HOPE Project: Hypertensive Disorders Of Pregnancy Empowerment Project

Marie Baker, MD; Keyana F. Varnado, MD; Bradley Ber, MD; Kristy Chin, DO; Libby Going, MD; Marilyn Marshall, MD
Louisiana State University Health Sciences Center at Ochsner University Hospital and Clinics
Department of Family Medicine – Lafayette, LA

Background and Objectives

Hypertensive disorders of pregnancy, including preeclampsia, are a significant driver of maternal and perinatal morbidity and mortality. In a study evaluating 2017 state-based variability in hypertensive disorders of pregnancy, Louisiana had the highest adjusted prevalence at 9.3 percent[5] In Louisiana, from 2011-2016, 3 of the 36 confirmed pregnancy related deaths were due to preeclampsia or eclampsia and 15 were due to hypertension induced cardiovascular disease.[1] In 2014, the United State Preventative Services Task Force (USPSTF) issued a grade B recommendation for the initiation of aspirin 81mg in persons with any high risk factor for preeclampsia beginning at 12 weeks gestational age for preeclampsia risk reduction. It also supports the use of 81mg aspirin in persons with multiple moderate risk factors.

In the Ochsner University Hospital and Clinics Louisiana State University Family Medicine (OUHC LSU FM) Obstetrics Clinic, there has been a significant variation in the implementation of this USPSTF recommendation. The Society for Maternal-Fetal Medicine (SMFM) has proposed standardized checklists to improve the identification of persons who fit the criteria for aspirin (ASA) initiation for preeclampsia risk reduction.[3] We believe introducing a screening checklist in our clinic may improve resident, faculty and staff awareness of the USPSTF guideline, the identification of women who are at increased risk for preeclampsia, the recommendation and/or prescription of ASA 81 mg to these women, and patient education regarding preeclampsia.

Project Description and Methodology

We used the Plan, Do, Study, Act (PDSA) quality improvement (QI) model. Surveys were sent to OUHC LSU FM clinic physicians, nurses, and medical assistants to assess baseline knowledge of the USPSTF recommendation regarding ASA 81 mg for preeclampsia risk reduction and the high and moderate risk factors for preeclampsia per the USPSTF. Education was given at the end of the survey to provide information on the evidenced based guidelines for screening and identifying preeclampsia risk factors, and the prescription of ASA 81mg for preeclampsia risk reduction.

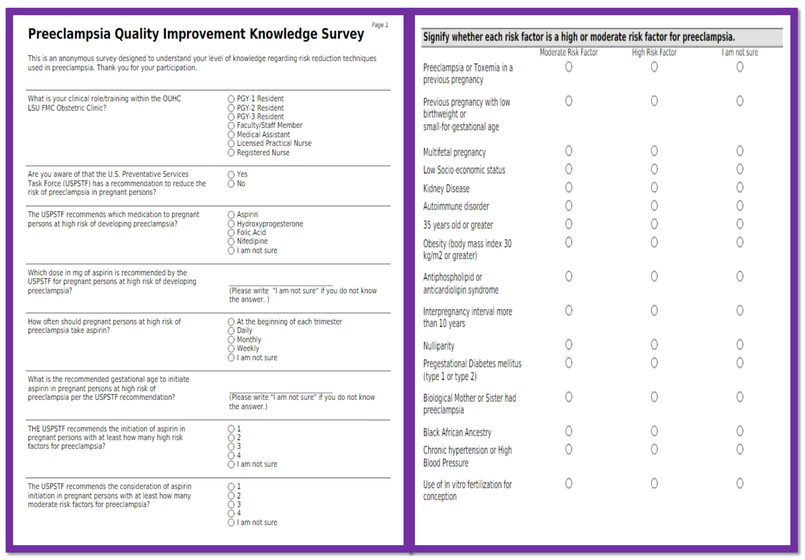
A standardized screening checklist was then implemented in the OUHC LSU FM initial obstetrics clinic. A protocol was established to have our clinical team verbally complete the checklist with each patient and determine if the patient meets criteria for aspirin use. The checklist results are reviewed and then scanned into the electronic medical record (EMR). Sub interventions were also used to support the utilization of the screening checklists, including:

- A flyer in the FMOB clinic rooms encouraging residents to recommend and prescribe ASA 81 mg to patient's who meet USPSTF criteria
- A card attached to physical charts signifying the patients who met criteria for ASA 81 mg per the risk factor screening tool
- An auto text tool to aid in the documentation of the recommendation and/or prescription of ASA 81 mg and preeclampsia related patient education

Both retrospective and prospective chart review took place to collect data from charts completed 3 months prior to the above intervention. We also reviewed data approximately 1 month and 4 months post the intervention. In addition to the scanned in screening checklists, we collected available demographic data from the chart. We determined the number of patients who met USPSTF ASA 81 mg recommendation or consideration criteria, the number of patients with documented recommendation and/or prescription of ASA 81 mg by the 12 to 16 weeks gestation age time frame or soonest surrounding appointment, and the number of patients with documented preeclampsia education provided.

