



ALLIANCE FOR INNOVATION
ON MATERNAL HEALTH

Cardiac Conditions in Obstetric Care

AIM Clinical Refresher Series

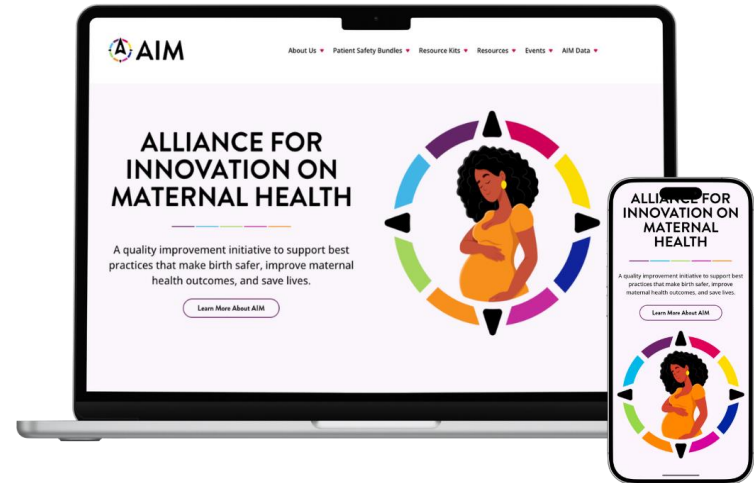
May 13, 2026

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ALLIANCE FOR INNOVATION
ON MATERNAL HEALTH
TECHNICAL ASSISTANCE CENTER

The Alliance for Innovation on Maternal Health (AIM) is a quality improvement initiative to support best practices that **make birth safer, improve maternal health outcomes, and save lives.**



AIM Cardiac Conditions in OB Care Patient Safety Bundle

Patient Safety Bundle Documents

Patient Safety Bundle



Element Implementation Details



Implementation Resources



Data Collection Plan



Change Package



Learning Modules



Learning Objectives

By the end of this session participants will be able to:

1. **Describe** at least one evidence-based strategy for early recognition and timely management of cardiac complications in maternal health settings.
2. **Integrate** concise, actionable clinical guidance from expert updates into everyday practice to strengthen patient safety and improve maternal health outcomes.
3. **Describe** at least one strategy to support implementation of the AIM Cardiac Conditions in Obstetric Care Patient Safety Bundle across maternal health care settings.



Diana S Wolfe, MD, MPH, FACOG, FACC



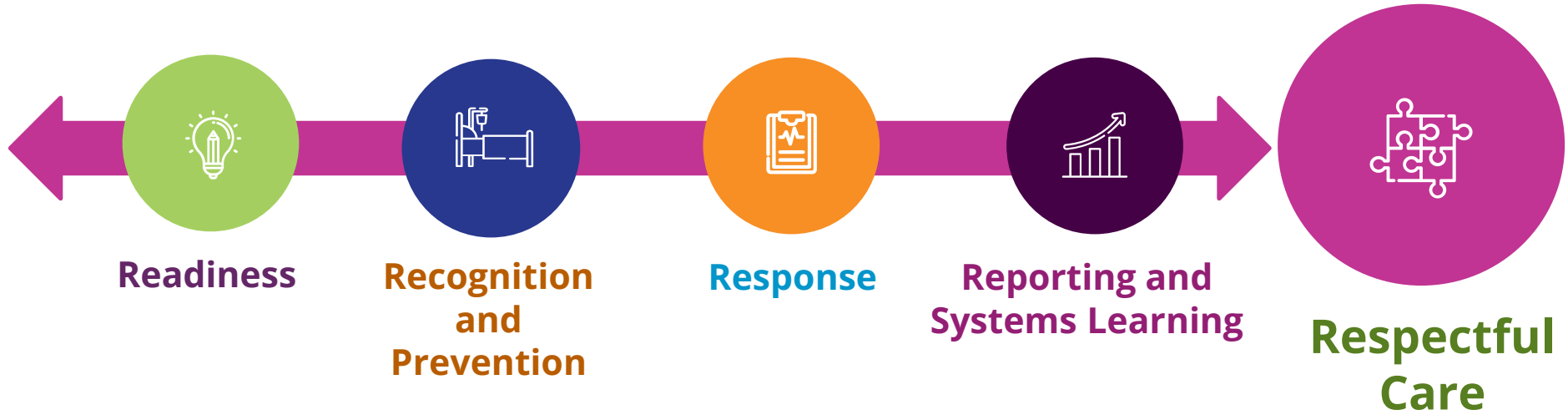
Obstetric Director of Maternal Fetal Medicine Cardiology
Joint Program

Professor, Obstetrics & Gynecology and Women's Health (Maternal
Fetal Medicine)

Professor, Medicine (Cardiology)

Albert Einstein College of Medicine/Montefiore Medical Center

AIM Patient Safety Bundles

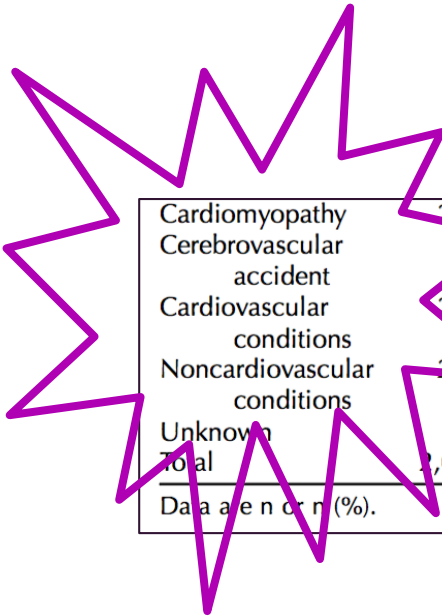


Original Research

Pregnancy-Related Mortality in the United States, 2006–2010

Andreea A. Creanga, MD, PhD, Cynthia J. Berg, MD, MPH, Carla Syverson, CNM, MPH, Kristi Seed, BS, F. Carol Bruce, RN, MPH, and William M. Callaghan, MD, MPH

