

Oregon Health & Science University
School of Medicine

Scholarly Projects Final Report

Title: An assessment of Patient Awareness and Provider Education regarding Future Cardiovascular Disease Risk in Women with a History of a Hypertensive Disorder during a Previous Pregnancy

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Project Course: Scholarly Projects Curriculum

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Project/Research Question:

Are women who have experienced a hypertensive disorder or diabetes disorder during a previous pregnancy educated regarding the association between HDP and future CVD risk and/or potential need for future follow-up care? Which care team(s) follow patients in the first year after birth hospitalization? What areas of opportunity for future improvement in patient understanding, education, and follow-up care for patients with hypertensive disorders during pregnancy exist?

Type of Project: Research Study (Retrospective Cohort Study)

Key words: Hypertensive disorders of pregnancy; Cardiovascular disease risk; Patient education

Meeting Presentations:

- **Mikaela Siegel BS**, Monica Rincon MD, MCR, Nandita Gupta MD, FACC, Johanna Warren MD, FAAFP. An assessment of Patient Awareness and Provider Education regarding Future Cardiovascular Disease Risk in Women with a History of a Hypertensive Disorder during a Previous Pregnancy. OHSU Research Week, OHSU, 05/02/2022. Poster Presentation with Oral Discussion.
- **Mikaela Siegel BS**, Monica Rincon MD, MCR, Nandita Gupta MD, FACC, Johanna Warren MD, FAAFP. An assessment of Patient Awareness and Provider Education regarding Future Cardiovascular Disease Risk in Women with a History of a Hypertensive Disorder during a Previous Pregnancy. OHSU Department of Medicine Research Retreat, OHSU, 04/29/2022. Poster Presentation with Oral Discussion.
- **Mikaela Siegel BS**, Monica Rincon MD, MCR, Nandita Gupta MD, FACC, Johanna Warren MD, FAAFP. An assessment of Patient Awareness and Provider Education regarding Future Cardiovascular Disease Risk in Women with a History of a Hypertensive Disorder during a Previous Pregnancy. Oregon Association of Family Physicians Conference, OHSU, 04/07/2022. Oral Poster Presentation.

Publications: None.

Submission to Archive

Final reports will be archived in a central library to benefit other students and colleagues. Describe any restrictions below (e.g., hold until publication of article on a specific date).

None

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Next Steps: Potential next steps from this study include development and implementation of an Epic dot phrase discussing HDP and the associated CVD risk. Further studies could evaluate whether development of a dot phrase increased the percentage of patients informed of their HDP diagnosis and associated CVD risk in their AVS within the OHSU Hospital. Additionally, studies surveying patients regarding their understanding/awareness after receiving detailed AVS would similarly be needed.

Please follow the link below and complete the archival process for your Project in addition to submitting your final report.

https://ohsu.ca1.qualtrics.com/jfe/form/SV_3ls2z8V0goKiHZP

Student's Signature/Date:

This report describes work that I conducted in the Scholarly Projects Curriculum or alternative academic program at the OHSU School of Medicine. By typing my signature below, I attest to its authenticity and originality and agree to submit it to the Archive.

X

Student's full name

Mentor's Approval (*Signature/date*)

Johanna Warren MD
3/6/2023

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Introduction:

A 2018 study demonstrated that “Women with hypertensive disorders of pregnancy (HDP) in their first pregnancy had increased rates of chronic hypertension (cHTN), type 2 diabetes mellitus (T2DM), and hypercholesterolemia that persisted for several decades.”¹ Furthermore, “HDP now affect 10% of pregnancies in the United States,”² and “Patients with a history of HDP suffer higher rates of long-term cardiovascular events including heart failure, coronary artery disease, and stroke.”² No clear best practices for transitions of care exist for women after birth. Failing to discuss future CVD risk means women and their healthcare team may miss important opportunities to intervene early.¹

This study examined the After Visit Summaries of patients who experienced a HDP, seeking to understand whether patients were informed of their risk for future CVD after delivering at OHSU Hospital. HDP definitions vary; however, in this study, HDP were broadly defined as: cHTN, gestational hypertension, preeclampsia, eclampsia, type 1 diabetes mellitus, T2DM, gestational diabetes, deep vein thrombosis, and pulmonary embolism. This study sought to evaluate both patient education and patient follow-up patterns.

