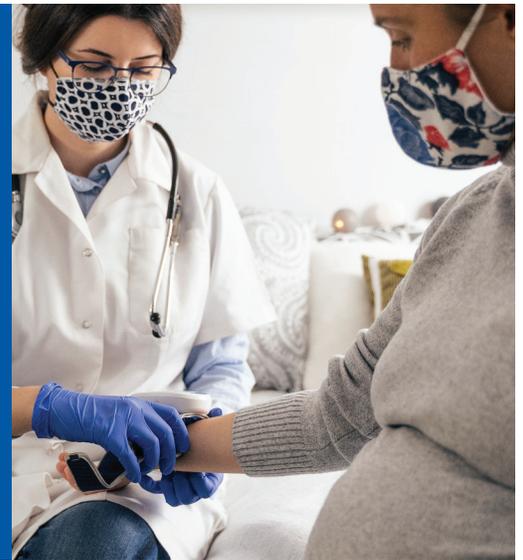


# The gender-specific risk factors of women's heart disease

Cardio-obstetrics is a new way of addressing the significant bidirectional link between pregnancy complications and heart disease.



Doctors have long known that preexisting heart disease can lead to pregnancy complications. More recently, however, research has shown that the relationship between heart disease and pregnancy is a two-way street. Previously healthy women who experience certain issues in pregnancy, such as preeclampsia and gestational hypertension, have an increased risk of developing cardiovascular disease as early as two to 10 years postpartum.

Cardio-obstetrics is a new, rapidly growing field of medicine that addresses the two-way relationship between heart disease and pregnancy complications. To date, most of the literature in the field has been published in cardiology journals. Now, however, OB/GYN and primary care providers are increasingly taking note. Innovative, multidisciplinary programs focusing on both directions of the obstetrics-cardiology pathway have been implemented at select medical systems across the country, including Northwell Health.

The need for these kinds of programs is clear: Delays in diagnosis, communication and treatment are frequently recognized in statewide reviews as contributors to maternal deaths. About one-quarter of maternal deaths are deemed preventable through better coordination of care.

## Building an evidence base

One study in the *Journal of the American College of Cardiology* detailed a cohort of 306 pregnant women with known heart disease who were managed by a cardio-obstetrics team between 2010 and 2019. Despite high-risk conditions and a median CARPREG II score of 3, maternal and fetal outcomes were excellent. Less than 2% of these at-risk women required readmission within 30 days after delivery, which is low compared to the national average. Maternal mortality was only 0.3%, live birth occurred in 98% of pregnancies,

and the median gestational age at delivery was 38 weeks.

These findings are promising, but to learn more about the benefits of implementing cardio-obstetrics programs, we will need longer-term, multicenter research studies. Because of its volume and expertise, the Cardio-Obstetrics Program at Northwell Health has been selected as a participating site in the first nationwide registry focused on pregnant women with heart disease. Known as Heart Outcomes in Pregnancy and Expectations (HOPE), this registry will help refine the management and counseling of at-risk cardiac moms in the U.S.

A joint advisory from the American Heart Association and the American College of Obstetrics and Gynecology emphasized the importance of close postpartum follow-up after adverse pregnancy outcomes with coordinated care between obstetricians and cardiologists. It is anticipated that Northwell Health's Cardio-Obstetrics Program, by enabling enhanced communication and a smooth flow of patients from obstetrician to cardiologist in the fourth trimester, will help mitigate women's risk and improve their long-term heart health. Prospective collection of data will be ongoing over the coming years.

## Targeting bidirectional risk

Obstetricians, maternal-fetal medicine (MFM) specialists and cardiologists have traditionally worked together to care for

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pregnant women with preexisting heart conditions, such as arrhythmias, valvular heart disease or a history of heart attack. That remains one crucial half of Northwell's Cardio-Obstetrics Program. For a woman with known heart disease who is considering pregnancy, MFM specialists provide preconception counseling. Once the woman becomes pregnant, she may potentially need close monitoring throughout pregnancy. A multidisciplinary team may oversee her care.

