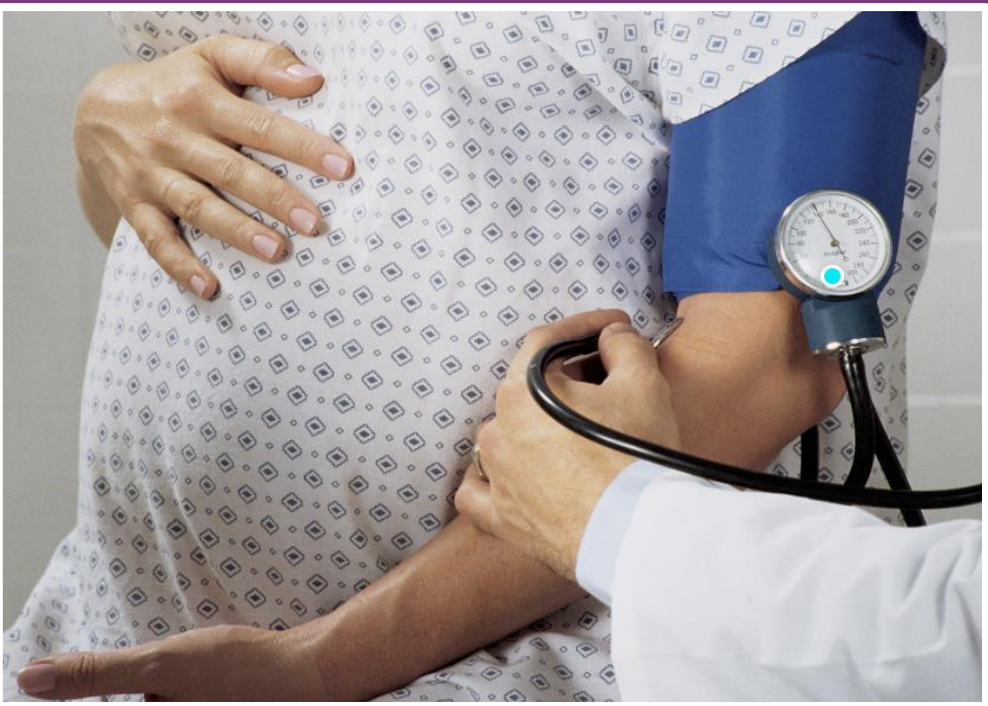




Hypertensive Disorders of Pregnancy: Utilizing High-Fidelity Simulation to Enhance Nursing Recognition and Response to Improve Maternal Outcomes

Emily Clark, MSN, RNC-MNN & Jennifer Young, MSN, RNC-OB, C-EFM
Magee-Womens, UPMC Hamot