The primary research questions addressed are as follows: 1) Are women who have experienced a hypertensive disorder during a previous pregnancy educated regarding the association between HDP and future CVD risk and/or potential need for future follow-up care? 2) Which care team(s) follow patients in the first year after birth hospitalization? 3) What areas of opportunity for future improvement in patient understanding, education, and follow-up care for patients with hypertensive disorders during pregnancy exist? The specific aims of this study included: 1) To determine the percentage of women diagnosed with a hypertensive disorder of pregnancy and who gave birth within OHSU Hospital between 09/2019 – 02/2020 who were provided information about their lifetime risk for CVD and/or potential need for follow-up care based on chart documentation in patient AVS instructions; 2) To determine which care team (maternity care, primary care, cardiology, other) assesses these pregnancy-related outcomes and their association with future CVD risk and carries forward that information through patient education; 3) To understand which care teams (maternity care, primary care, cardiology) patients with a history of a hypertensive disorder in pregnancy see for their care after birth hospitalization; and 4) To understand how information around a diagnosis of a hypertensive disorders in pregnancy is reflected in the Electronic Health Record and communicated with the patient.

Methods:

This study was a retrospective cohort study from 09/2019 - 02/2020 including patients who delivered with a hypertensive disorder of pregnancy (chronic HTN, gestational hypertension, preeclampsia, eclampsia, type 1 diabetes mellitus, type 2 diabetes mellitus, gestational diabetes, deep vein thrombosis, or pulmonary embolism). Study participants were identified through a database of deliveries at OHSU Hospital unit 12C during the selected time frame. From this database, manual chart review identified 333 patients meeting full inclusion criteria: women ages 18 – 55 admitted to OHSU Hospital unit 12C for delivery with a hypertensive disorder of pregnancy (chronic HTN, gestational hypertension, preeclampsia, eclampsia, type 1 diabetes mellitus, type 2 diabetes mellitus, gestational diabetes, deep vein thrombosis, or pulmonary embolism) and delivered at OHSU between 09/2019 – 02/2020. Sample size of eligible participants meeting inclusion criteria was 333. A REDCap survey with multiple instruments was developed for data collection. Chart review was completed collecting information on the following variables: demographics, delivery characteristics, infant/neonatal data, hypertensive disorder(s) of pregnancy, specialty of provider(s) seen in post-partum visits, total number of post-partum visits, and whether discussion of the patient’s cardiovascular risk, need for follow-up care, and information about the patient’s diagnosis was recorded in the after-visit summary of the hospital delivery admission. Data was stored electronically via REDCap. After initial data collection, survey entries missing inputs were reviewed and corrected as needed. REDCap was

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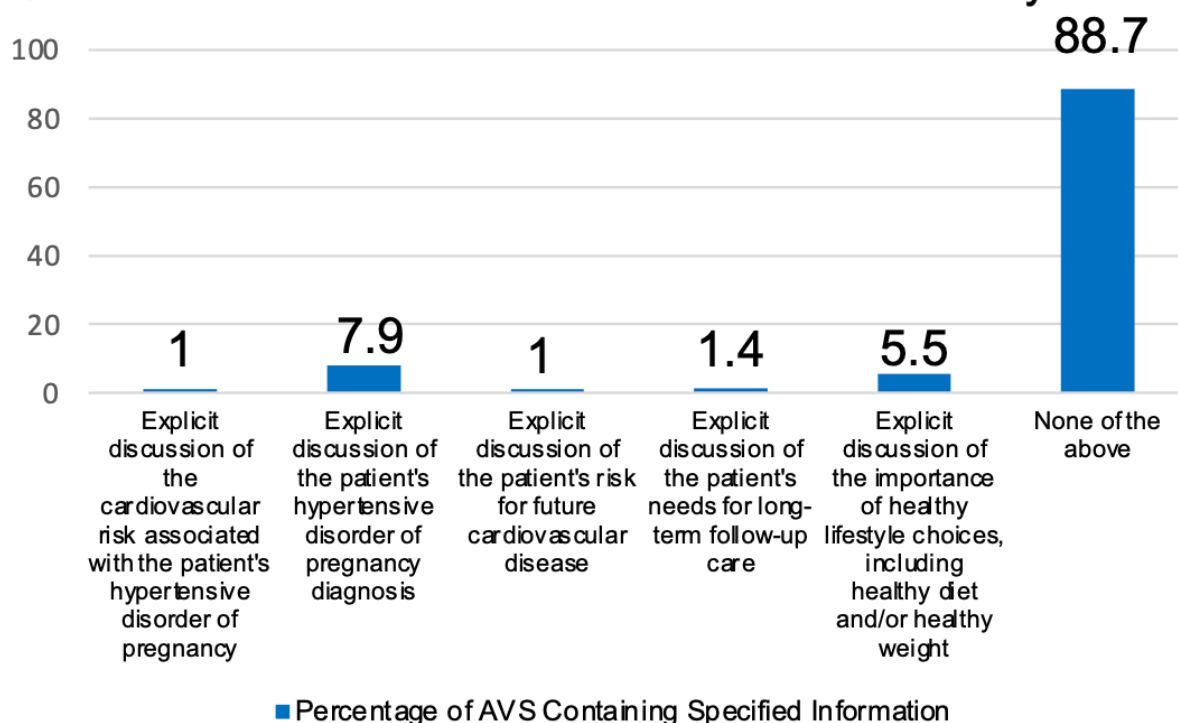
used to generate statistical results for data analysis.

