 12-16 weeks of your pregnancy daily at bedtime.

Visit [preeclampsia.org/aspirin](http://preeclampsia.org/aspirin) to learn more.

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**After 20 weeks**

**Preeclampsia**

**What Is It?**

Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman during the second half of her pregnancy, or up to 6 weeks after delivery.

**Risks to You**

- Seizures
- Stroke
- Organ damage
- Death

**Risks to Your Baby**

- Premature birth
- Death

**Signs of Preeclampsia**

- Stomach pain
- Headache
- Feeling nauseous; throwing up
- Seeing spots
- Swelling in your hands and face
- Gaining more than 5 pounds (2.3 kg) in a week

**What Should You Do?**

Call your doctor or midwife right away. Finding preeclampsia early is important for you and your baby.

For more information go to [preeclampsia.org](http://preeclampsia.org)

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**Postpartum**

**Ask Your Doctor or Midwife**

Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman during the second half of her pregnancy, or up to 6 weeks after delivery.

**Risks to You**

- Seizures
- Stroke
- Organ damage
- Death

**Risks to Your Baby**

- Premature birth
- Death

**Signs of Preeclampsia**

- Stomach pain
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**What Should You Do?**

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**Education to patients**
WHERE TO BEGIN......

- Create a team with diverse members (OB physicians, nurses, anesthesiologist, pharmacist, managers)
- Compare your hospital with the bundle elements
  - Gap analysis
  - Focus on areas that may be easiest to implement (get an easy win)
  - Identify potential barriers and honestly address them
- Communication, Response & Reliable Processes
  - High risk huddles and debriefing
- Simple debrief
  - Timely and easy to do
  - Should provoke awareness and ideas
  - Identifies problem areas, confirms best practices
  - Plan for follow-up and reporting back to staff
- Post the process- pocket note book, bulletin boards, posters, food/networking
Our team

• Colleen Duncan, RN
• Macaria Solache- RN
• Jamila Pleas, RN
• Melissa Benesh , FBC
• Macaria Solache- RN
• Natali Horab, DCAM
• Elizabeth Delgado, RN
• Samantha D Reyes- Fellow
• Victoria Oladipo- MS II
• Heba Naseem, RA
• Harjot Kaur, RA
• Sarosh Rana- MFM
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• Thoughts
• Questions