Implementing A Severe Maternal Hypertension Protocol

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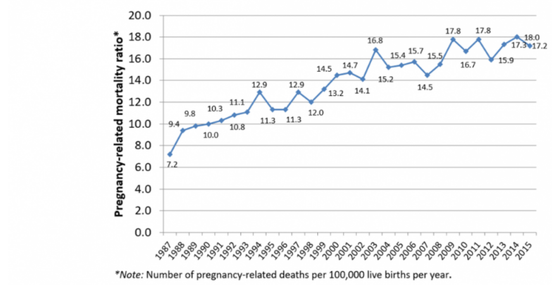
Background

Increasing Maternal Morbidity and Mortality

- The United States continues to see increasing rates of maternal morbidity and mortality while other developed nation's rates decline.

Since the Pregnancy Mortality Surveillance System was implemented, the number of reported pregnancy-related deaths in the United States steadily increased from 7.2 deaths per 100,000 live births in 1987 to 17.2 deaths per 100,000 live births in 2015. The graph below shows trends in pregnancy-related mortality ratios defined as the number of pregnancy-related deaths per 100,000 live births in the United States between 1987 and 2015 (the latest available year of data).

Trends in pregnancy-related mortality in the United States: 1987-2015

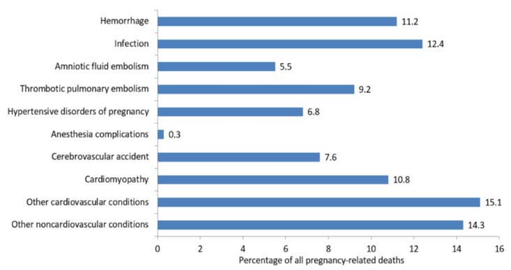


Note: Number of pregnancy-related deaths per 100,000 live births per year.

Source: https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-mortality-surveillance-system.htm Accessed on 9/4/2019.

- Diseases of HTN contributed to 6.8% of pregnancy related deaths from 2011–2015.
- CDC recommends standardization of patient care during intrapartum phase, including delivering high-risk women at hospitals with specialized providers and equipment.
- Baptist Health Louisville recognized care of the hypertensive pregnant patient as area of opportunity for improving standardization of care

Causes of pregnancy-related death in the United States: 2011-2015



Note: The cause of death is unknown for 6.7% of all pregnancy-related deaths.

https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-mortality-surveillance-system.htm
Accessed on 9/4/2019

Implementation

Preparation for Protocol Launch

- Review of literature and recommendations.
- Algorithm created based on ACOG and CMQCC recommendations.
- Order set uploaded for use in EMR.
- Changed HTN policy.
- Approved plan through Women's and Children's Health Operations Committee.
- Education completed for L&D, Antepartum, MB, and ED nursing staff.

Algorithm

Severe Maternal Hypertension Treatment Algorithm

Severely elevated SBP ≥ 160 and/or DBP ≥ 105 persisting for 15 min

Begin IV Labetalol ***OR*** Hydralazine
Target BP SBP 140-150 and/or DBP 90-100

If **NO** IV **access** give Procardia **10**mg PO Repeat BP in 20 minutes, if severe range give Procardia **20** mg PO. Repeat BP **20** minutes, if severe range give Procardia **20** mg.

Labetalol 20 mg IV over 2 minutes Begin continuous SpO2 monitoring. **Do not give labetalol if history of asthma, heart disease, of CHF. Monitor BP & HR every 10 minutes after each dose.**

Labetalol 200 mg PO can be given if **NO** IV access as an alternate to Procardia. May repeat labetalol dose in 30 minutes if still in severe range.

Utilizing this protocol should not delay initiation of Magnesium Sulfate for seizure prophylaxis

Repeat BP in 10 minutes. If SBP ≥ 160 **or** DBP ≥ 105, administer **Labetalol 40mg** IV over 2 minutes; If BP below threshold initiate BP surveillance

Hydralazine 5 or 10 mg IV over 2 minutes. Begin continuous SpO2 monitoring. **Monitor BP & HR everv 20 minutes after each dose.**

Repeat BP in 10 min. If SBP ≥ 160 **or** DBP ≥ 105, administer **Labetalol 80mg** IV over 2 minutes; If BP below threshold initiate BP surveillance

Request OB at bedside (if not already there) after 3rd dose if no improvement

Repeat BP in 20 minutes. If SBP ≥ 160 **or** DBP ≥ 105, administer **Hydralazine 10 mg** IV over 2 minutes; If BP below threshold initiate BP surveillance

Repeat BP in 10 min. If SBP ≥ 160 **or** DBP ≥ 105, administer **Hydralazine 10 mg** IV over 2 minutes; If BP below threshold initiate BP surveillance

Repeat BP in 20 minutes. If SBP ≥ 160 **or** DBP ≥ 105, administer **Labetalol 20 mg (if no contraindications)** IV over 2 minutes; If BP below threshold initiate BP

Repeat BP in 20 min. If SBP ≥ 160 **or** DBP ≥ 105, at 20 minutes, obtain consultation critical care by calling a Rapid Response. Inform anesthesiology if appropriate.