Introduction

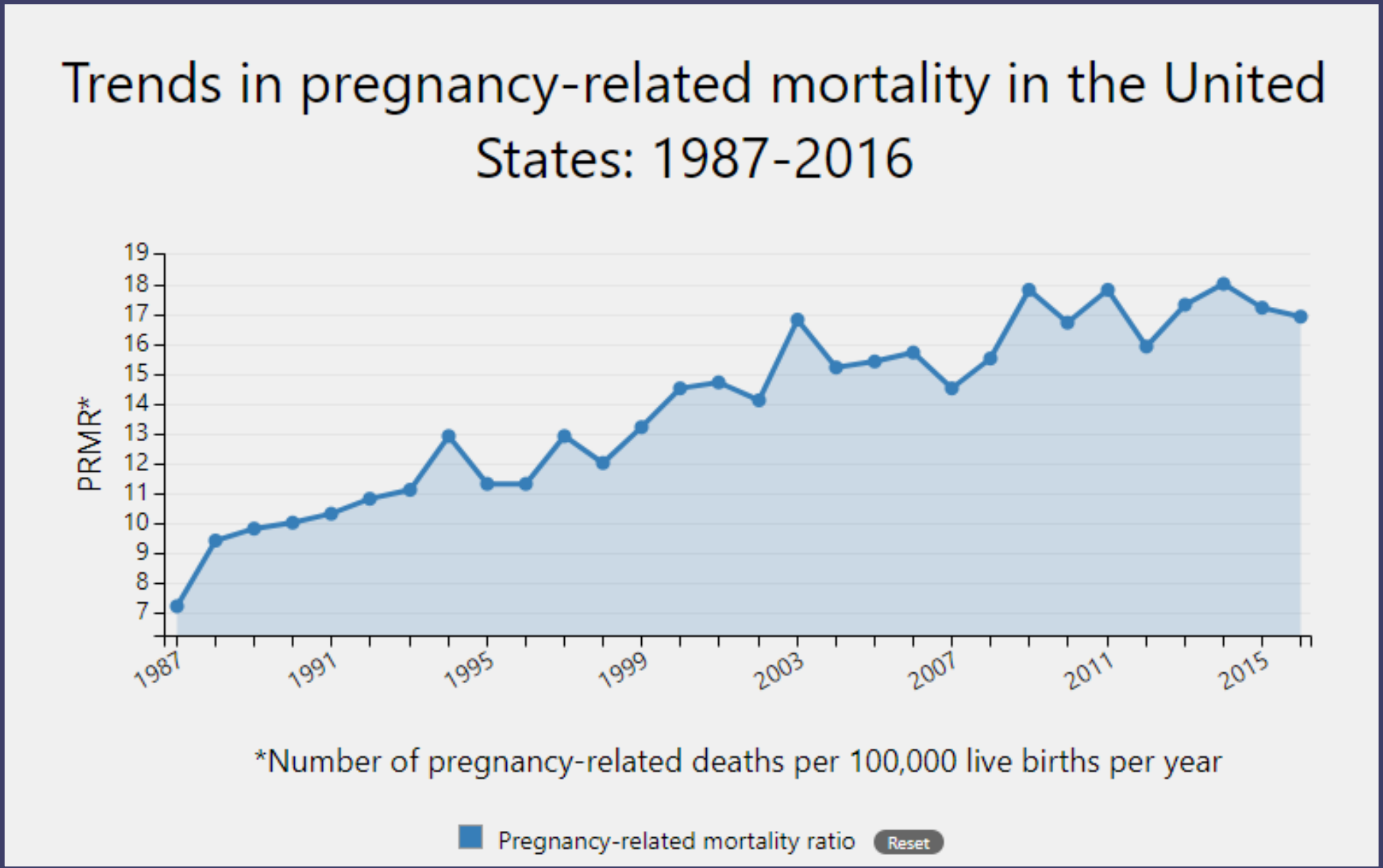


Figure 1. Trends in pregnancy-related mortality in the United States: 1987-2016. Reprinted from "Pregnancy Mortality Surveillance System," by Centers for Disease Control and Prevention, 2018. Retrieved from <https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm>

- ❖ Pregnancy mortality rates are increasing in the USA
- ❖ 50,000 women suffer severe injuries, while approximately 700 women die each year related to pregnancy and childbirth complications
- ❖ Reports indicate half of maternal deaths and injuries are preventable
- ❖ To decrease alarming statistics, national guidelines recommend the following:
 - ❖ Standardizing assessments and treatment decisions
 - ❖ Refining polices concerning patient management, communication, and care coordination

