Safety Action Series

National Improvement Challenge on Severe Hypertension Winning QI Programs
Disclosures

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Objectives

➢ Learn about the National Improvement Challenge issued by the Council on Patient Safety in Women’s Health Care.

➢ Hear from the winners of the Hypertension in Pregnancy cycle. Through their presentations you will:
  - Learn how each of the winning institutions successfully utilized the Council’s patient safety materials to drive process improvement around hypertension in pregnancy.
  - Gain valuable insight on ways that your institution can successfully implement the Council’s tools to drive culture change, increase collaboration, and improve outcomes.
  - Hear real world challenges to successful QI program implementation and discover methods for overcoming these challenges.

➢ Find out how your institution can get involved in the next cycle of the challenge.
Submission Evaluation Criterion

• Submissions were evaluated and voted on by members of the Council

• Overall evaluation of submission:
  – Documentation of improved structures, processes, or outcomes.
  – Use of Council developed materials.
  – Demonstrated interdisciplinary collaborative engagement.
The beginning of the journey

• 4100 deliveries performed annually at the Hospital of the University of Pennsylvania

• A standing multidisciplinary obstetric quality improvement (QI) committee (members include Obstetric and Family Medicine faculty and residents, nurses and a perinatal safety nurse) meets monthly to review cases of severe maternal morbidity and readmission are reviewed

• Noted to have 2-9 readmissions a month for postpartum hypertension in 2011
  – Variation of care in the immediate postpartum and post-discharge period
Pre-intervention Data

• No consistency in thresholds to start medications, choice of medications, follow up

• Not meeting ACOG recommendations to monitor blood pressures at 72 hours and again at 7-10 days postpartum in women with hypertensive disorders of pregnancy

• Uptake of visiting nurse home blood pressure checks was low
Specific Aims: Processes

• To standardize inpatient postpartum preeclampsia treatment with an algorithm that defines when to treat and which medications to use
• To improve patient education about the disease process including long term cardiovascular risk
• To standardize blood pressure follow up after discharge and decrease demand placed on clinical care portals
Specific Aims: Outcomes

• To proactively treat postpartum hypertension to decrease overall morbidity
• To improve awareness and potential long term health implications of preeclampsia
• To increase postpartum blood pressure ascertainment
• To minimize the number of preventable readmissions
Intervention

• Inpatient
  – Hypertension algorithm-developed standardized thresholds for initiation of medication
  – Patient education handout

• Outpatient
  – Postpartum transition clinic visit
    • Postpartum RN blood pressure visit
  – Text messaging pilot
  – Cardiology clinic
  – Text message RCT
Intervention: Inpatient Obstetrical postpartum hypertension clinical protocol

If BP >170/110
(>100cc/hour x 2 hours), K must be >3 mEq/L during lab draw), can be initiated while on Magnesium therapy or after discontinued as long as above criteria are met

- Lasix 20 mg PO daily + 20 mEq K PO for 5 days (Ascarelli OBGYN 2005)
- If still high, start Nifedipine ER 60 mg once daily (or Norvasc 10)-after Magnesium discontinued
- Consider low salt diet
- May think about discharge with script for blood pressure cuff and have them check BP twice daily and bring log to outpatient visit.

If BP >160/100 on 2 or more measurements start an agent in the following order*:
- HCTZ 12.5 mg daily
- Ca Channel blocker (Nifedipine 30 mg daily or Norvasc 5 mg daily) - after Magnesium discontinued
- Increase dose of HCTZ
- Increase dose of calcium channel blocker
- Enalapril 5 mg twice daily

If BP >140/90
- Observe
- Will be evaluated at HR transition clinic, PP for medication need

Allow 24 hours after starting/Changing dose of calcium channel blocker and 48 hours after diuretic before additional dose changes.

If the patient has a history of diabetes or chronic kidney disease, consider starting with enalapril with reliable birth control method
Intervention: Inpatient Patient education form

What is Preeclampsia? Preeclampsia is a problem that can happen in pregnancy. It is also called toxemia or pregnancy induced hypertension (high blood pressure). Preeclampsia can happen when you are pregnant and up to one month after you have your baby. Preeclampsia can cause your blood pressure to rise and put you at risk for brain injury. It can hurt your kidneys and liver function, and it can also cause fluid in your lungs and seizures. If it is very severe or not treated, it can cause maternal and infant death. The only cure for preeclampsia is to deliver the baby. It can take up to 6 weeks for your blood pressure to be normal again.

Types of Preeclampsia There are two main types of preeclampsia, mild and severe. When you have mild preeclampsia, your blood pressure is usually between 140-150/80-90. You may also have a small amount of protein in your urine. With severe preeclampsia, your blood pressure is usually over 160/90. You might have a lot of protein in your urine too. If you have severe preeclampsia, there is a higher chance that you and your baby could have problems.