The other, newer half of the Cardio-Obstetrics Program focuses on women without a history of heart problems who experience issues during pregnancy that raise their risk for post-pregnancy cardiovascular disease. Referrals are encouraged for women with current or historical:

- Preeclampsia or gestational hypertension at any gestational age, including postpartum
- Spontaneous preterm birth at 34 weeks or earlier
- Growth restricted pregnancy requiring preterm delivery at 37 weeks or earlier

These conditions are emerging as significant independent risk factors for early-onset cardiovascular disease in women. In fact, a woman in her 20s who experiences preeclampsia during pregnancy has a much higher risk of developing hypertension within 10 years after delivery than a woman in her 40s with no history of preeclampsia.

Overall, the three obstetric outcomes listed above are associated with a markedly increased risk for hypertension, heart attack, stroke, heart failure and hospitalization for a severe cardiac event. The greater the severity and earlier the onset of a pregnancy complication, the higher the risk that a cardiovascular problem will arise within the next two to 10 years. For many of these women, pregnancy complications are their only risk factor for early-onset cardiovascular disease.

### How our program works

The Cardio-Obstetrics Program was launched in September 2020. Within just over six months, 785 patients have been referred to the program and 487 patients were enrolled.

The program aims to provide a seamless transition from pregnancy complications to long-term follow-up and ongoing support for a heart-healthy lifestyle. Patients who are candidates for the program are ideally identified during the pregnancy or soon after delivery. Once the referral is made, a nurse navigator then reaches out to the patient directly and schedules a timely appointment with a cardiologist.

The initial visit to the cardiologist focuses on fundamental cardiovascular testing and assessment. Based on the results, the patient can be set up with a range of services, including:

- Blood pressure management and lipid support
- Clinical care coordination by a nurse practitioner
- Nutritional support by a registered dietitian
- Behavioral health support by a behavioral cardiologist

The clinical care coordinator plays a particularly important role in helping patients manage their heart health on a day-to-day basis. For example, let's say a patient who recently had preeclampsia is being actively weaned off blood pressure medications. She may be instructed to text her home blood pressure readings to the clinical care coordinator every few days. The clinical care coordinator can then provide immediate feedback on appropriate steps to take next.

Patients in the program also have access to Northwell Health's Center for Wellness and Integrative Medicine. Through the center, they can tap into a variety of wellness activities and services, including classes on meditation and mindfulness, Pilates, yoga and tai chi.

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To refer patients to Northwell Health's Cardio-Obstetrics Program, any member of the health care team can call **(855) 944-KIWH (5494)**, or email the patient's name and contact information along with the reason for the referral to [cardio-ob@northwell.edu](mailto:cardio-ob@northwell.edu).

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The increased cardiovascular risk after a complicated pregnancy stays with a woman for life, so the Cardio-Obstetrics Program is designed to provide lifelong follow-up and support. Women who continue to have ongoing cardiovascular issues may be seen by a cardiologist every three to six months. Others may only need an annual preventive assessment. The nurse navigators within the Cardio-Obstetrics Program make sure patients get the appointments they need without slipping through the cracks.

### Looking to the future

Heart disease is the No. 1 cause of mortality for women in the U.S. It kills more American women than all forms of cancer combined. Addressing gender-specific pregnancy risk factors is emerging as one important part of the preventive strategy to help reduce this toll.

At Northwell Health, new referrals to the Cardio-Obstetrics Program have quickly risen to 60 to 80 per month, and it is expected that number will continue to climb. The program is now in the process of expanding beyond Northwell Health's central region to the western and eastern regions as well.

It is anticipated that the Cardio-Obstetrics Program will not only grow clinically, but also produce meaningful answers to important scientific questions. With more women engaged in the program, the heart health management of pregnant and postpartum women can be refined over time. 