Pregnancy Related Mortality



Cardiomyopathy	292 (14.6)	2 (1.3)	0 (0.0)	0 (0.0)	33 (5.0)	70 (20.6)	397 (11.8)
Cerebrovascular accident	122 (6.1)	3 (1.9)	0 (0.0)	0 (0.0)	53 (8.0)	29 (8.5)	207 (6.2)
Cardiovascular conditions	288 (14.4)	18 (11.4)	0 (0.0)	7 (7.8)	134 (20.2)	43 (12.7)	490 (14.6)
Noncardiovascular conditions	208 (10.4)	29 (18.4)	0 (0.0)	5 (5.6)	149 (22.4)	37 (10.9)	428 (12.8)
Unknown	97 (4.8)	7 (4.4)	1 (1.0)	2 (2.2)	36 (5.4)	15 (4.4)	158 (4.7)
Total	2,003 (100.0)	158 (100.0)	103 (100.0)	90 (100.0)	664 (100.0)	340 (100.0)	3,358 (100.0)

Data are n or n (%).

- Rate of pregnancy related mortality increased by 27.7% from 2018 to 2022.
- American Indian and Alaska Native women had the highest rate, followed by non-Hispanic Black women.
- Cardiovascular disease was the leading cause of the overall pregnancy-related deaths



Original Investigation | Obstetrics and Gynecology

Pregnancy-Related Deaths in the US, 2018-2022

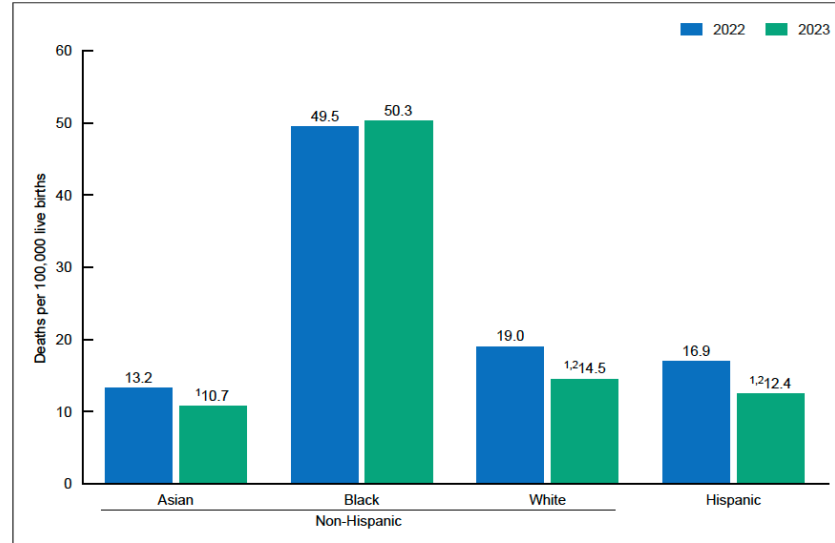
Yingxi Chen, MD, PhD; Meredith S. Shiels, PhD; Tarsicio Uribe-Leitz, MD, MPH; Rose L. Molina, MD, MPH; Wayne R. Lawrence, DrPH; Neal D. Freedman, PhD, MPH; Christian C. Abnet, PhD, MPH

Maternal Mortality Rate, by Race and Hispanic Origin

NCHS Health E-Stats

February 2025

Figure 2. Maternal mortality rate, by race and Hispanic origin: United States, 2022 and 2023



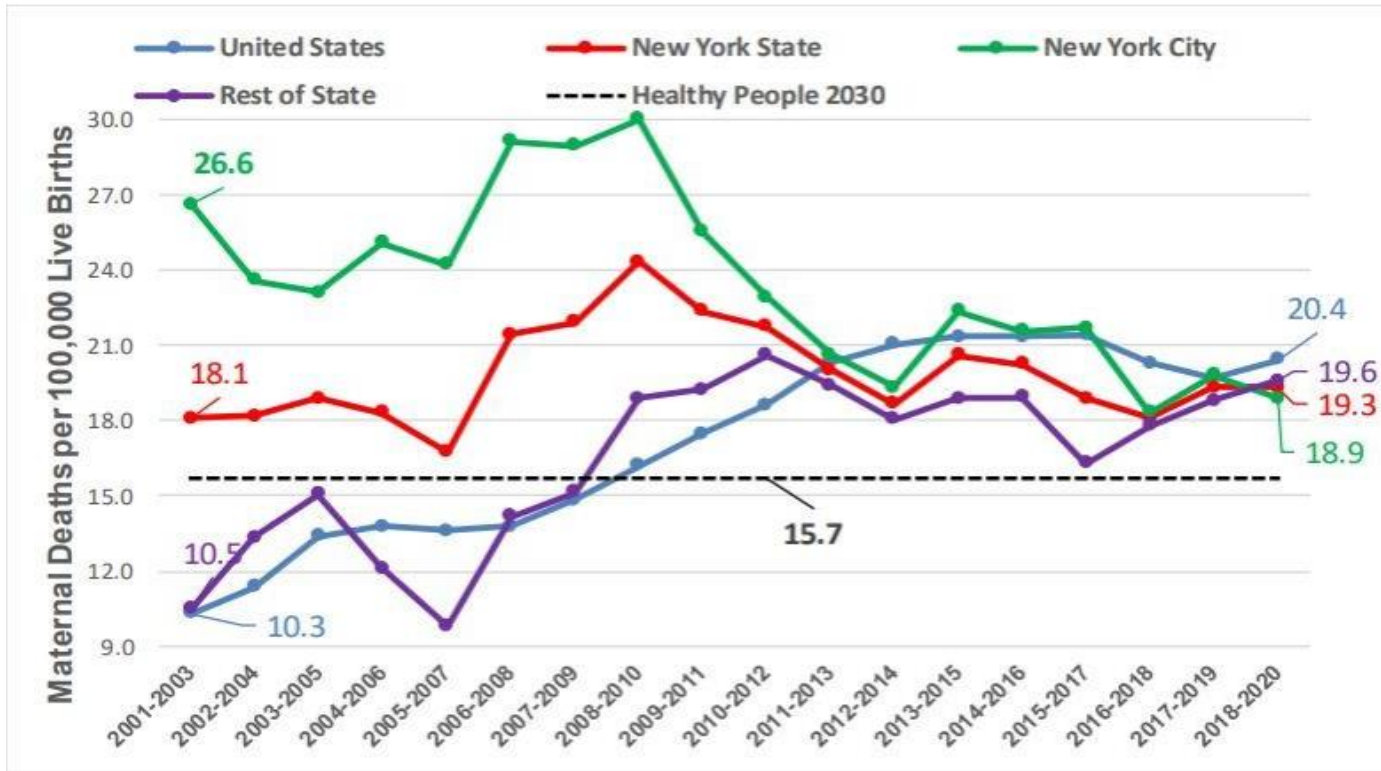
¹Statistically significant difference from Black non-Hispanic women ($p < 0.05$).