What causes preeclampsia and why do women get it? Preeclampsia affects 5 to 8 out of 100 pregnant women. We do not know why women get preeclampsia. We do know that some women have a higher chance of getting it. Women with a higher chance for preeclampsia are:
- First pregnancy
- Under 18 years old or
- Older than 40 years old
- If you have high blood pressure now
- If you have diabetes
- If you have kidney problems
- If you have lupus
- If you are pregnant with twins or triplets

What happens immediately after I go home?

Home Care: We will try to arrange to have your blood pressure checked a few days after you go home by a home care nurse. This is important because if it is still high, this increases your chances of having a stroke.

Medicine: Your doctor may send you home with a prescription for blood pressure medicine. It is very important that you get this prescription filled and take the medicine as prescribed to control your blood pressure. If need help getting your prescription filled, please tell your nurse before you leave the hospital. We may be able to help you.

Appointment: Your doctor may tell you to come back in one to two weeks for a follow up appointment. It is very important to come back for this appointment to have your blood pressure checked.

Signs and symptoms of preeclampsia: You should know the signs of preeclampsia and when to call the doctor. After you go home from the hospital you should call if you have a headache, pain in the right upper part of your belly that feels like heartbeat, nausea or vomiting, changes in your vision or trouble breathing. You should tell the home nurse if you are having these symptoms when she comes to check your blood pressure.
Intervention: Outpatient Comprehensive HTN Program

• Initiated July 2012
• Standardized blood pressure parameters to initiate treatment
• Standard patient education sheet
• Transition clinic developed for HTN-every other week staffed by resident and MFM fellow
• Patient returns 3-14 days postpartum
• Continued home nursing visit offered to all patients
• Partnership with Medicine department with direct access to send patients to them if continued to require medications and/or If no primary care doctor
Intervention: Outpatient Comprehensive HTN Program

SHOW RATE:

30%
**Intervention: Outpatient**

- **Patient arrives in given visit time window.** RN brings patient to room.
- **Patient with GHTN, PRE, SIP, CHTN.** RN BP appointment given to patient in DC instructions; EPIC message sent to RN pool by inpatient team. Info placed in problem list.
- **Patient does not show up for appointment.** RN to call patient and offer next available time up until 1 week post discharge.
- **<140/90.** Must meet both parameters.
  - 1) RN performs Med Rec in EPIC.
  - 2) RN takes BP after patient seated for 3-5 minutes. *Choose algorithm based on highest systolic or diastolic value. Recorded in EPIC as BP visit using PPHNFU.*
  - Ensure 4-6 week postpartum visit scheduled.
  - Give patient phone number (215-315-3062) and instruct to call Dr. Nkonde-Price of cardiology appointment within 4 weeks (PCAM).
- **140-159/90-109.**
- **>=160/110.**
- **Discharge home.** RN asks patient if they have PMD.
  - If yes, encourage appointment in next 4 weeks.
  - If no, provide number to Medicine (215)349-5200 and encourage appointment in 4 weeks.
- **<140/90 and no symptoms.**
  - Schedule return RN BP visit in 2-4 days.
- **140-159/90-109.**
  - RN asks about symptoms:
    - Persistent headache.
    - Blurry vision/scotomata.
    - Right upper quadrant pain.
  - Recorded in EPIC as presence or absence of symptoms.
  - Repeat BP.
- **160/110.**
  - Notify Mixed MD; MD to see patient; Start HCTZ 12.5 daily; document.
  - RN or MD to call PACC clinic for appointment (3701 Market St. M pm/Th am clinic) 215-349-8803 (RN or MD must call between 9-4). *This number should not be given to patients 215-349-5200 can be given to patients as a back-up.*

**Notify Mixed MD;**
- Start Norvasc 5 daily;
  - If >180/110 start HCTZ 12.5 mg and Norvasc 5 mg.
Intervention: Outpatient
Intervention: Outpatient

**AM Reminder:** Good morning! Please text us a blood pressure by 11 AM.

**If reading is <140/90:**

Your blood pressure looks good! Please send another reading by 5 PM.

**If reading is >140/90 and <160/100:**

Your blood pressure is OK but I’d like to keep an eye on it. Please make sure you send your next BP by 5 PM.