Results:

Pertinent results from this study are detailed as follows. 88% of patients were provided an After Visit Summary (AVS) from their hospital delivery admission with written instructions to pursue follow-up care. The most frequently recommended providers for follow-up care were Maternity Care (96.2%) and Primary Care (63.4%). Additionally, only 1.4% of patients received recommendations to follow-up with Cardiology. Of patients who had at least 1 post-partum (PP) visit in the 1st-year PP, 96.5% visited a Maternity Care Provider, 23.2% saw a Primary Care Provider, 1.8% saw Cardiology, 0% saw Endocrinology, 0.4% saw an Urgent Care Provider, and 1.1% visited non-listed specialists.

Shockingly, 88.7% of patients were given an AVS that did not include information regarding their HDP or future risk for CVD (Figure 1). Furthermore, only 7.9% of patients received an AVS that specifically stated their HDP diagnosis (Figure 1). Only 1% of patients received an AVS that discussed the CVD risk tied with the patient's HDP (Figure 1) and 1% of AVS included information about the risk for future CVD (Figure 1). 1.4% of AVS included information regarding the patient's need for long-term follow-up care (Figure 1). Lastly, 5.5% of AVS mentioned pertinent lifestyle factors, such as healthy diet and/or healthy weight (Figure 1).

Figure 1: Information Included in After Visit Summary



Discussion:

Patients are shockingly not being informed of their risk for future cardiovascular disease. The implications of this communication failure are numerous, with compounding downstream health effects. Notably, 92.1% of patients received an AVS that did not mention the patient's HDP diagnosis and only 1% of

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AVS mentioned the association with future CVD risk (Figure 1). Regarding PP visits, Maternity Care Providers most frequently completed PP visits, followed by Primary Care Providers. These results point to services where further discussion about the patient's HDP experience could be achieved. Overwhelmingly, results from this study show that patients experiencing HDP are not being adequately educated and prepared for their futures.

This study is limited to evaluation of written education communicated through the hospital delivery admission AVS, excluding education that may have been delivered verbally. This means that members of the patient's care team may have informed patients of their HDP diagnosis or associated future CVD risk in-person, but that information was not included in their hospital delivery AVS and thus not reflected in this study. However, failing to provide written information to review at home places undue responsibility on the patient to accurately remember everything their provider discusses with them. This requires not only a high level of health literacy, but disregards that the focus after birth often transitions to the baby, rather than the mother's health. This is not to say that verbal education is not important; however, discussion of complicated health information with implications for the future merits delivery in both verbal and written formats. Over education, rather than undereducation, should occur, especially after the incredibly vulnerable and often traumatic experience of birth.

Additionally, this study is further limited by evaluating only the hospital delivery admission AVS. AVS from the 2 and 6-week PP visits may yield additional information about patient education and provider awareness. However, not all patients are able to attend PP visits, thus, the hospital delivery AVS is the only guaranteed information the patient will take home after delivery. Ideally, CVD risk and future implications would be discussed during both the hospital delivery admission and PP visits. This outlines an opportunity for future studies to assess the patient education provided in PP visits.

Lastly, this study hinges on the concept that AVS are utilized by patients at home. Some believe that AVS are thrown away without ever being read, arguing that providers should spend as little time as possible in writing the AVS. The answer is unclear; however, evaluating the use of AVS by new mothers would be useful information for a future study to consider. However, I argue that even if most AVS are thrown away, providers have a duty to inform their patients, especially regarding heightened CVD risk. When a patient is unlikely to stop smoking cigarettes, smoking cessation is still discussed in depth. Why not provide the same care for new mothers? The AVS may not be perfect, but it appears to be an easily accessible tool providers can use to educate patients and provide more transparent care regarding HDP.

This study effectively outlined a clear, widespread problem. Providers are failing to communicate with their patients regarding HDP and the associated CVD risks. Maternity care and primary care teams must develop strategies to improve patient education surrounding this topic. For example, implementing a dot phrase discussing the CVD risk associated with HDP may be a possible solution. If providers had an accessible dot phrase discussing this topic, would patient communication in the AVS improve? Clearly, new studies are needed to evaluate strategies and further evaluate this communication failure. As of right now, providers are not preparing new mothers for their futures.

Conclusions:

Significant gaps exist in patient-education after patients experience HDP. Overall, the AVS appears to be an opportunity through which patients can be educated about their HDP. Utilizing the AVS to improve patient education may improve awareness and mitigate future CVD risk.¹

References:

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