²Statistically significant decrease in rate from previous year ($p < 0.05$).

NOTES: Race groups are single race. People of Hispanic origin may be of any race.

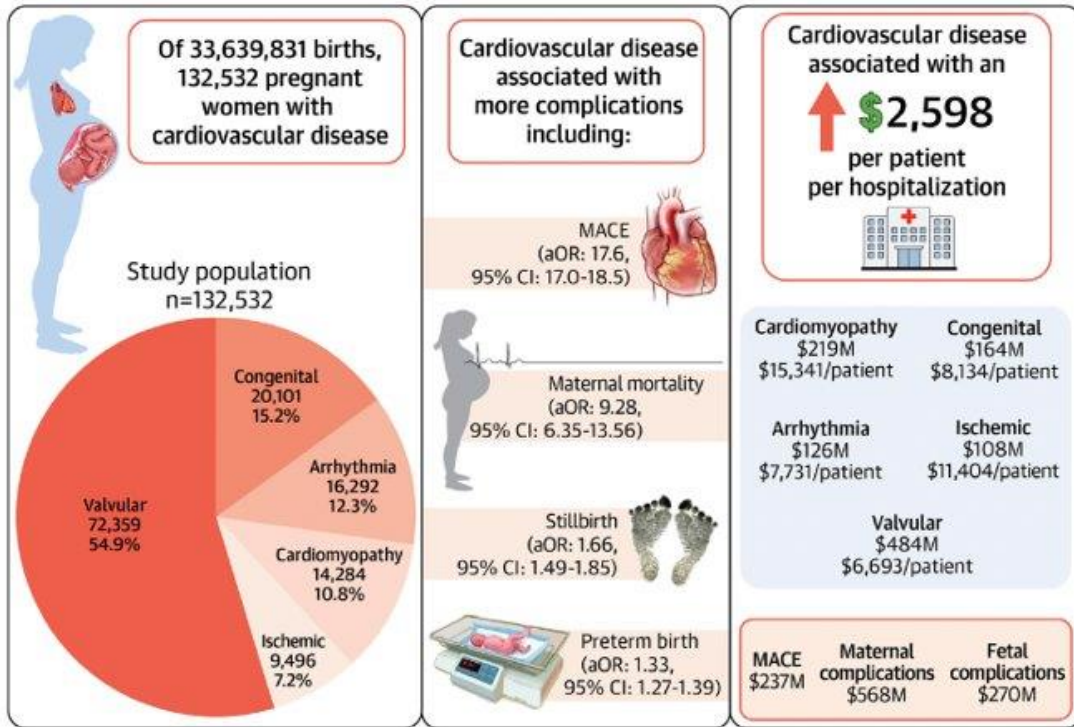
SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

NYS Three-Year Rolling Average Maternal Mortality Rate



New York State Department of Health. New York State Maternal Mortality Review Report on Pregnancy-Associated Deaths in 2018. 2022. [New York State Maternal Mortality Review Report, 2018-2020 \(ny.gov\)](https://www.ny.gov/new-york-state-maternal-mortality-review-report-2018-2020)

CENTRAL ILLUSTRATION Cardiovascular Disease in Pregnancy: Clinical Outcomes and Cost-Associated Burdens From a National Cohort at Delivery



Williamson CG, et al. JACC Adv. 2024;3(8):101071.

aOR = adjusted odds ratio; MACE = major adverse cardiac events.

