

Patient-Centered CDS for Postpartum Hypertension Monitoring

At age 42, Brittany McFarland was excited about her first pregnancy after over a year of trying to conceive. All was going well with the pregnancy until she developed preeclampsia in her third trimester. Due to worsening preeclampsia, Brittany had to be induced and delivered a small for gestational age baby girl at 36 weeks. After one night in the step-down nursery for the baby, Brittany and her new daughter were happily sent home to begin their life together.

Because Brittany had experienced preeclampsia during her pregnancy, she was invited to enroll in a new monitoring program designed to follow women with hypertensive disorders in pregnancy after delivery. Based on evidence-based guidelines from the American College of Obstetricians and Gynecologists, the purpose of the program was to monitor for problems that can develop in women who had elevated blood pressure while pregnant. The program provided women with Bluetooth-enabled blood pressure monitors at the time of discharge that automatically sent results back to their maternal-fetal medicine care team. Patients were asked to check their blood pressure measurements daily from home. In addition, a patient-centered decision support component was added to the monitoring process to collect information directly from patients and provide guidance back to them. This decision support system was programmed to send patients a daily reminder to fill out a questionnaire and report symptoms that could suggest evolving blood pressure related issues, such as headaches, abdominal pain, and vision changes.

Brittany's transition to being a first-time mother was going well, despite the reduced sleep and adjustments related to having a newborn at home. However, on the third morning after leaving the hospital, Brittany awoke with a severe throbbing headache and blurred vision. She recalled questions about headaches and vision on the questionnaire she had done the two days prior, so she was anxious to complete her questionnaire that morning. When she received the text reminder on her smartphone, Brittany was able to easily open the questionnaire and answered 'yes' to the questions asking about new headache and blurred vision. Although she struggled a bit with looking at the screen due to her blurred vision, the simple 'yes or no' format of the questions and the user-friendly interface allowed her to complete the form quickly. Upon submitting her responses, a screen popped up on Brittany's phone with instructions to call the maternal-fetal medicine service along with an active phone number. She tapped on the phone number and was immediately connected to the maternal-fetal medicine fellow, who asked her to take a blood pressure reading using her Bluetooth-enabled blood pressure monitor. While her blood pressure at hospital discharge was normal, Brittany's current pressure was very high. She was advised by the fellow to come to the emergency room immediately because she was experiencing a hypertensive crisis.

In the emergency room, Brittany was met by the maternal-fetal medicine fellow who initiated therapies to treat her high blood pressure and prevent seizures, which can occur in women who have been diagnosed with postpartum preeclampsia. After an overnight stay in the hospital on antihypertensive medications, Brittany's headache subsided, her blurred vision cleared, and her blood pressure returned to the normal range. Brittany was discharged on antihypertensive medication and advised to continue reporting her symptoms on her smartphone and taking daily blood pressures readings. During the six-week monitoring interval, Brittany's blood pressures remained in the normal range, and she did not experience any additional symptoms.

The availability of daily blood pressure measurements, symptom information collected directly from patients in real time, and immediate actionable guidance in response to concerning patient information enabled Brittany to connect quickly with the healthcare system and prevent further complications from progressive preeclampsia. Brittany came away from the experience with a new appreciation for the importance of continued blood pressure monitoring and medication. She was pleased with her ability to connect so quickly with her care team and coordinate a plan for care, both at the hospital and at home.

Note: The above vignette prepared by Dr. David Lobach captures a hypothetical patient scenario based on a proof-of-concept patient-centered CDS pilot of a CDS application developed under the AHRQ funded [PCOR CDS Current State and Future Direction](#) contract.