Repeat BP in 10 min. If SBP ≥ 160 **or** DBP ≥ 105, give **Labetalol 40 mg** IV over 2 minutes, obtain consultation critical care by calling a Rapid Response. Inform anesthesiology if appropriate.

Once BP thresholds are reached, initiate BP Surveillance

Notify provider after one severe BP value is obtained
Institute fetal surveillance if undelivered
Hold IV **labetalol** for maternal pulse under 60
Avoid IV labetalol with active or history of asthma, heart disease, or CHF
Maximum cumulative IV-administered doses of labetalol should not exceed **220 mg** in 24 hours
Maximum cumulative IV-administered doses of hydralazine should not exceed **25 mg** in 24 hours
Hydralazine may increase risk of maternal hypotension
There may be adverse effects & contraindications, clinical judgement should prevail

BP Surveillance
Every 10 minutes X1 hour
Then every 15 min X1 hour
Then every 30 min X1 hour
Then every hour for 4 hour

ACOG. (2018).Maternal Safety Bundle for Severe Hypertension in Pregnancy

Revised11/18

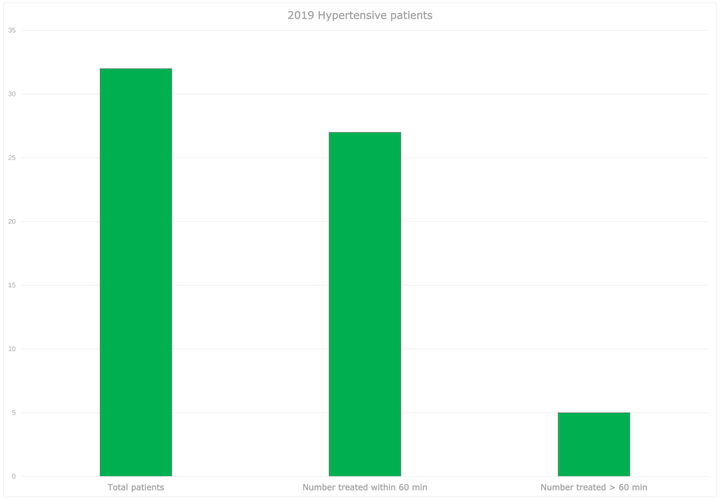
Review Process

- Staff turn in a "Case Review" form for HTN patients to trigger audit.
- Cases reviewed by OB Medical Quality physician.
- Outliers are brought to the Women's and Children's Patient Care Committee for further discussion and follow-up.

Outcomes

Case Reviews January – August 2019

- Any patients identified as meeting the criteria for treatment based on the algorithm were reviewed by an OB quality physician reviewer.
- 32 patients were identified as meeting criteria or SBP ≥ 160 and/or DBP ≥105 persisting for 15 minutes.
- 27 patients were treated with 60 min goal time.
- 5 patients were treated > 60 minutes: 3 Intrapartum, 2 postpartum.



Implications

- Ongoing education of nursing and physician staff is necessary to continue improvement of outcomes.
- Opportunities exist to improve timing of treatment and adherence to the recommended frequency of blood pressure readings.
- Development of a partnership with the Emergency Department to identify patients and initiate treatment is key to a successful process.

References

- Committee Opinion No. 692: Emergent therapy for acute-onset, severe hypertension during pregnancy and the postpartum period. (2017). *Obstetrics and Gynecology, 129* (4), 769-770. Doi:10.1097/AOG.0000000000002010
- Druzin, M.L., Shields, L.E., Peterson, N.L., Cape, V. (2013). Preeclampsia toolkit: Improving health care response to preeclampsia. California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care. *California Maternal Quality Care Collaboration*
- Maternal Safety Bundle for Severe Hypertension in Pregnancy. (2018). *American Congress of Obstetricians and Gynecologists.* https://www.acog.org/-/media/Districts/District-II/Public/SMI/v2/HTNSlideSetApril2018.pdf?dmc=1&ts=20180611T1226571472
- Phyllis, A., (2018). Management of hypertension in pregnant and postpartum women. *UpToDate.*
- Roberts, J.M., August, P.A., Bakris, G., Barton, J.R., Bernstein, I.M., Druzin, M., Martin, J.N. (2018). Hypertension in pregnancy. *The American College of Obstetricians and Gynecologists.* https://www.acog.org/Clinical-Guidance-and Publications/Task-Force-and-Work-Group-Reports/Hypertension-in-Pregnancy