Trends in Prevalent Maternal Cardiovascular Disease

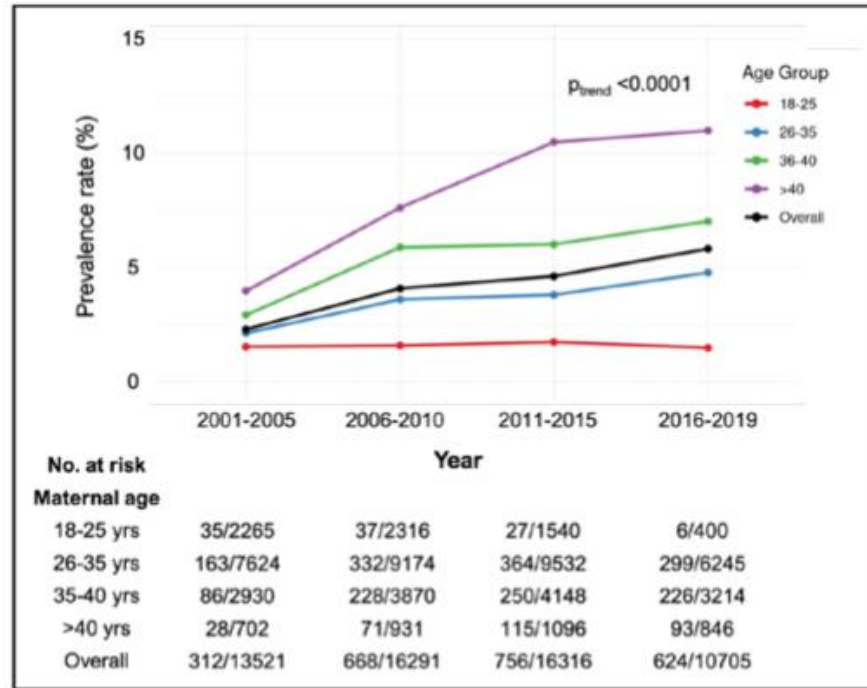
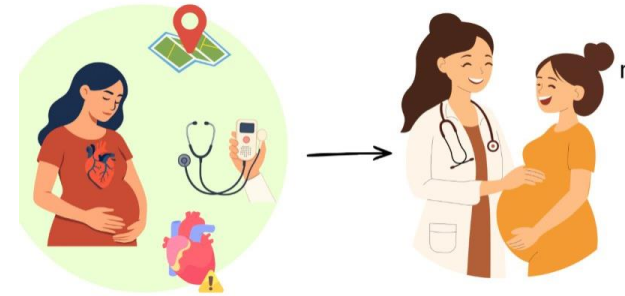


Figure 4. Trends in prevalent maternal cardiovascular disease from 2001 through 2019, stratified by maternal age. Prevalence rates for preexisting maternal cardiovascular disease from 2001 through 2019 in prespecified time intervals, stratified by maternal age at time of delivery.

The Challenge to Detect CVD in Pregnancy

Table 2. How to Differentiate Common Signs and Symptoms of Normal Pregnancy Versus Those That Are Abnormal and Indicative of Underlying Cardiac Disease

	ROUTINE CARE	CAUTION*†	STOP‡‡
	Reassurance	Nonemergent Evaluation	Prompt Evaluation Pregnancy Heart Team
History of CVD	None	None	Yes
Self-reported symptoms	None or mild	Yes	Yes
Shortness of breath	No interference with activities of daily living; with heavy exertion only	With moderate exertion, new-onset asthma, persistent cough, or moderate or severe OSA§	At rest; paroxysmal nocturnal dyspnea or orthopnea; bilateral chest infiltrates on CXR or refractory pneumonia
Chest pain	Reflux related that resolves with treatment	Atypical	At rest or with minimal exertion
Palpitations	Few seconds, self-limited	Brief, self-limited episodes; no lightheadedness or syncope	Associated with near syncope
Syncope	Dizziness only with prolonged standing or dehydration	Vasovagal	Exertional or unprovoked
Fatigue	Mild	Mild or moderate	Extreme
Vital signs	Normal		
HR (beats per minute)	<90	90–119	≥120
Systolic BP (mm Hg)	120–139	140–159	≥160 (or symptomatic low BP)
RR (per minute)	12–15	16–25	≥25
Oxygen saturation	>97%	95–97%	<95% (unless chronic)
Physical examination	Normal		
JVP	Not visible	Not visible	Visible >2 cm above clavicle
Heart	S3, barely audible soft systolic murmur	S3, systolic murmur	Loud systolic murmur, diastolic murmur, S4
Lungs	Clear	Clear	Wheezing, crackles, effusion
Edema	Mild	Moderate	Marked