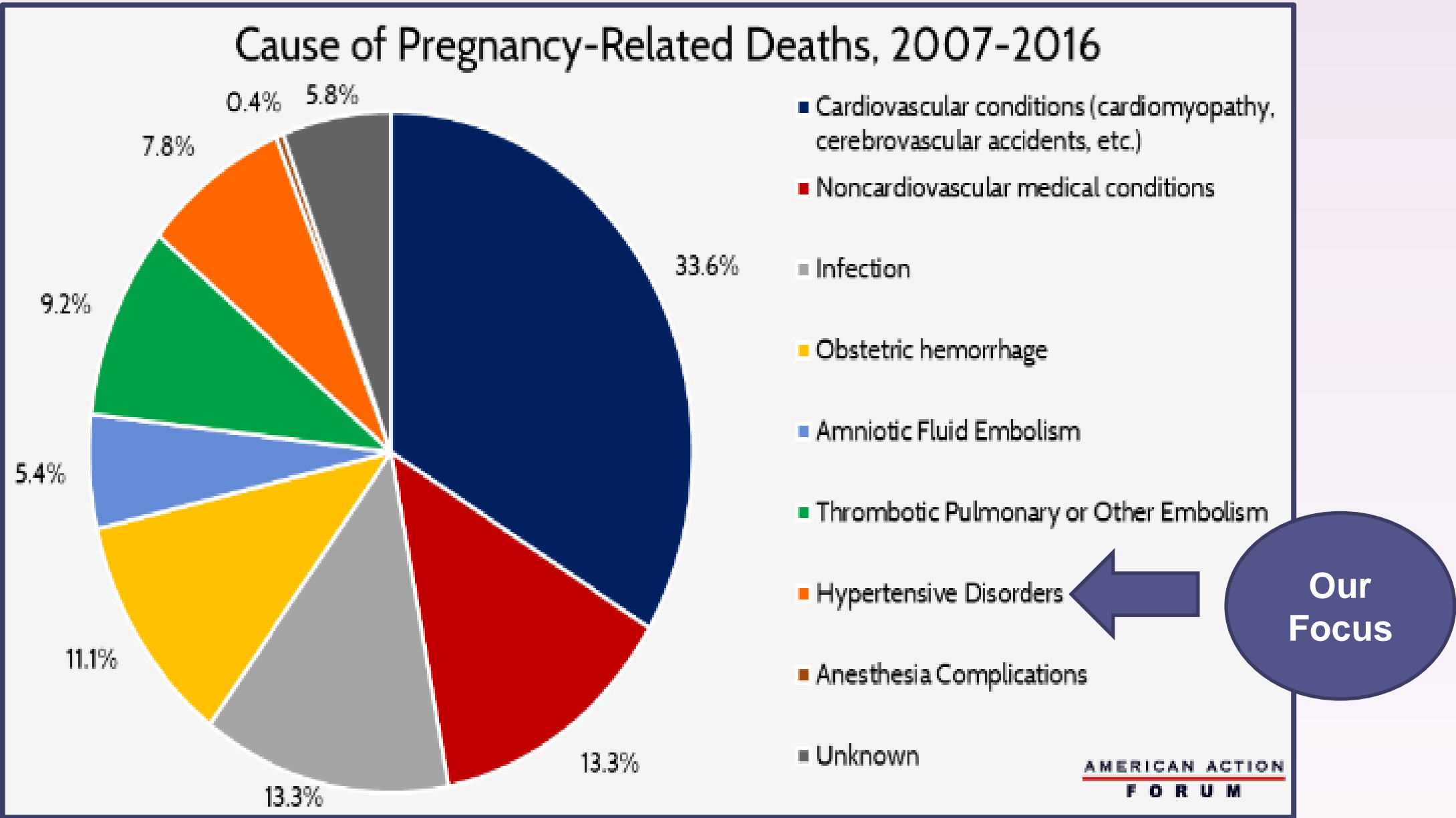
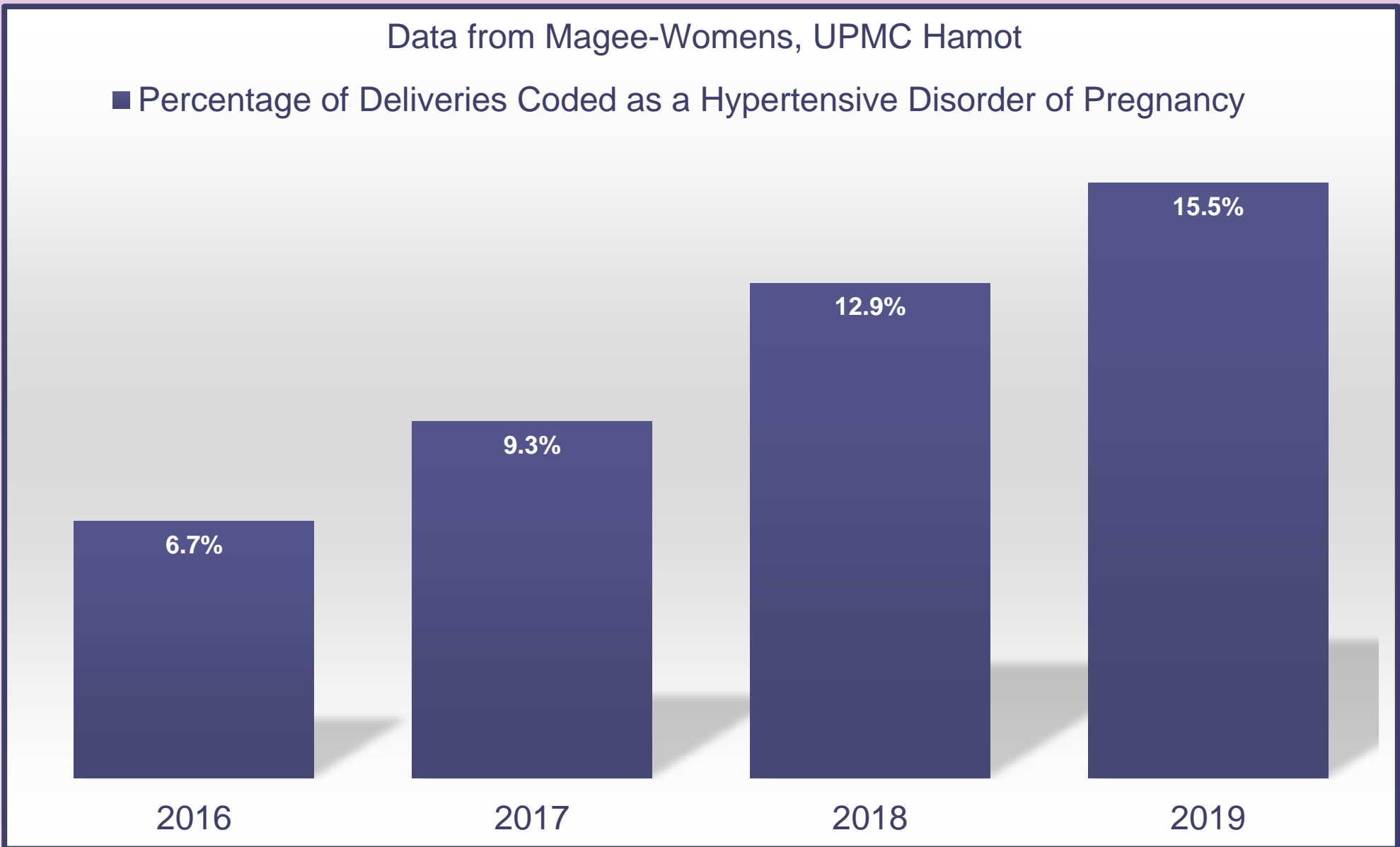