**If reading is >160/100:**

Your blood pressure is high. I’d like to chat over the phone. When is a good time to call you today?
**Intervention: Outpatient**

- We achieved 85% engagement
- Nearly 65% of patients (20/32) texted blood pressures on 5 of the 7 days requested
- 84% sent in a BP on post-discharge day 1 or 2 (72 hours post delivery)
- 66% sent in a BP on post-discharge day 5, 6, or 7 (postpartum day 7-10)
Long term Health

- Primary Care Physician
- Department of Internal Medicine Clinic
- Penn Women’s Cardiovascular Center
The Study and Analysis of Our Intervention

• Qualitative
  – Compliance with algorithm
  – Increased provider comfort with postpartum hypertension management in the inpatient and outpatient settings

• Quantitative
  – Increase in physician ascertainment of blood pressures
  – Decrease readmissions
Results: Total 7 Day Readmissions

FY 2014-2015
- 37%

FY 2015-2016
- 26%
  - Progression of Delivery Preeclampsia
  - New onset postpartum preeclampsia
  - Infection
  - Bowel injury
  - Pulmonary embolus
  - Laceration Breakdown
  - Cardiac
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Initial and ongoing Challenges

- New faculty and house staff education and awareness
- Provider and RN education regarding importance of transitions of care
- Patient education regarding importance of follow-up—what is most effective form of communication
- Addressing challenges with blood pressure ascertainment with strategies that are patient centered
Successes

• Multi-pronged approach-provider and patient education and care delivery change
• Spans intrapartum, immediate postpartum, and post-discharge period
• Overall acceptance and enthusiasm by staff
• Provider and patient benefit
• Development of a new care delivery model that is patient centered
• Reproducible
Lessons Learned

• Always engage a multi-disciplinary team
  – Think about including a patient
• Pursue an iterative approach
• Try and fail!
• Be responsive to things that don’t work
Thank you
Specific Objectives Related to Severe Hypertension in Pregnancy

• It is our goal to initiate prompt treatment for the maternity patient presenting with a hypertensive emergency by having mechanisms in place to reduce adverse maternal-fetal outcomes.

• South Nassau Communities Hospital fosters a culture of collaboration. Teamwork is present in all aspects of patient care. Our mission is to provide high quality, comprehensive and easily accessible health care services to our surrounding communities. We have a long standing tradition of a personalized cultural competent care and innovation, and clinical excellence. Patient safety and communication between clinicians and patients is our highest priority.
Steps for Implementation

Step 1 Mobilize

- **Mobilize Quality Improvement Team.** Recruit champions: clinical staff that visualize the ideal, set goals and follow through to realize defined aims.
  - The team was co-chaired by:
    - Alan Garely, MD, OB/GYN Department Chairman,
    - Edmund Tomlinson, MD, Vice-Chair OB/GYN
    - Sue Penque PhD, NE-BC, RN, Senior Vice President, Chief Nursing Officer.
  - Participants and initiative champions included other disciplines such as:
    - Robert Dean, MD, Family Medicine OB Residency Director and Obstetrician
    - Samuel Sandowski, MD Residency Director, Family Medicine
    - Janet Shelters, MSN, CEN, RN, Nurse Manager L&D
    - Alyson Ornstein, BSN, CBC, Nurse Manager NICU, Maternity
    - Madeline Cozzi-Gottlieb, MS, FNP-BC, RNC-OB,c-EFM Nursing Professional Development Specialist, Maternal Child Services
    - Camille D’Amato, MS, RNC-OB, Assistant Director Performance Improvement
    - Opal McPartlin, MSN, RN, Manager, Electronic Medical Records.
Steps for Implementation

Step 2 Access

• **Evaluate the Situation.** Determine current practices for response to severe hypertension; identify QI Data, process and outcome measures that inform baseline assessment, guide appropriate implementation, and provide data sufficient to track.
  – Severe Hypertension in Pregnancy bundle
  – Our intent was to standardize the health care processes and reduce variation among practitioners to improve outcomes and quality of patient care.

• **Implementation was a multi-stepped process.**
  1. Ensure the ‘readiness’ of the department overall.
     • Education modules and review on diagnostic criteria for severe hypertension, timeliness of treatment, and identification of appropriate agents to use
     • Safe Motherhood Initiative posters used for awareness
     • Omnicell medication dispensing machines located in the L&D Suite
  2. The Rapid Response Team reviewed their purpose with the nursing staff of the Women & Children’s Service at their annual mandatory education sessions
Steps for Implementation

Step 2 Access

3. Implement TeamSTEPPS™ methodology
   • All staff educated in TeamSTEPPS™ briefs/debriefs and huddles by master trainers. Established protocols and annually participate in multidisciplinary unit-based drills (with debriefs).
   • Screening and early diagnosis: Every patient had an initial assessment of hypertensive risk. On-going risk assessment performed if there was a change in the patient’s condition.
   • Acute care management of maternal hypertension, preeclampsia and eclampsia. Postpartum surveillance to detect potential change in status and prevent further morbidity.
   • Nursing staff of Maternity and Labor & Delivery were updated on Hypertensive Disorders of Pregnancy and informed of the new Exit Care document addressing Hypertension in Pregnancy created by the EMR team. This document is given to each postpartum patient upon discharge from the Maternity Unit.
   • Post-discharge blood pressure monitoring is recommended 72 hours after delivery which was implemented through a home care nurse evaluation within this time frame, and again in 7-10 days after delivery or earlier if symptoms persisted.
   • The Homecare Department of SNCH were also educated on Hypertensive Disorders of Pregnancy, and given patient education handouts.
Steps for Implementation