ACOG PRACTICE BULLETIN

Clinical Management Guidelines for Obstetrician–Gynecologists

NUMBER 212

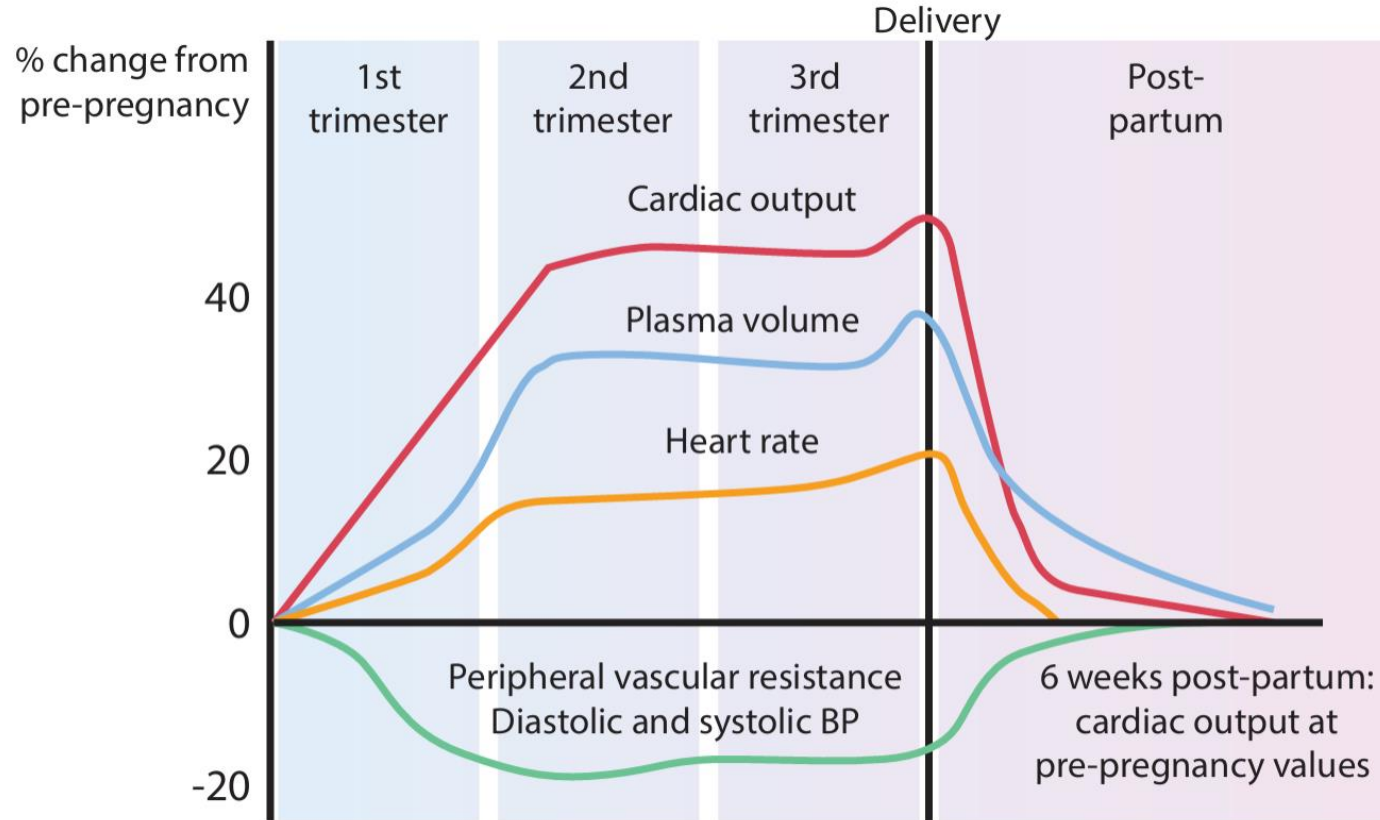
Presidential Task Force on Pregnancy and Heart Disease

Committee on Practice Bulletins—Obstetrics. This Practice Bulletin was developed by the American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Obstetrics in collaboration with the Presidential Task Force on Pregnancy and Heart Disease members: Lisa M. Huller, MD, James N. Martin Jr., MD, Heidi Connolly, MD, Mark Turmette, MD, Ashim Hazaref, MD, Katherine W. Anand, MD, Octavia Cannon, DO, Louisa Colman, ARNP, CNM, Use Elkayem, MD, Anthony Gregg, MD, MBA, Alison Haddock, MD, Stacy M. Higgins, MD, FACP, Sue Koenig, JD, Robert Liu, MD, MPH, FAAP, Stephanie R. Martin, DO, Dennis McNamara, MD, Wanda Nicholson, MD, Patrick S. Ramsey, MD, MPH, Laura Riley, MD, Elizabeth Rochon, PhD, RN, NE-BC, Stacey K. Rosen, MD, Rachel G. Siskay, MD, Graeme Smith, MD, PhD, Calandra Tibbo, MPH, Elean Z. Tappin, Rachel Villanova, MD, Janet Wu, MD, and Geoffrey Zubik, MD.

