AIM HTN Bundle 101: Key Steps for Implementation

Illinois Perinatal Quality Collaborative
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In control
Building the case for change
Utilize Patient Stories

Downton Abby

Preeclampsia Foundation

If only we knew...
The Quest to Conquer Preeclampsia
Variation in quality in American healthcare is not merely “troubling”...it’s fundamentally unjust. When we know how to do something that can save lives or reduce suffering, and we fail to reliably make it available to anyone who could benefit, we’re all at risk of seeing our loved ones subjected to avoidable harm.

WE CAN DO BETTER!

Joe McCannon-Co-founder and Principle, The Billions Institute
Successful Implementation Lessons

It takes a broad team to implement systematic change

<table>
<thead>
<tr>
<th>Disciplines &amp; Departments</th>
<th>Needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetric Providers</td>
<td>YES</td>
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<tr>
<td>Nursing</td>
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<tr>
<td>Anesthesia</td>
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<td>Blood bank</td>
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<td>Laboratory</td>
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<td>Operating Room</td>
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<td>Support Personnel</td>
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<td>IT/EMR</td>
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<td>Others unique to your hospital setting?</td>
<td>isperse the wider implications.</td>
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</table>
Easy Wins Matter!!!!

- Early, straightforward successes builds confidence and enthusiasm for continued improvement
Goals and Timelines

- Clear, measureable and time-specific, otherwise known as an AIM statement
Small Tests of Change Matter

- Needs to be a good fit between intervention and context
- Each unit is unique and must design, implement and sustain change in it’s own way
- Be willing to test multiple ideas (PDSA cycles)
Data and Administrative Support Matters

Data helps you define your baseline, test changes, provide feedback and answers the question:

“How do we know the change was an improvement?”

Requires staff time, budgetary resources, education & training
It Takes Time and Persistence

- Implementation involves coordination of multiple clinicians and departments
- Overall success takes time
Champions are ESSENTIAL

- They actively associate with the project
- Dedicate themselves to incorporating best practices within their unit
- Need both physician and nursing champions to lead change
Sustainability Plan

- Long term change is dependent on a commitment to sustainability of the new clinical practice.
- The means, to include all stakeholders, plan processes that make sense, and educate and train staff – from the beginning.
An engaged staff is a key to sustainability
The Alliance for Innovation on Maternal Health (AIM)

**Patient Safety Bundle**

**Hypertension**

**Readiness**
- Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (include order sets and algorithms)
- Unit education on protocols, unit-based drills (with post-drill debriefs)
- Process for timely triage and evaluation of pregnant and postpartum women with hypertension including ED and outpatient areas
- Rapid access to medications used for severe hypertension/eclampsia: Medications should be stocked and immediately available on U&D and in other areas where patients may be treated. Include brief guide for administration and dosing.
- System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

**Recognition & Prevention**
- Every patient
  - Standard protocol for measurement and assessment of BP and urine protein for all pregnant and postpartum women.
  - Standard response to maternal early warning signs including listening to and investigating patient symptoms and assessment of labs (e.g. CBC with platelets, AST and ALT).
  - Facility-wide standards for educating intranatal and postpartum women on signs and symptoms of hypertension and preeclampsia.

**Response**
- Every case of severe hypertension/eclampsia
  - Facility-wide standard protocol with checklists and escalation policies for management and treatment of:
    - Severe hypertension
    - Eclampsia, severe prophylaxis, and magnesium over-dosage
    - Postpartum presentation of severe hypertension/preeclampsia
  - Minimum requirements for protocol:
    - Notification of physician or primary care provider if systolic BP > 160 or diastolic BP > 110 for two measurements within 15 minutes
    - After the second elevated reading, treatment should be initiated ASAP (preferably within 60 minutes of verification)
    - Includes onset and duration of magnesium sulfate therapy
    - Includes escalation measures for those unresponsive to standard treatment
    - Describes manner and verification of follow-up within 7 to 14 days postpartum
    - Describe postpartum patient education for woman with preeclampsia
    - Support plan for patients, families, and staff for ICU admissions and serious complications of severe hypertension