Step 3 Plan

• Change Strategies and Tactics Policy, Scheduling Process, Empowered Physician Leadership
  – Implemented relevant policies and procedures (P&P) or changes to P&P that support a protocol to respond quickly and effectively to a hypertensive emergency, pre-eclampsia, or eclampsia.
  – Merged and revised the existing house wide policy for Magnesium Sulfate Intravenous Administration in the Obstetrical Patient.
  – Clarification of categorization of Preeclampsia was redefined.
  – Interdisciplinary education was conducted via staff meetings, educational sessions, email communication and educational materials available to staff in unit binders.
  – Developed Labor & Delivery Response Team to respond to an obstetrical emergency outside of maternal hemorrhage or change in medical status. Nursing staff feedback was encouraged and the team was developed.
Steps for Implementation

Step 4 Implement

• There are three broad types of implementation strategies which we used during implementation: education, data, and discourse or communication.

  1. Employed educational tactics utilizing both Grand Rounds as well as departmental PI meetings to provide physician and resident educational sessions. During these multi-disciplinary grand rounds we had an opportunity to review the standard toolkit slide set and made a copy of the slides for all staff to review.
Steps for Implementation

Step 4 Implement

- Data collection and submission to the New York State Perinatal Quality Collaborative was initiated in April 2014 and conclusion of data collection was September 2015 showing a range of 0.0% to 1.7% prolonged LOS over this 18 month period.
Severe Antepartum/Intrapartum/Postpartum Hypertension Order Set

Currently we have developed a Severe Intrapartum/Postpartum Hypertension Order Set which clearly defines assessment, intervention and treatment and will be available for use by the Emergency Department in addition to the Obstetrical Service with integration into the EMR.

- Education of the Perinatal Services, Emergency Department and Critical Care Department has been completed
Notify physician if systolic BP measurement is greater than or equal to 160 mmHg OR if diastolic BP is greater than or equal to 110 mmHg (Severe Hypertension).

- Repeat BP measurement in 15 minutes

- Institute continuous fetal monitoring if undelivered and fetus is viable
- If no IV access, insert medlock
- If the post-partum patient presents in the ED, call OB attending or resident for evaluation.

**MEDICATIONS / BP MONITORING:**
If Severe BP elevations are greater than or equal to 160 systolic or greater than or equal to 110 diastolic and persist for 15 minutes or more, administer:

- Labetalol 20 mg IV push over 2 minutes (by provider) to achieve a range between 140–160/90–100 mmHg (you may consider using a lower initial Labetalol dose, i.e., 10 mg, when IV Magnesium Sulfate is being administered for seizure prophylaxis).

**NOTE:** Hold IV Labetalol for maternal pulse less than 60 beats per minute.

- Continuous pulse oximetry during IV push: Note: notify MD if O2 sat is less than 95%

For Prevention of seizure activity:

- Magnesium Sulfate:
  - Loading dose: 4 grams Magnesium Sulfate in 100ml of solution to infuse IVPB over 30 min via infusion pump followed by Maintenance dose: 40 grams in 1000ml water for injection infuse 2 grams Magnesium Sulfate / hour IVPB via infusion pump.
  - Note: Initial Magnesium level to be drawn 6 hours post administration and every 6 hours while on infusion. Therapeutic range: 4-6mg/dl. Evaluation for toxicity includes: hourly reflex checks (to be completed while on infusion).
  - Note: Symptoms of Toxicity include: hypotension, flaccid paralysis, CNS/respiratory depression.
  - Repeat BP measurement in 10 minutes, record results If either BP threshold is still exceeded, administer Labetalol 40mg IV push over 2 min
  - Repeat BP measurement in 10 minutes, record results
  - If either BP threshold is still exceeded, administer Labetalol 80mg IV push over 2 min
  - Repeat BP in 10 minutes, record results

**Note:** Maximum cumulative IV dose of Labetalol should not exceed 220 mg in 24 hours

- Repeat BP in 10 minutes, record results
- If either BP threshold is still exceeded, administer Hydralazine 10mg IV push over 2 min

**NOTE:** Maximum cumulative IV dose of Hydralazine should not exceed 25 mg in 24 hours.

- Repeat BP in 20 minutes. If either BP threshold is still exceeded obtain emergency consult from Maternal Fetal Medicine (MFM), Internal Medicine, Anesthesia or Critical Care intensivist.
Steps for Implementation
Step 5 Track