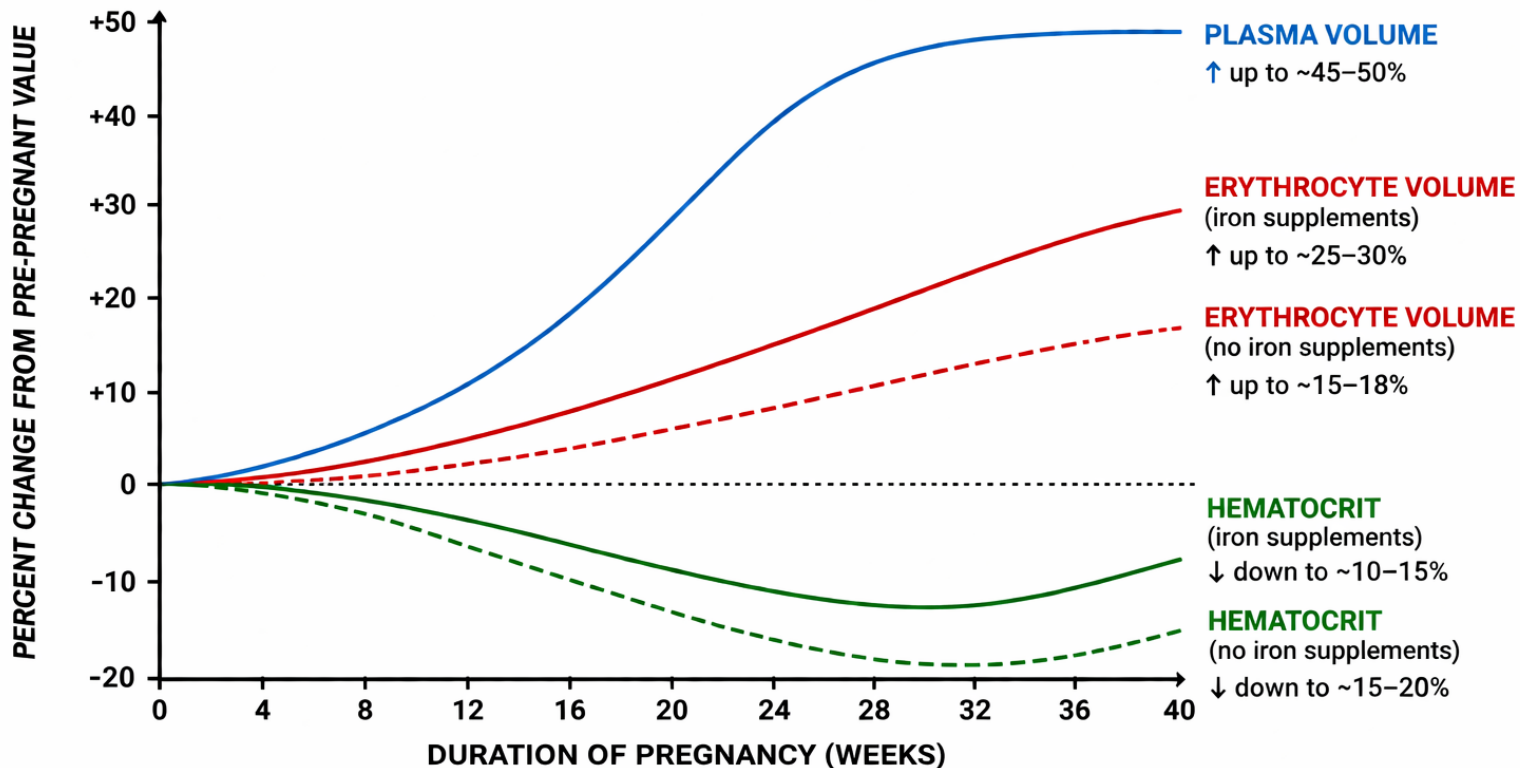
Pregnancy and Heart Disease

Practice Bulletin 2019, *Pregnancy and Heart Disease*, ACOG

Haemodynamic Changes



Changes in Maternal Blood Volume and Hematocrit During Pregnancy



Plasma volume increases more than red cell mass, resulting in hemodilution (↓ hematocrit).
Iron supplementation blunts the fall in hematocrit.

Supine vs. Left Lateral Position in Pregnancy

In supine position:

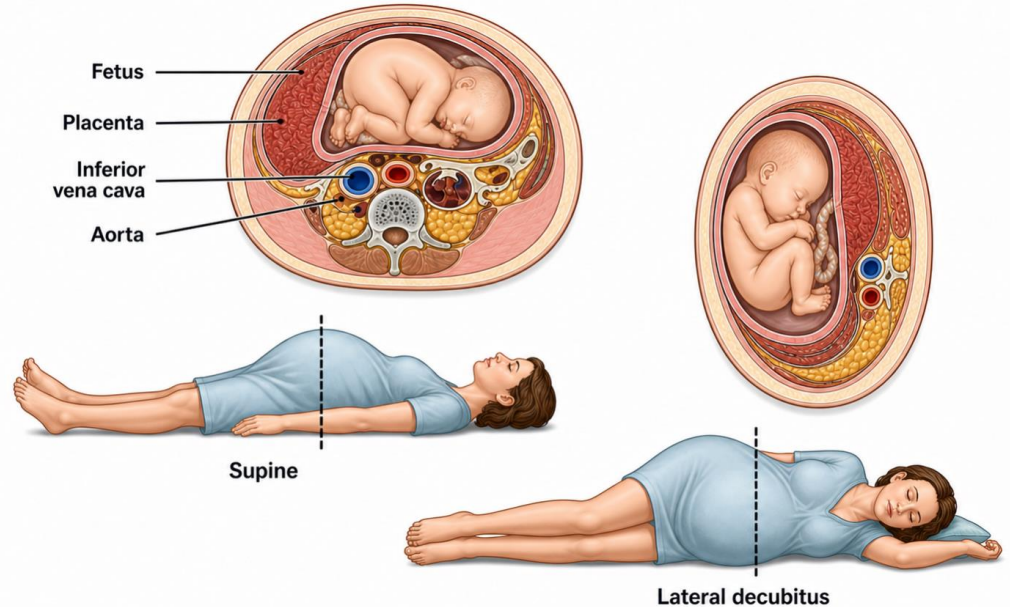
- Cardiac output may decrease by 25–30%
- The gravid uterus compresses the inferior vena cava

This results in:

- ↓ Venous return to the heart
- ↓ Stroke volume
- ↓ Cardiac output

Patients with underlying cardiac disease may not tolerate this reduction.

Left lateral positioning relieves caval compression and restores cardiac output.



Elkayam and Gleicher. *Diagnosis and management of fetal and maternal heart disease*. 1998.

Intrapartum Changes

Two main concerns with the cardiovascular changes during Valsalva Maneuver

- 1. Increase In Arterial Shear Stress**
- 2. Fluctuations In Pre-Load**

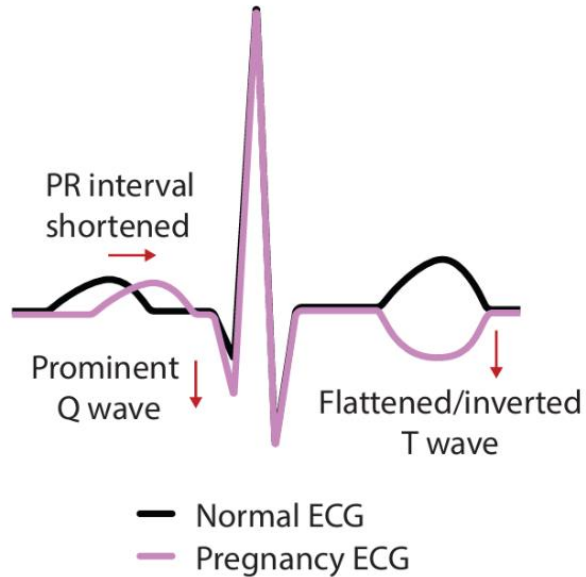
Adams JQ, Alexander AM. *Alterations in cardiovascular physiology during labor*. 1958.