This data will be presented to the OUHC LSU FMC clinic physicians, nurses, medical assistants and administrative leaders to improve the identification of pregnant persons at increased risk for preeclampsia, the recommendation or consideration of ASA 81 mg at 12 to 16 weeks gestational age for preeclampsia risk reduction, and patient education regarding preeclampsia in pregnant persons at increased risk for preeclampsia.

Knowledge Assessment Tool



Preeclampsia Quality Improvement Knowledge Survey

Page 1

This is an anonymous survey designed to understand your level of knowledge regarding risk reduction techniques used in preeclampsia. Thank you for your participation.

What is your clinical role/training within the OUHC LSU FMC Obstetric Clinic?
○ PGY-1 Resident ○ PGY-2 Resident ○ PGY-3 Resident ○ Faculty/Staff Member ○ Medical Assistant ○ Licensed Practical Nurse ○ Registered Nurse

Are you aware of that the U.S. Preventative Services Task Force (USPSTF) has a recommendation to reduce the risk of preeclampsia in pregnant persons?
○ Yes ○ No

The USPSTF recommends which medication to pregnant persons at high risk of developing preeclampsia?
○ Aspirin ○ Hydroxyprogesterone ○ Folic Acid ○ Nifedipine ○ I am not sure

Which dose in mg of aspirin is recommended by the USPSTF for pregnant persons at high risk of developing preeclampsia?
(Please write "I am not sure" if you do not know the answer.)

How often should pregnant persons at high risk of preeclampsia take aspirin?
○ At the beginning of each trimester ○ Daily ○ Monthly ○ Weekly ○ I am not sure

What is the recommended gestational age to initiate aspirin in pregnant persons at high risk of preeclampsia per the USPSTF recommendation?
(Please write "I am not sure" if you do not know the answer.)

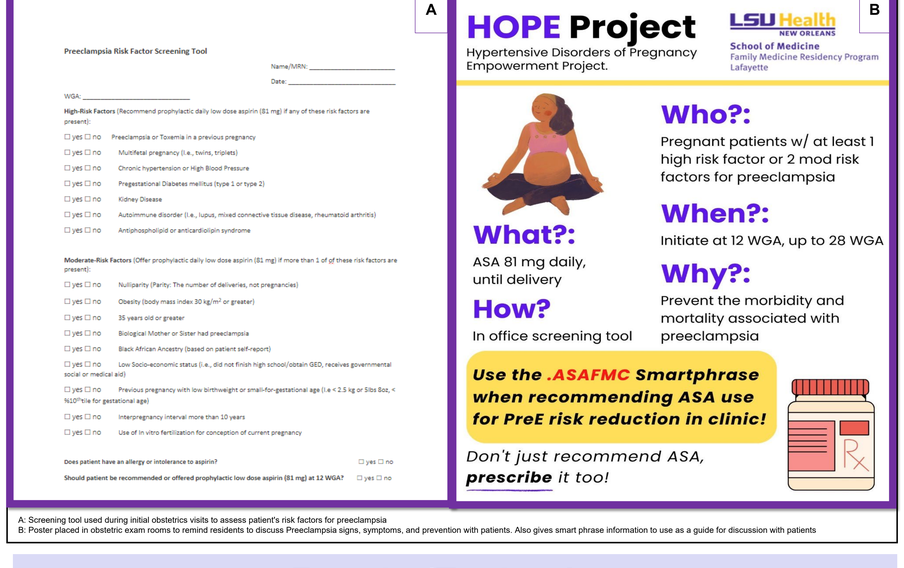
THE USPSTF recommends the initiation of aspirin in pregnant persons with at least how many high risk factors for preeclampsia?
○ 1 ○ 2 ○ 3 ○ 4 ○ I am not sure

The USPSTF recommends the consideration of aspirin initiation in pregnant persons with at least how many moderate risk factors for preeclampsia?
○ 1 ○ 2 ○ 3 ○ 4 ○ I am not sure

Signify whether each risk factor is a high or moderate risk factor for preeclampsia.