Figure 2. Cause of pregnancy-related deaths, 2007-2016. Reprinted from "Maternal mortality in the United States," by American Action Forum, 2019. Retrieved from <https://www.americanactionforum.org/insight/maternal-mortality-in-the-united-states/>

- ❖ Hypertensive disorders of pregnancy are rising due to obesity, delayed childbearing, and assisted reproductive technologies
- ❖ Up to 10% of pregnancies worldwide are complicated by hypertensive disorders of pregnancy
- ❖ In the USA, the rate of preeclampsia has increased by 25% since the 1980s and is a primary cause of maternal and infant illness and death
- ❖ Approximately 60% of maternal deaths related to hypertension are potentially preventable
- ❖ Roughly 75% of maternal deaths associated with hypertensive disorders occur after birth
- ❖ Preeclampsia increases the risk for preterm delivery, cesarean section, fetal growth restriction, placental abruption, disseminated intravascular coagulation, renal failure, pulmonary edema, and aspiration pneumonia
- ❖ Preeclampsia can lead to cardiovascular and cerebrovascular diseases later in life

Background

- ❖ Increased diagnoses of hypertensive disorders of pregnancy at Magee-Womens, UPMC Hamot
- ❖ Knowledge gap for assessing patients with hypertensive disorders
- ❖ Delayed response to hypertensive symptoms and reportable vital signs
- ❖ Lack of standardized communication between healthcare team
- ❖ Missed opportunities to initiate recommended treatment for severe range blood pressures