• We will follow the progress and analyze data and present results to clinical staff via Trend Charts about Review and repeat steps; when necessary, revise newly implemented tactics to ensure sustainable results.
  – In a TeamSTEPPS™ culture, huddles for high risk patients and post-event debriefs has aided us to identify successes and opportunities for improvement.
  – Patient outcomes are monitored and process metrics are shared in perinatal quality improvement committee meetings. We are continuing to review the outcome measure of prolonged LOS by trending the number of patients admitted to critical care due to persistent hypertension.
  – We have initiated review of the process measure, the number of maternity patients with persistent hypertension receiving treatment within one hour of the second elevated blood pressure. We have identified this as an area which needs further exploration due to a barrier in data collection, and is a focus of our continued quality improvement efforts.
Maternal Pre-eclampsia Outcome Measure (Prolonged Length Of Stay)

Percent of maternity patients who have given birth >= 20 weeks completed gestation with prolonged post-delivery length of stay in the hospital resulting from pre-eclampsia, eclampsia, severe hypertension, and related complications.
(Click www.NYSPPC.org for more details about the above definition)

South Nassau Communities Hospital
Does implementing a protocol checklist for management of severe pre-eclampsia reduce severe maternal morbidity?

Shelley Binkley, MD, FACOG
Medical Director, Labor and Delivery
Associate Director, OBGYN Residency Faculty

Melody Zoma, MD
OBGYN PGY II
Objectives

• First we will try to determine our existing rates of admission for severe pre-eclampsia. We then plan to institute the ACOG Hypertension Safety Bundle Protocol Checklist for management of severe pre-eclampsia.

• Our goal is to reduce severe maternal morbidity due to hypertensive crisis, abruption, and hemorrhage; and observe what, if any effect it has on severe maternal and neonatal morbidity.
Intervention

• The intervention studies will be implementing the ACOG Hypertension Safety Bundle Protocol Checklist (Appendix A)
Method and Measures

• We will initiate this protocol with all our clinic and high risk clinic patients who are diagnosed with severe pre-eclampsia
• We will measure for the 12 months preceding and following implementation of the protocol:
  1. Admission rate per 1000 deliveries with the diagnosis of severe pre-eclampsia (prior to delivery)
  2. Implementation and adherence to the severe pre-eclampsia protocol checklist
  3. Severe maternal hypertensive sequelae, eclampsia
  4. Diagnosis/incidence of placental abruption
  5. Maternal hemorrhage incidence and rate
  6. Length of maternal hospital stay
  7. Number of units blood products transfused in the event of hemorrhage
  8. Infant hospital stay
  9. Maternal readmission rate within 6 weeks postpartum
Steps for Implementation

• **Education**
  – Multi-disciplinary didactic sessions will be held with residents and faculty
  – Protocol will be discussed in committee meetings for attending physician support and awareness

• **Technology**
  – If possible, we would like to integrate the checklist into our EMR system; as a part of our existing hypertension in pregnancy order set

• **The Protocol (Appendix A)** will be trialed in PDSA cycles
  – First cycle with one patient-care team
  – Second cycle with five patient-care teams
  – Additional cycles added as necessary

• **Simulation** will be conducted if it is found from the PDSA cycles that these would be of benefit

• **Calculate measures listed above for the 12 months preceding and following the implementation of the protocol**
Anticipated Outcomes

• Consistent use of a protocol checklist will reduce severe hypertensive sequelae, placental abruption, severe maternal morbidity (hemorrhage, ICU admission etc.)

• Also expected are reduction in maternal hospital stay, returns to the OR, hospital readmission for postpartum hypertensive emergencies; pre-eclampsia and/or eclampsia.

• Impact on NICU admission is anticipated to be minimal.
ACOG Resources and Checklists

Severe Hypertension

Severe Hypertension in Pregnancy Bundle
- Slide Set
- Algorithms:
  - Labetalol
  - Hydralazine
  - Oral Nifedipine
- Checklists:
  - Hypertensive Emergency
  - Eclampsia
  - ED Postpartum Preeclampsia

Additional Resources:
- ACOG Hypertension in Pregnancy
- NYSDOH Hypertension Disorders in Pregnancy Executive Summary
- Guideline Summary
- Eclampsia:
  - Simulation Scenario Overview #1
  - Clinical Scenario #2
  - Drill Assessment Tool
- CMOCC Preeclampsia Toolkit:
  - Accurate Blood Pressure Measurement
  - Administration of Magnesium Sulfate

http://www.acog.org/About-ACOG/ACOG-Districts/District-II/SMI-Severe-Hypertension
Hypertensive Emergency Checklist