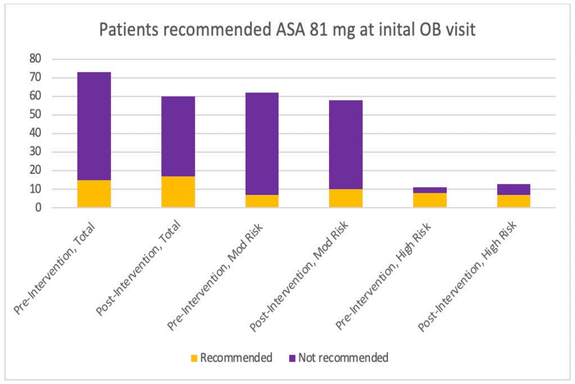
	Moderate Risk Factor	High Risk Factor	I am not sure
Preeclampsia or Toxemia in a previous pregnancy	○	○	○
Previous pregnancy with low birthweight or small-for-gestational age	○	○	○
Multifetal pregnancy	○	○	○
Low Socio-economic status	○	○	○
Kidney Disease	○	○	○
Autoimmune disorder	○	○	○
35 years old or greater	○	○	○
Obesity (body mass index 30 kg/m2 or greater)	○	○	○
Antiphospholipid or anticardiolipin syndrome	○	○	○
Interpregnancy interval more than 10 years	○	○	○
Nulliparity	○	○	○
Pregestational Diabetes mellitus (type 1 or type 2)	○	○	○
Biological Mother or Sister had preeclampsia	○	○	○
Black African Ancestry	○	○	○
Chronic hypertension or High Blood Pressure	○	○	○
Use of In vitro fertilization for conception	○	○	○

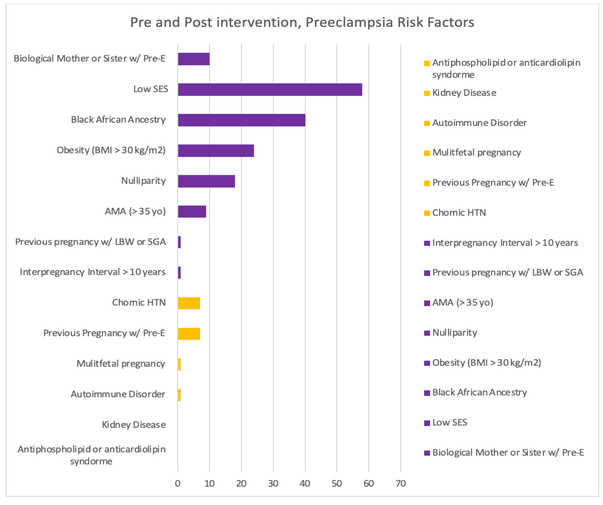
Intervention Tools

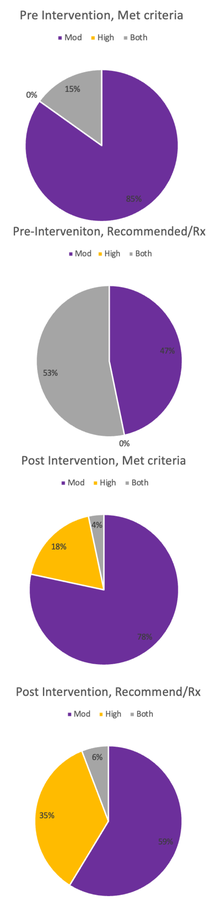


A: Screening tool used during initial obstetrics visits to assess patient's risk factors for preeclampsia
B: Poster placed in obstetric exam rooms to remind residents to discuss Preeclampsia signs, symptoms, and prevention with patients. Also gives smart phrase information to use as a guide for discussion with patients

Results/Evaluation







Results/Evaluation

We reviewed 178 total charts, 45 of which were excluded during the data analysis process due to patients not meeting risk factor criteria for ASA 81 mg (22 patients), being 28 WGA or greater (27 patients) and/or having a contraindication to ASA 81 mg at time of initial OB visit (2 patients). 73 charts were analyzed in the pre-intervention stage and 60 in the intervention stage. In the pre-intervention phase, 11/73 (15.1%) of patients had at least 1 high risk factor and 62/73 (84.9%) had only at least 2 moderate risk factors. In the post-intervention phase, 13/60 (21.7%) of patients had at least 1 high risk factor and 47/60 (78.33%) had only at least 2 moderate risk factors. In both groups, history of preeclampsia and chronic hypertension were the most common high-risk factors and low socioeconomic status, Black/African descent and obesity were the most common moderate risk factors.