**Reporting/Systems Learning**
- Every unit
  - Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
  - Multidisciplinary review of all severe hypertension/eclampsia cases admitted to ICU for systems issues.
  - Monitor outcomes and process metrics

**Note:** “Facility-wide” indicates all areas where pregnant or postpartum women receive care (e.g., L&D, postpartum critical care, emergency department, and others depending on the facility).
Readiness
Readiness

- Adopt standard diagnostic criteria, monitoring and treatment for severe hypertension, preeclampsia, eclampsia to include order sets and algorithms
Algorithm

Hypertension Emergency
Systolic Blood Pressure ≥ 160 mm Hg
Diastolic Blood Pressure ≥ 110 mm Hg

- Decrease BP no more than 15% in first 1 to 2 hours
- Oral nifedipine, 10 mg
  Or oral labetalol, 200 mg
  If IV Rx
  Not available

Magnesium sulfate seizure prophylaxis
4 to 6 g IV load over 20 minutes then 3-2 g per hour continuous infusion for 24 hours
10 g IM injection (5 g into each buttock + 1 cc 1% lidocaine) then 5 g every 4 hours (if no IV)

First Line Agents
- IV Labetalol
- IV Hydralazine
- Oral Nifedipine

Use with caution when
- Labetalol
  Heart rate < 60 bpm,
  Congestive heart failure,
  AV heart block, or asthma
- Hydralazine
  Heart rate > 100 bpm,
  Recent stroke,
  Severe mitral valve disease
- Nifedipine
  Heart rate > 100 bpm,
  Severe aortic stenosis,
  Recent MI,
  Cardiogenic shock

Preferred agent when
- Labetalol
  Maternal tachycardia
- Hydralazine
  Maternal bradycardia
- Nifedipine
  Maternal bradycardia or oliguria

Check blood pressure every 20 minutes (10 minutes if labetalol)
Continue if SBP ≥ 160 mm Hg or DBP ≥ 110 mm Hg

Labetalol (q 10 min)
- Initial:
  20 mg IV over 2 minutes
- Second:
  40 mg IV over 2 minutes
- Third:
  80 mg IV over 2 minutes
- If BP remains elevated, then switch to Hydralazine starting at 110 mg IV push

Hydralazine (q 20 min)
- Initial:
  5 to 10 mg IV over 2 minutes
- Second:
  10 mg IV over 2 minutes
- If BP remains elevated, then switch to Labetalol 20 mg IV push
- If needed, Labetalol 40 mg IV push

Nifedipine (q 20 min)
- Initial:
  10 mg by oral route
- Second:
  20 mg by oral route
- Third:
  20 mg by oral route
- If BP remains elevated, then switch to Labetalol starting at 40 mg IV push

Second line agent, Intravenous nifedipine
- 2.5 to 5 mg per hour and titrate to effect, maximum 15 mg per hour
Readiness

- Process for timely triage of pregnant and postpartum women with hypertension including ED and outpatient areas
Postpartum presentation to ED

All emergency departments should have an initial screening question of:

Are you pregnant?
Or have you recently given birth?
  • Within the past six weeks
  • Within the past six months?
Postpartum presentation to ED

- Postpartum patients presenting to the ED with hypertension, preeclampsia or eclampsia should either be assessed by or admitted to an obstetrical service.
Empowering staff

Knowledge is power!
Empower nurses with an arsenal of learning opportunities:

- Unit education on P&P’s
- Drills / Simulations

I don’t need to know that…that’s someone else’s job
Readiness

- Rapid access to medications used for severe hypertension/eclampsia
  - Medications stocked and readily available on L&D and other areas
  - Should include a brief guide for administration and dosage
One hospital’s journey

RN’s and MD’s Embrace the Collaborative:

- Education was the first step.
- The collaborative’s flowchart for Labetalol administration was placed in every labor room and triage room.
- Collaboration began with our Inpatient Pharmacy to improve medication availability.
- Previously, Labetalol came in a multi-dose vial. Dosing and documenting were problematic.
- Instead, we stocked our Pyxis with 8 syringes of 10 mg Labetalol. This has really streamlined the process.
- The ability to diagnose and treat a hypertensive crisis went from 0% at the beginning of the collaborative to >90% in 4 months! (see graph)
Communication simulation