HYPERTENSIVE EMERGENCY:
- Two severe BP values (≥160/110) taken 15-60 minutes apart. Values do not need to be consecutive.
- May treat within 15 minutes if clinically indicated

☐ Call for Assistance
☐ Designate:
  ☐ Team leader
  ☐ Checklist reader/recorder
  ☐ Primary RN
☐ Ensure side rails up
☐ Administer seizure prophylaxis (magnesium sulfate first line agent, unless contraindicated)
☐ Antihypertensive therapy within 1 hour for persistent severe range BP
☐ Place IV; Draw preeclampsia labs
☐ Antenatal corticosteroids (if <34 weeks of gestation)
☐ Re-address VTE prophylaxis requirement
☐ Place indwelling urinary catheter
☐ Brain imaging if unrelenting headache or neurological symptoms
☐ Debrief patient, family, and obstetric team

MAGNESIUM SULFATE
Contraindications: pulmonary edema, renal failure, myasthenia gravis

IV access:
☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
☐ Label magnesium sulfate; Connect to labeled infusion pump
☐ Magnesium sulfate maintenance 1-2 grams/hour

No IV access:
☐ 10 grams of 50% solution IM (5 g in each buttock)

ANTIHYPERTENSIVE MEDICATIONS
For SBP ≥ 160 or DBP ≥ 110
☐ Labetalol (20 mg, 40, 80 IV* over 2 min, escalating doses, repeat q 10 min); Avoid in asthma or heart failure
☐ Hydralazine (5-10 mg IV* over 2 min, repeat q 20 min until target BP reached)
☐ Oral Nifedipine (10, 20, 40 mg capsules; repeat BP q 20 min until target BP reached); Capsules should be administered orally, not punctured or otherwise administered sublingually
* Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours
Note: If first line agents unsuccessful, emergency consult with specialist (MFM, Internal medicine, OB anesthesiology, critical care) is recommended

ANTICONVULSANT MEDICATIONS
For recurrent seizures or when magnesium sulfate contraindicated
☐ Lorazepam (Ativan): 2-4 mg IV x 1, may repeat once after 10-15 min
☐ Diazepam (Valium): 5-10 mg IV q 5-10 min to maximum dose 30 mg
## Eclampsia Checklist

- Call for Assistance
- Designate
  - Team leader
  - Checklist reader/recorder
  - Primary RN
- Ensure side rails up
- Protect airway and improve oxygenation:
  - Maternal pulse oximetry
  - Supplemental oxygen (100% non-rebreather)
  - Lateral decubitus position
  - Bag-mask ventilation available
  - Suction available
- Continuous fetal monitoring
- Place IV; Draw preeclampsia labs
- Administer magnesium sulfate
- Administer antihypertensive therapy if appropriate
- Develop delivery plan, if appropriate
- Debrief patient, family, and obstetric team

### Magnesium Sulfate

**Contraindications:** pulmonary edema, renal failure, myasthenia gravis

**IV access:**
- Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
- Label magnesium sulfate; Connect to labeled infusion pump
- Magnesium sulfate maintenance 1-2 grams/hour

**No IV access:**
- 10 grams of 50% solution IM (5 g in each buttock)

### Antihypertensive Medications

For SBP ≥ 160 or DBP ≥ 110

- Labetalol (20 mg, 40, 80 IV* over 2 min, escalating doses, repeat q 10 min); Avoid in asthma or heart failure, can cause neonatal bradycardia
- Hydralazine (5-10 mg IV* over 2 min, repeat q 20 min until target BP reached)

* Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours

**Note:** If persistent seizures, consider anticonvulsant medications and additional workup

### Anticonvulsant Medications

For recurrent seizures or when magnesium sulfate contraindicated

- Lorazepam (Ativan): 2-4 mg IV x 1, may repeat once after 10-15 min
- Diazepam (Valium): 5-10 mg IV q 5-10 min to maximum dose 30 mg

### For Persistent Seizures

- Neuromuscular block and intubate
- Obtain radiographic imaging
- ICU admission
- Consider anticonvulsant medications

---

*Revised October 2015*
EMERGENCY DEPARTMENT

Postpartum Preeclampsia Checklist

IF PATIENT < 6 WEEKS POSTPARTUM WITH:

• BP ≥ 160/110 or
• BP ≥ 140/90 with unremitting headache, visual disturbances, epigastric pain

☐ Call for Assistance
☐ Designate:
  ○ Team leader
  ○ Checklist reader/recorder
  ○ Primary RN
☐ Ensure side rails up
☐ Call obstetric consult; Document call
☐ Place IV; Draw preeclampsia labs
  ○ CBC
  ○ PT
  ○ Fibrogen
  ○ Chemistry Panel
  ○ Uric Acid
  ○ Hepatic Function
  ○ Type and Screen
☐ Administer seizure prophylaxis
☐ Administer antihypertensive therapy
  ○ Contact MFM or Critical Care for refractory blood pressure
☐ Consider indwelling urinary catheter
  ○ Maintain strict I&O - patient at risk for pulmonary edema
☐ Brain imaging if unremitting headache or neurological symptoms

