

Outpatient Obstetric Referral to Cardiology Scheduling Process

Executive Summary

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Main Points

- There is a global and local maternal health crisis.
- Cardiovascular conditions are a leading cause of maternal mortality (Khalid et al., 2023).
- Cardiovascular screening, a defined referral process, and dedicated appointment times with Cardio Obstetric providers promote access to cardiology for obstetric referrals.
- Scheduling template with 'Cardio OB' appointment facilitates scheduling and data collection.
- Large volume and percentage of referrals not completed due to patients not scheduling, canceling, or not showing up for appointment. Further exploration and strategies are needed.

Background and Purpose

Maternal mortality rates in the United States are higher than other developed countries. In North Carolina maternal mortality rates were 26.7 per 100,000 live births between 2018 to 2022 (March of Dimes, n.d.). Cardiovascular disease (CVD) is a leading cause of maternal death during pregnancy through the postpartum period, accounting for 26.5% of pregnancy-related deaths and fifty percent occur postpartum. Maternal mortality and complications increase based on race, social determinants of health, and access to care (Sharma et al., 2020; O'Kelly et al., 2021).

The Perinatal Quality Collaborative of North Carolina (PQCNC) provides tools for organizations to improve maternal care. The screening tool provides a cardiovascular screening for obstetric patients to identify symptoms of CVD or history of CVD or congenital heart disease (CHD). If the screening is positive, the recommendation is for a cardiology evaluation (PQCNC, n.d.).

American College of Obstetricians and Gynecologists (ACOG), American Heart Associations (AHA), and American College of Cardiology (ACC) provide guidance for risk assessments, prevention, and care models to promote maternal health. Early management or HDP improves maternal health and

events. Access to specialized care may improve outcomes; however, there is limited outcome data for obstetric patients who have a visit with a cardio-obstetric provider. During pregnancy care, there is an opportunity to promote health and prevention; however, up to 50% of postpartum patients do not attend postpartum follow-up (Countouris et al., 2022; Lemon et al., 2024; O’Kelly et al., 2024).

The purpose of this quality improvement project is for obstetric patients to have increased access to a dedicated Cardio Obstetric (Cardio OB) provider in a timely fashion and ultimately improve maternal health.

Methodology

The project site is a cardiology practice within a large private, non-profit healthcare system centrally located in the state with urban and rural areas. The organization is a community leader and provides various academic programs. The health system implemented a cardiovascular screening tool for all obstetric patients, and the electronic cardiology referral order was updated to reflect referral from obstetrics to cardiology. The Cardio-Obstetric program includes representatives from obstetrics, maternal-fetal medicine, cardiology, nursing, administration, and data analysts.

The project team included the leading advanced practice registered nurse practitioner (NP) and the Cardio Obstetric (Cardio OB) physician. Extended project representatives included an obstetric clinical nurse specialist (CNS), an electronic health record (EHR) specialist, a practice administrator, a call center administrator, and an office scheduler. The NP and Cardio OB physician developed goals for access to cardiology appointments, including a dedicated daily time slot for referrals. The NP completed literature review including keywords: cardiovascular disease, cardio-obstetrics, maternal mortality, pregnancy-related death, postpartum clinic, maternal health, and maternal clinic.

The NP developed a Cardio Obstetric Scheduling Algorithm and presented information to office and call center management, and staff. The call center incorporated the scheduling algorithm into the

existing cardiology scheduling decision tree. The office manager modified the physician schedule template to have a daily dedicated appointment slot labeled 'Cardio OB'. At the beginning of implementation, the NP met weekly with the Cardio OB provider, scheduler, and manager to review opportunities and feedback. The extended team met monthly to review data, feedback, and opportunities. All team members were responsive to communication between meetings as needed. After 6 weeks, feedback and engagement decreased, and the scheduling process was adopted for routine scheduling.

A data dashboard was developed and expanded to reflect quality improvement goals and future initiatives. Data collection for this 12-week implementation project focused on the number of obstetric referrals to cardiology, how many completed by a cardiologist, how many completed by a Cardio OB provider, and how many days from referral to completed referral. Three months of data were collected after the implementation of the screening process and updated referral order, then compared to three months of data collected after the implementation of the Cardio OB scheduling process.

The EHR report provided data for obstetric referrals to cardiology, including the date of referral and demographic information. The NP reviewed each referral for completion, completion by which cardiology provider, time frame for completion, and if not complete, what was the reason. Reports and data were maintained on the healthcare system's secure network. Volume reports were de-identified.