**Situation:**
- I’m calling about ____________
- I’m concerned about her blood pressure
- Her last vital signs are:
- VS taken at:
- This is the confirmatory blood pressure of:

**Background:**
- If necessary
- New onset
- Repeated episodes
- Not responsive to previous treatment

**Assessment:**
- I think Ms. ________ is having new onset severe hypertension that has been confirmed and sustained
  - OR
  - Ms. ________ did not respond to the administration of ________

**Recommendation:**
- May I have an order for ________ (IV Labetalol, IV Apresoline, or PO Nifedipine)
  - OR
- May I have an order for a second dose of ________ and I need you to come in to evaluate the patient.
  - Can you give me an approximate time of your arrival?
Recognition
Recognition

- Adopt a standard process for the measurement and assessment of BP for all pregnant and postpartum women
What are some responses you have heard or said that may be barriers to timely treatment?

A. She has always been an anxious person
B. Just turn her on her left side and recheck it
C. We don’t want to bottom her blood pressure out
D. Start magnesium sulfate for the blood pressure
E. More than one of the above
Monitoring our patients

Monitoring forms the cornerstone of timely diagnosis and treatment
Recognition

- Adopt a standard process to maternal early warning signs including listening to and appropriately investigating patient symptoms and assessment of labs.
# Preeclampsia Early Recognition Tool (PERT)

<table>
<thead>
<tr>
<th>ASSESS</th>
<th>NORMAL (GREEN)</th>
<th>WORRISEME (YELLOW)</th>
<th>SEVERE (RED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Alert oriented</td>
<td>Agitated/delirious</td>
<td>Unresponsive</td>
</tr>
<tr>
<td>Headache</td>
<td>None</td>
<td>Mild headache</td>
<td>Unrelieved headache</td>
</tr>
<tr>
<td>Vision</td>
<td>None</td>
<td>Blurred or impaired</td>
<td>Temporary blindness</td>
</tr>
<tr>
<td>Systolic BP</td>
<td>100-139</td>
<td>140-159</td>
<td>≥ 160</td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>50-89</td>
<td>90-105</td>
<td>≥ 105</td>
</tr>
<tr>
<td>HR</td>
<td>60-110</td>
<td>111-129</td>
<td>≥ 130</td>
</tr>
<tr>
<td>Respiration</td>
<td>≥15</td>
<td>10-20</td>
<td>≥100 or ≤30</td>
</tr>
<tr>
<td>O2 Sat (%)</td>
<td>≥90</td>
<td>91-94</td>
<td>≤90</td>
</tr>
<tr>
<td>Pain: Abdomen or Chest</td>
<td>None</td>
<td>Nausea, vomiting</td>
<td>Nausea, vomiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chest pain</td>
<td>Chest pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abdominal pain</td>
<td>Abdominal pain</td>
</tr>
<tr>
<td>Fatal Signs</td>
<td>Category I</td>
<td>Category II</td>
<td>Category III</td>
</tr>
<tr>
<td></td>
<td>Reactive NST</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-reactive NST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine Output</td>
<td>≥50</td>
<td>30-49</td>
<td>≤30 (in 2 hrs)</td>
</tr>
<tr>
<td>Protimeinuria</td>
<td>Trace</td>
<td>+2+1</td>
<td>≥3000 mg/24 hrs</td>
</tr>
<tr>
<td>Platelets</td>
<td>&gt;100</td>
<td>50-100</td>
<td>≤50</td>
</tr>
<tr>
<td>AST/LAT</td>
<td>&lt;70</td>
<td>&gt;70</td>
<td>&gt;70</td>
</tr>
<tr>
<td>Creatinine</td>
<td>0.8</td>
<td>0.9-1.1</td>
<td>&gt;1.2</td>
</tr>
<tr>
<td>Sulfate Toxicity</td>
<td>Trace +</td>
<td>Depression of patellar reflexes</td>
<td>Respiration &lt;12</td>
</tr>
</tbody>
</table>