Osofsky HF, Williams JA. *Changes in blood volume during parturition and the early postpartum period*. 1964.

Hendricks CH, Quilligan EJ. *Cardiac output during labor*. 1956.

EKG and ECHO changes in Pregnancy

ECG changes



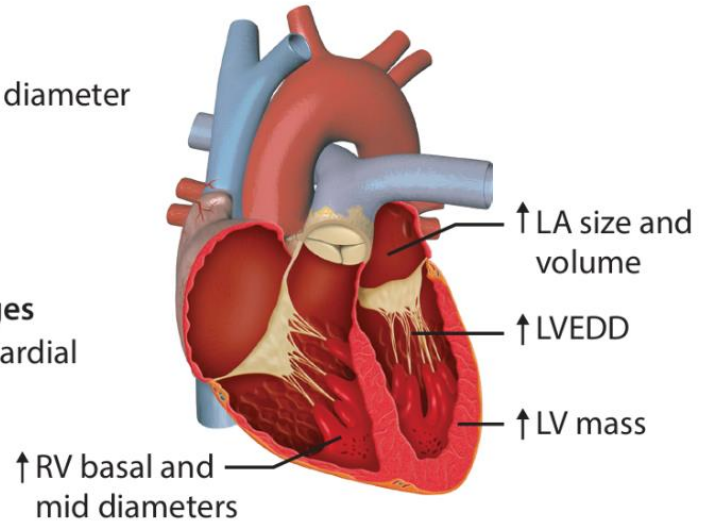
Echocardiographic changes

Unchanged

- Aortic root diameter
- LVEF
- RVEF
- SPAP

Small changes

- Small pericardial effusion



Consensus Statement

Alliance for Innovation on Maternal Health

Consensus Bundle on Cardiac Conditions in Obstetric Care

Afshan B. Hameed, MD, Alison Haddock, MD, Diana S. Wolfe, MD, MPH, Karen Florio, DO, MPH, Nora Drummond, DNP, CNM, Christie Allen, MSN, BSN, Isabel Taylor, MS, Susan Kendig, JD, MSN, Garssandra Presumey-Leblanc, MS, and Emily Greenwood, MPH

READINESS (EVERY CLINICAL SETTING)

1. Train All Obstetric Care Professionals to Perform a Screen for Cardiac Conditions

Evidence suggests that implementation of a screen for cardiac conditions for pregnant and postpartum people in all clinical care settings is a key step toward reducing the burden of maternal mortality due to cardiac conditions.⁸ A cardiovascular risk-assessment algorithm developed by the CMQCC (California Maternal Care Quality Collaborative) (see <https://www.cmqcc.org/resources-toolkits/toolkits/improving-health-care-response-cardiovascular-disease-pregnancy-and>) stratifies pregnant and postpartum patients into low risk and high risk for cardiovascular disease.⁹ The algorithm can be applied to all pregnant and postpartum people at their first clinical encounter regardless of gestational age.¹⁰ In a retro-

RECOGNITION AND PREVENTION (EVERY HEALTH CARE PROFESSIONAL AND CLINICAL SETTING)

11. Use Standardized Cardiac Risk-Assessment Tools to Identify and Stratify Risk

Staff training and integration of cardiac risk-assessment tools and documentation into the electronic medical record may support regular utilization of the standardized assessment tools. More detail on standardized cardiac risk assessments can be found in Readiness Element 1.

CMQCC Cardiovascular Disease Toolkit

The CVD Toolkit was developed by CMQCC at Stanford University under contract with CDPH with funding from a federal Title V MCH Block grant.

The logo for CMQCC, featuring the letters 'CMQCC' in a bold, sans-serif font. The 'Q' is orange, while the other letters are dark grey.

California Maternal
Quality Care Collaborative



Algorithm validated
64 CVD deaths.