This project utilizes Lewin's Theory of Planned Change to unfreeze a process which is preparing for change, to change the process, and the refreeze the process to be sustainable. Methods include the DMAIC process to Define, Measure, Analyze, Improve, and Control the quality improvement process.

Results

The volume of referrals was similar before and after scheduling process implementation with 15-29 referrals a month. After implementation of the scheduling process, there was an increase in the

number of referrals seen by a Cardio OB provider every month. There was an overall decrease in referrals completed. The number of completed referrals within 14 days per month was similar, ranging from 2 to 8; however, the percentage decreased for the first two months and increased for the third month. The wide range of days to referral completed reflects frequent rescheduling of visit as patients were offered a visit within 14 days. The change in small numbers influences percentages. The range of completed visits was 0-64 days and for referrals not completed or not completed within 14 days of referral, 43-92% were due to patients not scheduling, canceling, or not showing up. Most patients were contacted to schedule an appointment, and a few had out-of-network health coverage that were referred to an in-network provider. See Appendix A and Appendix B for details.

Strengths and Limitations

The Cardio OB Scheduling Algorithm was incorporated quickly into the call center scheduling process and the physician schedule template. The 'Cardio OB' appointment was adopted in the EHR facilitating dedicated times and ease of scheduling. Project team and staff were invested in providing early access to obstetric referrals. Strengths include the physician champion, an experienced obstetric CNS, and analyst. As well as existing Cardio Obstetric program members and meetings.

Early challenges included communication methods for scheduling referrals that evolved into regular use of a designated scheduling pool. Initial reports were limited and improved with regular review and design. The Cardio OB provider's schedule was limited when out of office and access improved by adding additional Cardio OB providers and locations. There is limited outcome data for Cardio OB referrals and further review and data there will be future outcome data.

Implications

- Healthsystem plans to incorporate the Cardiac Obstetric Conditions Program as a Quality Assurance and Performance Improvement process.

- Project work supports the Perinatal Quality Collaborative recommendation for the role of a Cardiovascular Obstetric Nurse Coordinator.
- Access to care and improve maternal health supports the triple aim to improve population health, improve patient experience, and provide cost-effective care.
- Quality initiative supports Healthy People 2030's focus on preventing maternal death and promoting women's health.
- Advocate for maternal health coverage and policies to support maternal health populations.
- Promote health education on maternal health and long-term women's health and wellness.
- Provide evidence-based education and resources for hypertension disorders of pregnancy.

Conclusion

Cardiovascular conditions and the risk of cardiovascular conditions significantly impact maternal health. The development of the Cardio Obstetric Scheduling Algorithm has provided obstetric patients with access to a Cardio OB provider and a foundational process for the Cardio Obstetric program. Expansion of Cardio OB providers and locations increases access to a cardiovascular evaluation. The screening, referral, and scheduling process supports improving maternal health. Ongoing quality initiatives and measures will support outcome data. Further exploration is needed to identify needs and support strategies for obstetric patients and maternal health.

References

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Appendix A

Table 1

Obstetric Referrals to Outpatient Cardiology

Month	Total Referrals	Completed	Completed By Cardio OB	Completed within 14 days	Range in days
Pre-Implementation					
Month 1	15	9	1	6	5-55
Month 2	17	12	1	5	7-56
Month 3	29	15	2	8	1-64
Implementation					
Month 1	24	10	4	6	3-48
Month 2	18	6	5	2	8-35
Month 3	23	10	6	7	0-23
	Percent Completed	Percent of completed by Cardio OB		Percent of completed within 14 days	
Pre-Implementation					
Month 1	60	11.1		66.7	
Month 2	70	8.3		41.7	
Month 3	51.7	7.5		53.3	
Implementation					
Month 1	41.6	16.7		60	
Month 2	33.3	27.8		33.3	
Month 3	43.5	26		70	

Appendix B**Table 2***Patient Reasons for Referral Not Completed*

Month	Total Not Completed	Patient Cancel	No Show	Patient Declined	Total Patient Reasons
Pre-Implementation					
Month 1	6	1	2	1	4
Month 2	5	1	2	0	3
Month 3	14	3	3	0	6
Implementation					
Month 1	14	2	5	4	11
Month 2	12	5	2	2	9
Month 3	13	6	1	5	12

Note: Out-of-network with insurance occurred during Month 2 of Pre-Implementation. Office closure days during Month 1 of Implementation.