**GREEN = NORMAL**
- Proceed with protocol

**YELLOW = WORRISEME**
- Increase assessment
- # Triggers
- GO

**RED = SEVERE**
- Trigger: 1 of any type listed below

**TO DO**
- Immediate evaluation
- Transfer to higher acuity level
- 1:1 staff ratio
- Consider Neurology consult
- CT Scan
- R/O SAH, intracranial hemorrhage
- Lab results within 30 min
- In-person evaluation
- Magnesium sulfate loading or maintenance infusion
- Consider CT angiogram
- O2 at 1 L per rebreather mask
- MD pulmonary edema
- Chest x-ray

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**Notes:**
- Patient should be made aware of signs and symptoms at onset.
- Provider should be notified immediately.
- Protocol should be followed.
- "W" = Yellow
- "R" = Red
- "G" = Green
## Maternal Early Warning Criteria

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure (mm Hg)</td>
<td>&lt;90 or &gt;160</td>
</tr>
<tr>
<td>Diastolic Blood Pressure (mm Hg)</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Heart rate (beats per minute)</td>
<td>&lt;50 or &gt;120</td>
</tr>
<tr>
<td>Respiratory rate (breaths per min)</td>
<td>&lt;10 or &gt;30</td>
</tr>
<tr>
<td>Oxygen saturation on room air, at sea level %</td>
<td>&lt;95</td>
</tr>
<tr>
<td>Oliguria, mL/hr for ≥2 hrs</td>
<td>&lt;35</td>
</tr>
<tr>
<td>Maternal agitation, confusion, or unresponsiveness</td>
<td></td>
</tr>
<tr>
<td>Woman with preeclampsia reporting a non-remitting headache or shortness of breath</td>
<td></td>
</tr>
</tbody>
</table>
Existing Joint Commission requirements:

- Have a process for recognizing and responding as soon as a patient’s condition appears to be worsening.
- Develop written criteria describing early warning signs of a change or deterioration in a patient’s condition and when to seek further assistance.
- Based on the hospital’s early warning criteria, have staff seek additional assistance when they have concerns about a patient’s condition.
Key Clinical Pearl

An organized tool to identify “clinical signs” of high concern or triggers can aid clinicians to recognize and respond in a more timely manner to avoid delays in diagnosis and treatment.
Recognition

- Facility-wide standards for educating prenatal and postpartum women on signs and symptoms of preeclampsia and severe hypertension
Preeclampsia Foundation tools
What to teach?

- When to return
- What symptoms to report
- Modifiable factors
  - Breastfeeding
  - Regular exercise/diet
  - Weight loss
- Future CVD risk
Response
Response

- Facility wide standard process with checklists for management and treatment of:
  - Hypertensive emergencies
  - Eclampsia
Response

- Support plan for patients, families and staff for ICU admissions and serious complications of severe hypertension
Reporting & Systems Learning
“If we don’t know where we are, it is hard to know where we are going”
Where to begin...

- 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
    - Communication, Response & Reliable Processes
Reporting & Systems Learning

- High risk huddles and debriefing
Debriefing pearls

- 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

- Unit bulletin boards
- Pocket cards
- Newsletters
Make it easy to do the “right thing”

- Identify potential barriers
- Remove barriers
- Documentation
Have Fun, Be Creative and Celebrate your Successes !!!

Preeclampsia

JEOPARDY

Oh What Fun

CMQCC DATA ENTRY PARTY

Tuesday Dec. 11, 2013
12N - finished! (4 hours)
Women’s Conference Room
Potluck lunch
Food & Networking

3 Five Minute Presentations:
1. Preeclampsia Collaborative
2. Results of the Educational Module
3. Value & Ease of Debriefing

THEN:
30 minutes case based exercise
Teamwork = Shared Mental Model

- Ensure that team members know what to expect
- Helps synchronize care
- Ensures that everyone is “on the same page”
- Enables members to predict and anticipate one another’s needs

AHRQ, 2014
Success.

Thank You!

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