MAGNESIUM SULFATE

Contraindications: pulmonary edema, renal failure, myasthenia gravis

IV access:
☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
☐ Label magnesium sulfate; Connect to labeled infusion pump
☐ Magnesium sulfate maintenance 1-2 grams/hour

No IV access:
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☐ Diazepam (Valium): 5-10 mg IV q 5-10 min
TMC
TRUMAN MEDICAL CENTER
Behavioral Health
Better. For Everyone.
## Truman Medical Centers Data Sheet

### Fiscal Year Ending June 30, 2015

<table>
<thead>
<tr>
<th></th>
<th>Hospital Hill</th>
<th>Lakewood</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Licensed Beds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Care</td>
<td>249</td>
<td>110</td>
<td>359</td>
</tr>
<tr>
<td>Long Term Care</td>
<td>-</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td><strong>Hospitalized Patients</strong></td>
<td>17,306</td>
<td>6,005</td>
<td>23,311</td>
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<tr>
<td>Admissions¹</td>
<td>15,040</td>
<td>4,868</td>
<td>19,908</td>
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<tr>
<td>Observations</td>
<td>1,975</td>
<td>983</td>
<td>2,958</td>
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<tr>
<td>Bedded Outpatients</td>
<td>291</td>
<td>154</td>
<td>445</td>
</tr>
<tr>
<td><strong>Patient Days</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Care¹</td>
<td>74,560</td>
<td>19,688</td>
<td>94,248</td>
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<tr>
<td>Long Term Care</td>
<td>-</td>
<td>63,518</td>
<td>63,518</td>
</tr>
<tr>
<td><strong>Average Daily Census</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Care¹</td>
<td>204</td>
<td>54</td>
<td>258</td>
</tr>
<tr>
<td>Long Term Care</td>
<td>-</td>
<td>174</td>
<td>174</td>
</tr>
<tr>
<td>Births</td>
<td>1,964</td>
<td>1,744</td>
<td>3,708</td>
</tr>
<tr>
<td><strong>Outpatient Visits</strong></td>
<td>219,120</td>
<td>119,070</td>
<td>338,190</td>
</tr>
<tr>
<td><strong>Emergency Department Visits</strong></td>
<td>67,040</td>
<td>30,689</td>
<td>97,729</td>
</tr>
<tr>
<td>Trauma Admissions</td>
<td>863</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Surgical Cases³</td>
<td>5,191</td>
<td>3,827</td>
<td>9,018</td>
</tr>
<tr>
<td>Dental/Oral Surgery Visits⁴</td>
<td>9,860</td>
<td>19,186</td>
<td>29,046</td>
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<tr>
<td>Jackson County Health Department Encounters</td>
<td>-</td>
<td>-</td>
<td>139,936</td>
</tr>
<tr>
<td>Women/Infant/Children (WIC) Visits</td>
<td>34,820</td>
<td>112,770</td>
<td>147,590</td>
</tr>
<tr>
<td>Number of Unduplicated Patients</td>
<td>61,858</td>
<td>46,242</td>
<td>108,100</td>
</tr>
</tbody>
</table>

### Behavioral Health

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>17,264</td>
</tr>
<tr>
<td>Admissions³</td>
<td>2,722</td>
</tr>
<tr>
<td>Outpatient Visits</td>
<td>278,913</td>
</tr>
</tbody>
</table>

### Uncompensated Care at Cost

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad Debt</td>
<td>$14,776,000</td>
</tr>
<tr>
<td>Charity Care</td>
<td>$105,588,000</td>
</tr>
<tr>
<td>Total</td>
<td>$120,364,000</td>
</tr>
</tbody>
</table>

### Fiscal Year 2015 Revenue

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Revenue</td>
<td>$795,456,762</td>
</tr>
<tr>
<td>Net Revenue</td>
<td>$548,093,971</td>
</tr>
</tbody>
</table>

1 Includes Neonatal Intensive Care Unit.
2 Hospital Hill includes Behavioral Health emergency visits.
3 Includes Cesarean Sections.
4 Includes total outpatient visits.
5 Included in Hospital Hill Acute Care Admissions.