Interventions

- ❖ Created a high-fidelity simulation scenario related to preeclampsia with severe features during the postpartum period
- ❖ Developed nursing education to include:
 - ❖ Recent statistics
 - ❖ Hypertensive disorders of pregnancy definitions
 - ❖ Pathophysiology of preeclampsia and severe features
 - ❖ Focused patient assessment
 - ❖ Recommended treatments for hypertensive disorders
 - ❖ Techniques to improve communication
- ❖ Obtained manual BP cuffs and reflex hammers for the mother/baby unit
- ❖ Collaborated with pharmacy to create standardized hypertensive emergency/eclampsia medication boxes
- ❖ Attached standardized checklists and medication algorithms for hypertensive emergency, eclampsia, and postpartum preeclampsia on all obstetrical units

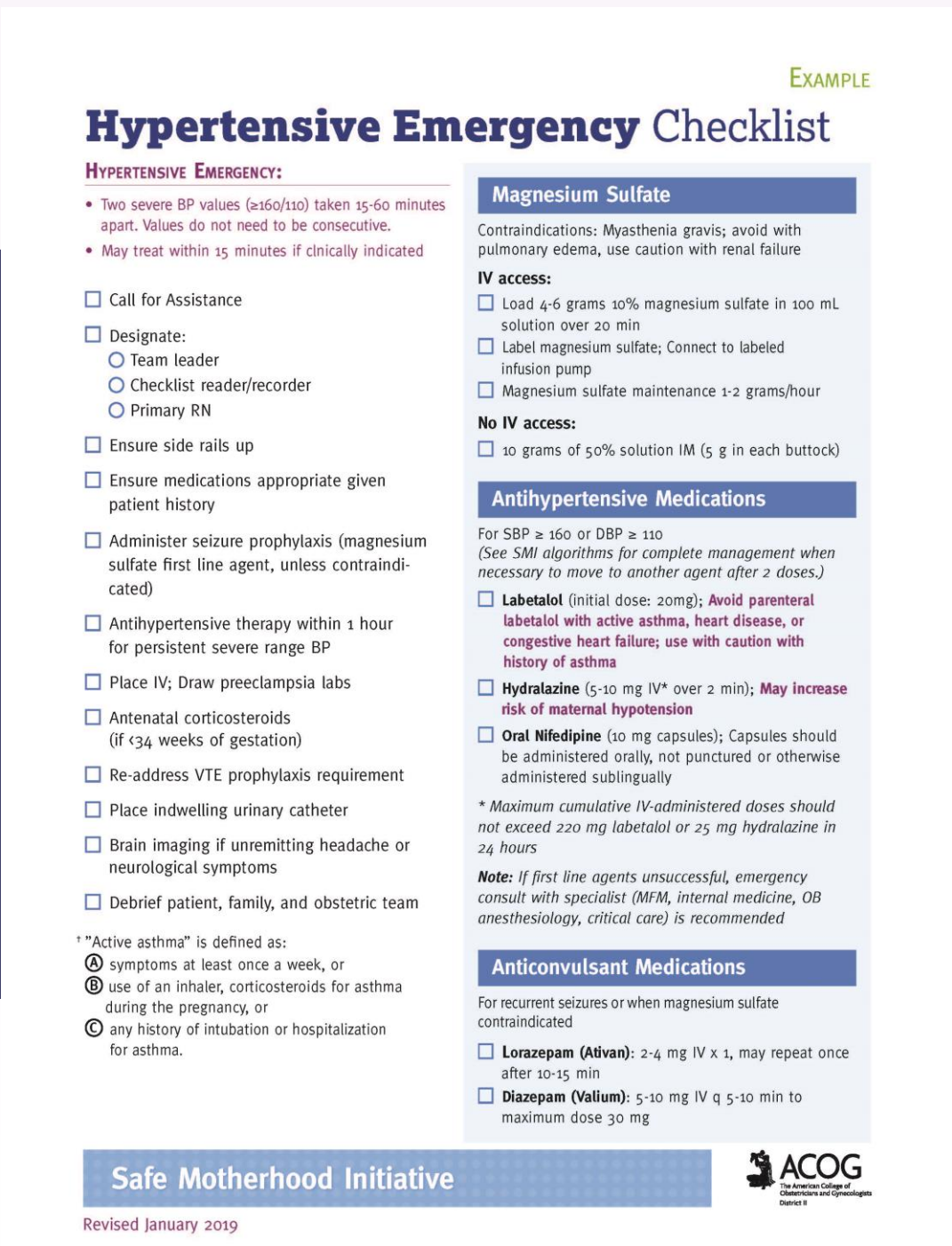
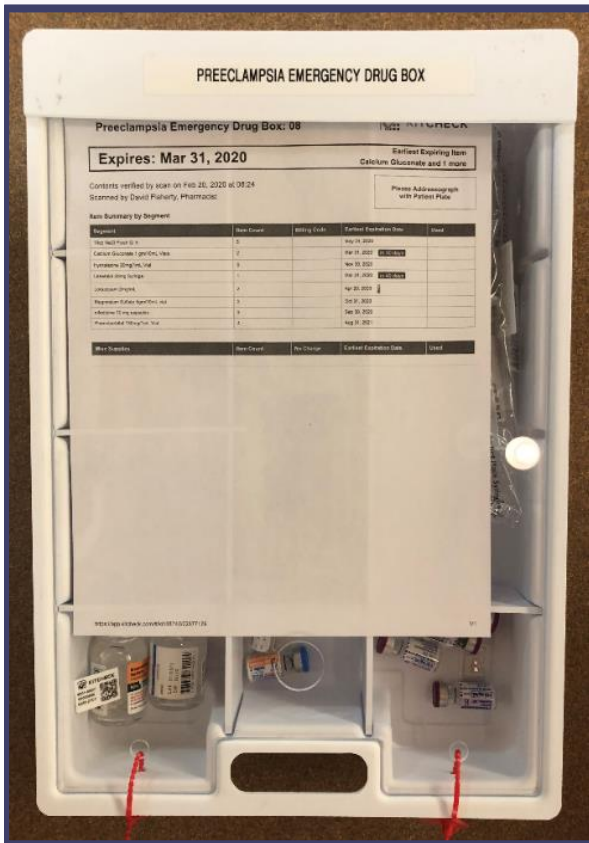