15/73 (20.5%) of patients were recommended ASA in the pre-intervention phase versus 15/60 (25%) of post-intervention patients (p-value .677). In the pre-intervention phase 8/73 (10.96%) patients were prescribed ASA vs. 11/60 (18.33%) of the post-intervention phase patients (p-value .32). 2 of the patients of the post-intervention phase were prescribed ASA, but documentation of recommendation wasn't included in the charts while all the pre-intervention patients who were prescribed ASA had additional documentation of recommendation. Patients who received prescriptions and/or recommended ASA were more likely to have at least 1 high risk factor for pre-eclampsia (p-value <.001) and/or a history of preeclampsia (p-value <.001). However, in the post intervention phase, there was a decrease in the recommendation and/or prescription of ASA from 72.7% to 53.8% (p-value .4225) in those with at least 1 high risk factor. Conversely, there was an increase of the recommendation and/or prescription of ASA from 11.29% to 17.24% in those with only at least 2 moderate risk factors.

Faculty/Staff and Resident Knowledge Assessment Results

Pre-Intervention: 16 residents and 8 faculty completed the survey. 8/16 (50%) and 7/8 (87.5%) residents and faculty respectively were aware of the USPSTF preeclampsia guidelines.

Post-Intervention: 18 residents and 7 faculty completed the survey. 18/18 (100%) and 7/7 (100%) residents and faculty respectively were aware of the USPSTF preeclampsia guidelines.

Conclusions and Future Plans

Hypertension and cardiovascular adverse outcomes in pregnant persons are partially modifiable through programming that improves identification of those at risk, routine screening for disease, timely medical management, and patient education. We have shown that the use of a standardized screening tool is beneficial in identifying patients with risk factors for preeclampsia. We were also able to aid our clinic in initiating discussions with patients about preeclampsia, the associated risks, and the signs/symptoms to be aware of through clinic posters placed in obstetric exam rooms.

Even so, improving provider knowledge and patient screening only modestly improved the number of patients prescribed ASA for pre-eclampsia risk reduction. However, the number of patients with only moderate risk factors who were prescribed ASA increased. This is reassuring, as we believe these patients are more likely to be unidentified secondary to the more innocuous perception of moderate risk factors for preeclampsia.

We were able to identify some barriers to implementing the USPSTF recommendation to initiate ASA 81 mg at 12 to 16 WGA for preeclampsia prevention, which included:

- **Resident Comfort**: some residents were not comfortable with recommending ASA secondary to concern for adverse effects, poor understanding of evidence behind certain risk factors, fear of challenging patient conversations, and lack of faculty/attending support.
- **Patient Concern**: we found that some patients were more inclined to initiate the aspirin if it were prescribed. Some patients also did not understand why they were at increased risk.
- **EMR Integration**: though we created an EMR auto-text, it was separate from the standard Initial OB clinic template, and this limited resident uptake.
- **Barriers to prenatal care:** if patients have less visits, there are not as many opportunities to initiate ASA.

In future initiatives, we would like to provide more educational sessions with the residents and faculty to discuss the barriers preventing the implementation of this recommendation. We hope that increasing adherence to this guideline can reduce preeclampsia in our patient population and in turn improve adverse maternal and perinatal morbidity and mortality in our region. The impact of increased adherence of this recommendation in our clinic can be studied in the future.

References

1. ***Reducing Maternal Morbidity Initiative -Final Report.*** https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/maternal/LaPQC/RMMI_Final_Report_LongForm_5-25-2021.pdf

2. **Gross M, Hughes AE, Sampene K. Leveraging Quality Improvement to Promote Health Equity: Prenatal Aspirin Recommendations by Race [A303]. *Obstetrics & Gynecology*. 2022;139(1):87S87S. doi:10.1097/01.aog.0000825532.73291.ec;** https://journals.lww.com/greenjournal/Abstract/2022/05001/Leveraging_Quality_Improvement_to_Promote_Health.300.aspx

3. **Combs CA, Montgomery DM. Society for Maternal-Fetal Medicine Special Statement: Checklists for preeclampsia risk-factor screening to guide recommendations for prophylactic low-dose aspirin. *American Journal of Obstetrics and Gynecology*. 2020;223(3):B7-B11. doi:10.1016/j.ajog.2020.06.003;** https://www.ajog.org/article/S0002-9378%2820%2930618-9/fulltext

4. **Wilkinson J, Cole G. Preeclampsia knowledge among women in Utah. *Hypertension in Pregnancy*. 2017;37(1):18-24. doi:10.1080/10641955.2017.1397691;** https://pubmed.ncbi.nlm.nih.gov/29140734/

5. **Butwick AJ, Druzin ML, Shaw GM, Guo N. Evaluation of US State–Level Variation in Hypertensive Disorders of Pregnancy. *JAMA Network Open*. 2020;3(10):e2018741. doi:10.1001/jamanetworkopen.2020.18741;** https://pubmed.ncbi.nlm.nih.gov/33001203/