---

**Kansas City's Essential Hospital.**

**TMC**

TRUMAN MEDICAL CENTERS

TruMed.org
Project Team
Project Aims

**PICOT Question:**
Will implementing a multidisciplinary education program and standardized protocols for hypertension in pregnancy enhance provider knowledge at Truman Medical Centers?
Intervention: Readiness

A multidisciplinary conference was held. A total of 44 participants attended. These participants included anesthesia providers, LDRP RNs, and OB/GYN attending physicians and residents.
Intervention: Readiness

The Multidisciplinary Conference featured:

• A presentation highlighting the latest advances in the pathophysiology and treatment

• An introduction of facility-wide, standardized medication protocols/algorithms for prompt treatment and medication safety

• Education on the importance of accurate blood pressure measurement
Intervention: Recognition and Prevention

Severe Intrapartum or Postpartum Hypertension Initial First-Line Management

- Notify physician if systolic blood pressure (BP) measurement is greater than or equal to 160 mm Hg or if diastolic BP measurement is greater than or equal to 110 mm Hg.
- Institute fetal surveillance if undelivered and fetus is viable.

Initiate the following algorithm dependent on physician choice of first line treatment:

**Labetalol**

If severe BP elevations persist for ≥15 minutes, administer labetalol (20 mg intravenously [IV] over 2 minutes).

Repeat BP measurement in 10 minutes and record results.

If either BP threshold is still exceeded, administer labetalol (40 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.

Repeat BP measurement in 10 minutes and record results.

If either BP threshold is still exceeded, administer labetalol (60 mg IV over 2 minutes).

If BP is below threshold, continue to monitor BP closely.

Repeat BP in 10 minutes and record results.

If either BP threshold is still exceeded, administer labetalol (20 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.

Repeat BP in 10 minutes and record results.

If either BP threshold is still exceeded, obtain emergency consultation from maternal-fetal medicine, internal medicine, anesthesia, or critical care subspecialists.

**Hydralazine**

If severe BP elevations persist for ≥15 minutes, administer hydralazine (5 mg or 10 mg intravenously [IV] over 2 minutes).

Repeat BP measurement in 20 minutes and record results.

If either BP threshold is still exceeded, administer hydralazine (10 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.

Repeat BP measurement in 20 minutes and record results.

If either BP threshold is still exceeded, administer hydralazine (10 mg IV over 2 minutes). If BP is below threshold, continue to monitor BP closely.

Repeat BP in 10 minutes and record results.

**Oral Nifedipine**

If severe BP elevations persist for ≥15 minutes, administer nifedipine (10 mg orally).

Repeat BP measurement in 20 minutes and record results.

If either BP threshold is still exceeded, administer nifedipine capsules (20 mg orally). If BP is below threshold, continue to monitor BP closely.

Repeat BP measurement in 20 minutes and record results.

If either BP threshold is still exceeded, administer nifedipine capsules (20 mg orally). If BP is below threshold, continue to monitor BP closely.

Repeat BP measurement in 20 minutes and record results.

Give additional antihypertensive medication per specific order.

Once the aforementioned BP thresholds are achieved, repeat BP measurement every 10 minutes for 1 hour, then every 15 minutes for 1 hour, then every 30 minutes for 1 hour, and then every hour for 4 hours.

Institute additional BP timing per specific order.

*Please note there may be adverse effects and contraindications.
Intervention: Response

- Collaboration with pharmacy is in process for implementation of protocols and algorithms

- A virtual Pyxis medication toolkit for first-line treatment of severe hypertension in pregnancy has been developed and will be implemented in coming weeks
Intervention: Reporting Systems

Project team members plan to meet with TMC information technology (IT) to explore ways to accurately collect data on severe hypertension and patient outcomes from the electronic medical record (EMR).
Project Analysis

• Participants in multidisciplinary education conference completed pre and post education surveys

• 44 participants attended the conference

• Formal statistical data analysis will be completed in coming months
Discussion

• Project successes to date include new and strengthened relationships across disciplines

• The bundle offers a wide variety of initiatives to pursue so the project team selected foci that would have the most impact at TMC

• Other project challenges included scheduling time when members from all disciplines were available to meet
Q&A Session
Press *1 to ask a question

You will enter the question queue
Your line will be unmuted by the operator for your turn

A recording of this presentation will be made available on our website:
www.safehealthcareforeverywoman.org
National Improvement Challenge
Cycle 3: Prevention of Surgical Site Infections After Major Gynecologic Surgery

Declaration of Intent
Due January 20, 2017

Full Application
Due June 20, 2017

Visit Our Website for More Information
National Improvement Video Challenge

Submissions due February 15, 2017

Visit Our Website for More Information
Upcoming Safety Action Series

Measuring Cumulative Blood Loss

February 13, 2017 at Noon EST

Presented by:
Dena Goffman, MD, FACOG
Columbia Medical Center/New York Presbyterian Hospital

Colleen Lee, MS, RN
Montefiore Medical Center

Click Here to Register