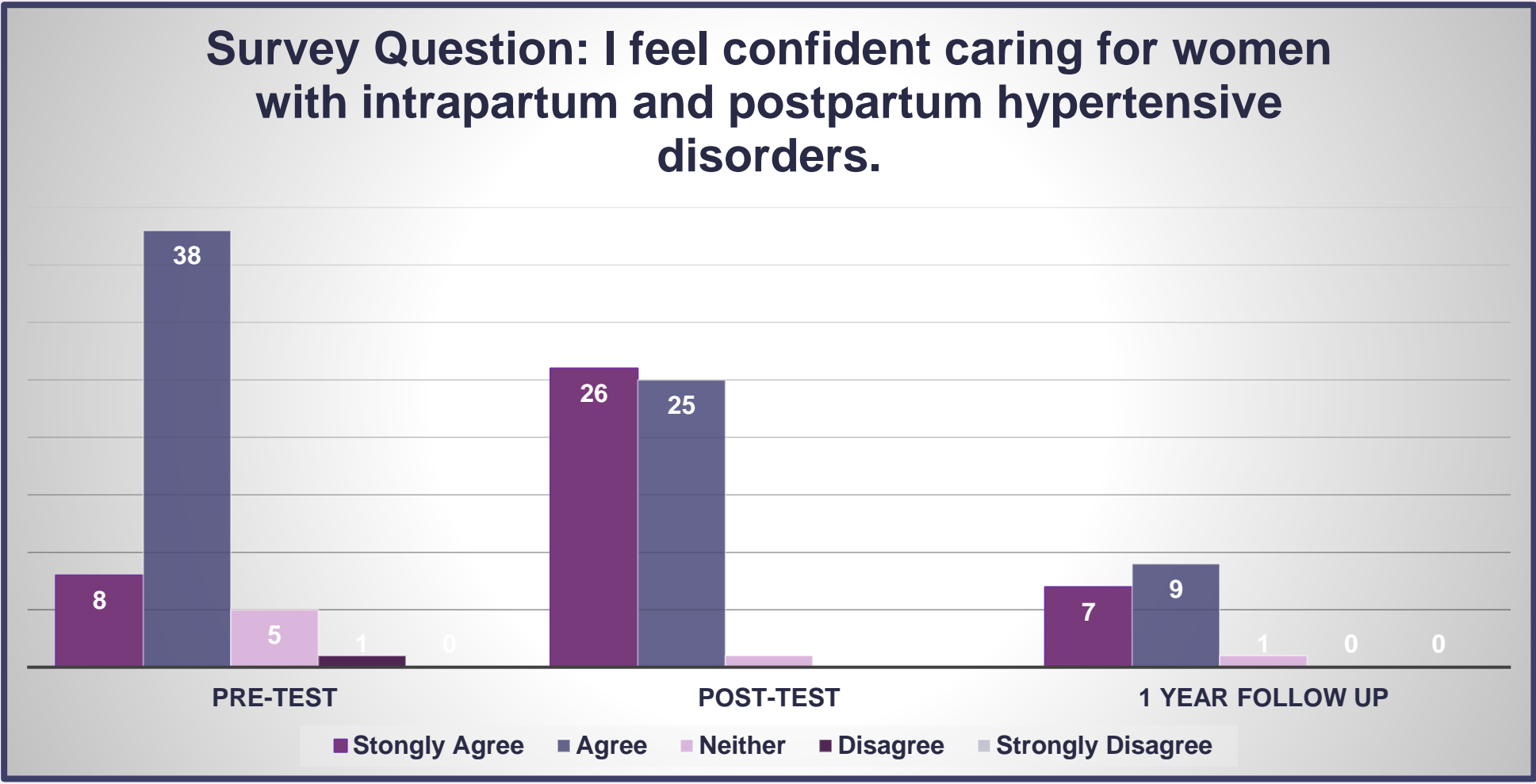
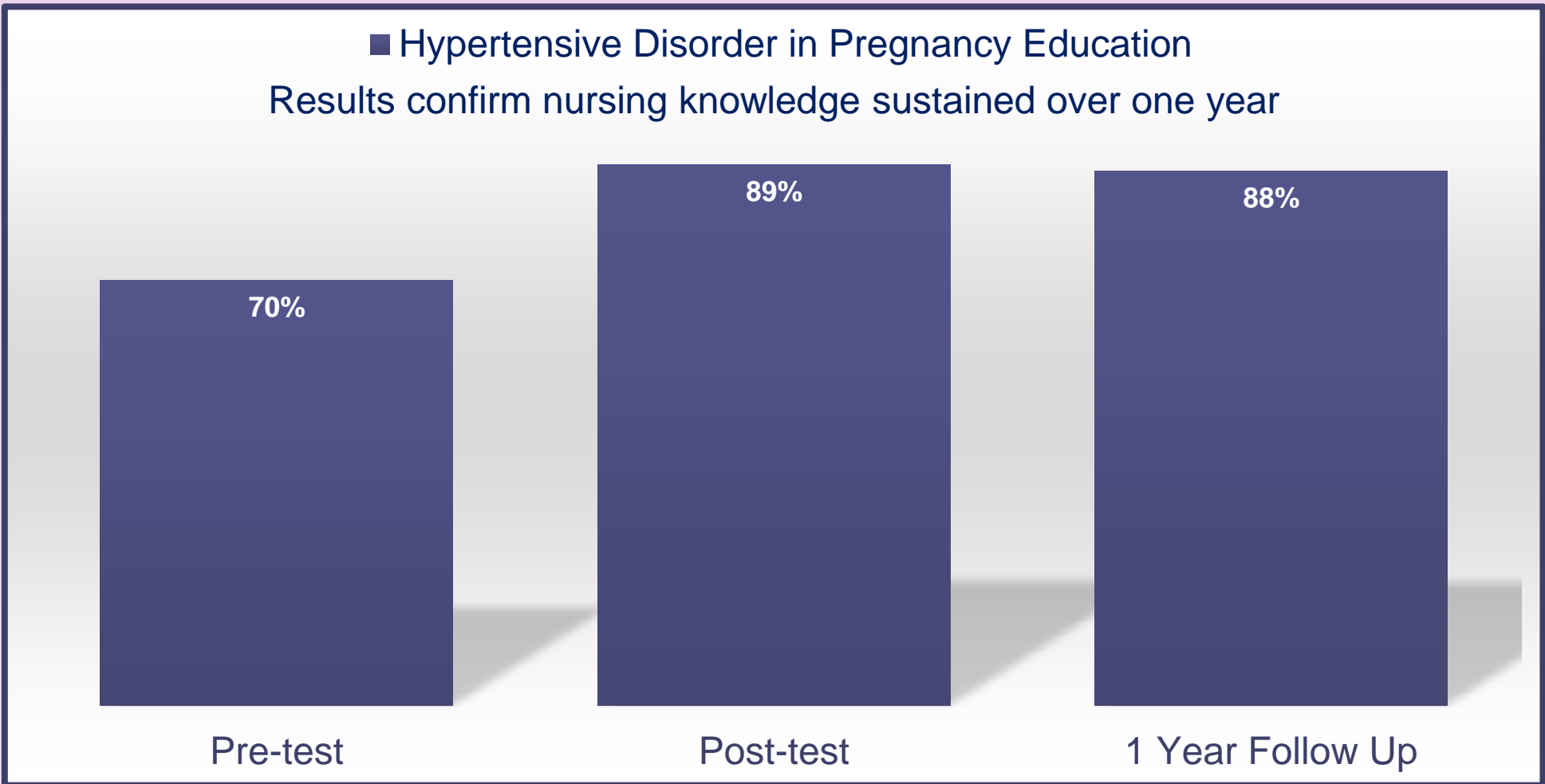
Figure 3. Hypertensive emergency checklist. Reprinted from "Maternal safety bundle for severe hypertension in pregnancy," by American College of Obstetricians and Gynecologists, 2018. Retrieved from <https://www.acog.org/-/media/Districts/District-II/Public/SMI/v2/HTNSlideSetApril2018.pdf?dmc=1&t=20200218T1856182856>



Methodology

- ❖ A descriptive study of patients with a hypertensive disorder of pregnancy was used to describe current trends
- ❖ A Plan Do Study Act Cycle was then used to plan education interventions
- ❖ On the day of simulation, nurses participated in the following activities:
 - ❖ A pre and post test containing the same 10 knowledge base questions and 3, 5-Point Likert Survey questions
 - ❖ Pre-brief Education
 - ❖ High-fidelity simulation scenario
 - ❖ Simulation scenario debrief
- ❖ Identical follow-up test completed by same nurses one-year later
- ❖ Test results compared and used to plan future education, simulation, and policy

Results



Future Goals

- ❖ Yearly simulation for preeclampsia with severe features
- ❖ Develop a new simulation to include an eclamptic seizure
- ❖ Continue to use enhanced communication techniques in simulation to strengthen relationships with team members
- ❖ Collaborate with the UPMC Women's Health Service Line to develop a policy for hypertensive emergency and a power plan order set to implement timely, consistent care

References

American College of Obstetricians and Gynecologists. (2019). ACOG Practice bulletin No. 202: Gestational hypertension and preeclampsia. *Obstetrics & Gynecology*, 133(1), e1-e25.

CDC Foundation. (2018). *Report from nine maternal mortality review committees*. Retrieved from <https://www.cdcfoundation.org/sites/default/files/files/ReportfromNineMMRCs.pdf>

Centers for Disease Control and Prevention. (2020). *Pregnancy mortality surveillance system*. Retrieved from <https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm>

Collier, C., & Martin, J. (2018). Hypertensive disorders of pregnancy. *Contemporary OB/GYN*, 5. Retrieved from <https://www.contemporaryobgyn.net/maternal-mortality-hypertension/hypertensive-disorders-pregnancy/page/0/>

O'Neill Hayes, T., & McNell, C. (2019). *Maternal mortality in the United States*. Retrieved from <https://www.americanactionforum.org/insight/maternal-mortality-in-the-united-states/>

Young, A. (2019, March 6). Hospitals know how to protect mothers. They just aren't doing it. *USA Today*. Retrieved from <https://www.usatoday.com/in-depth/news/investigations/deadly-deliveries/2018/07/26/maternal-mortality-rates-preeclampsia-postpartum-hemorrhage-safety/546889002/>