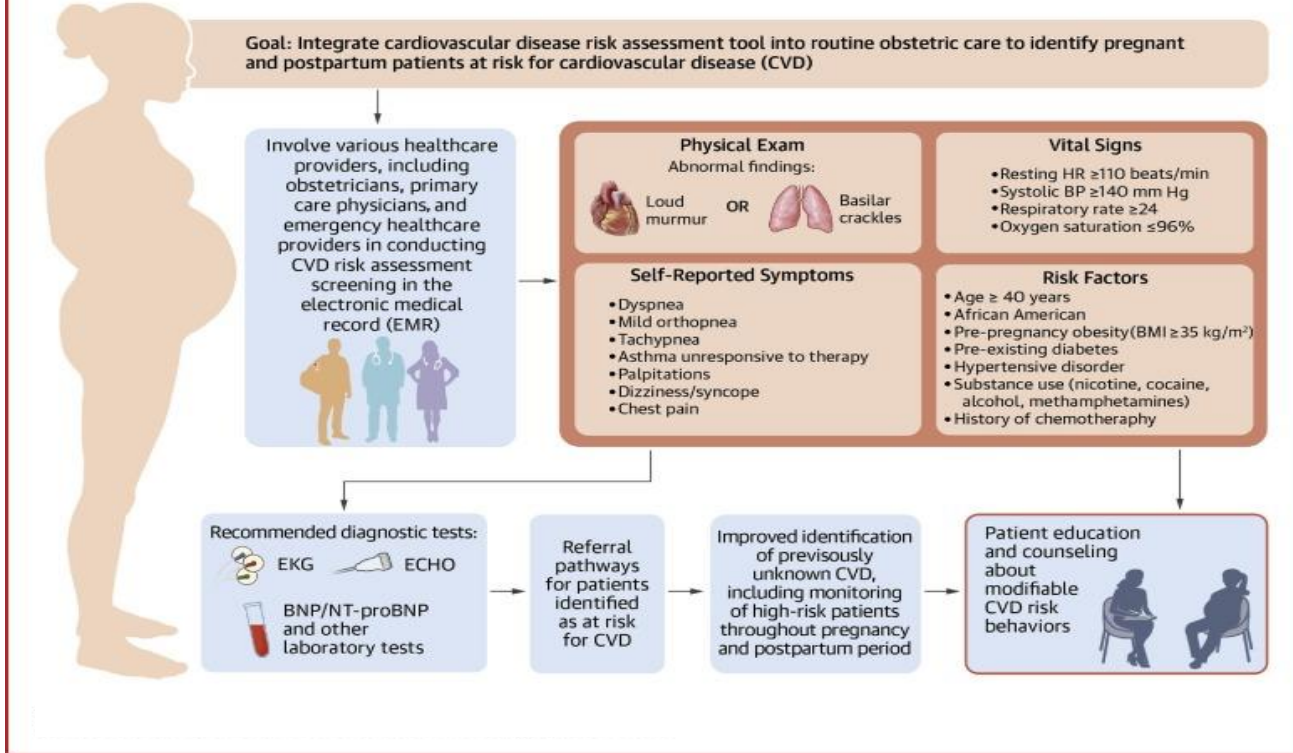


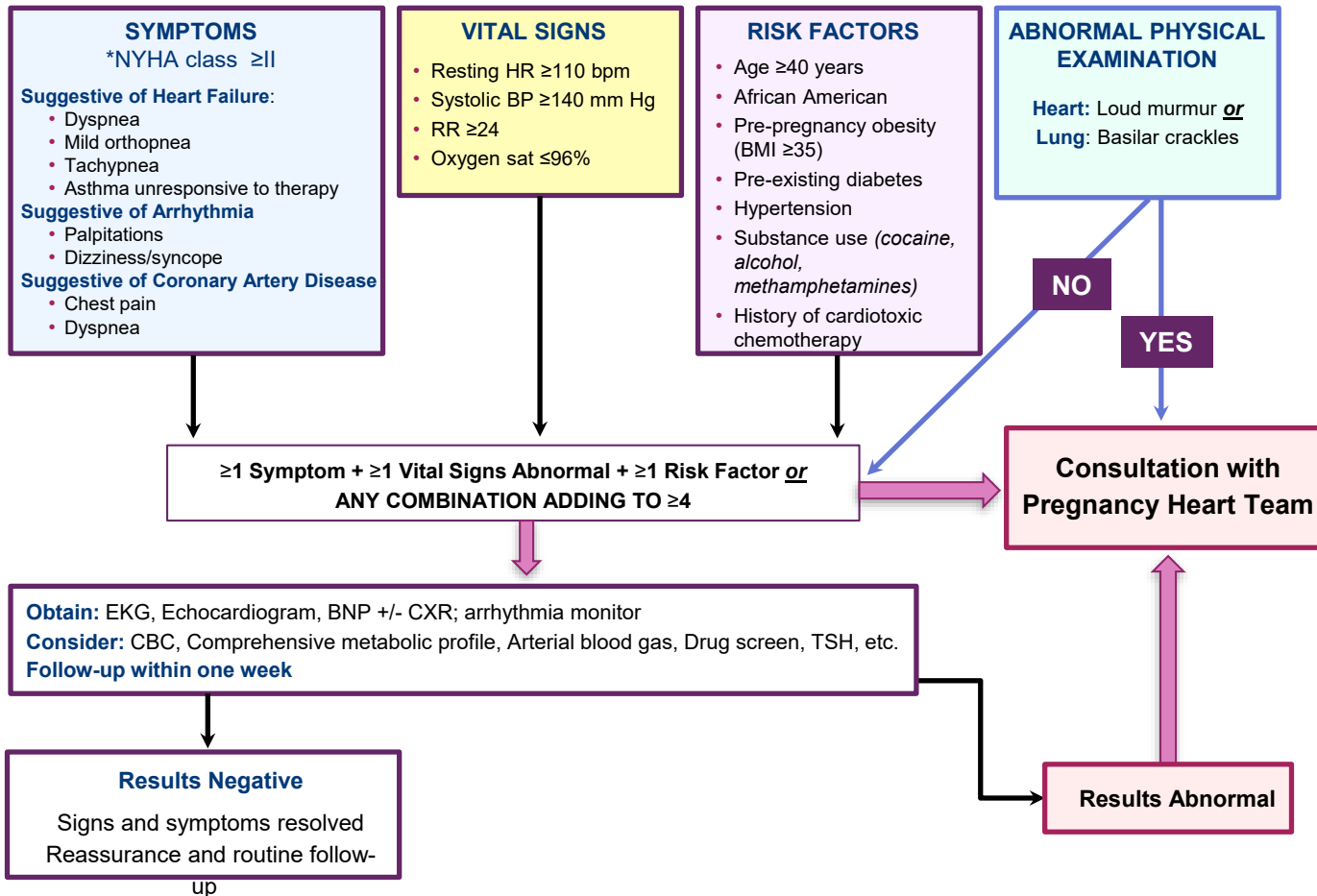
Detection rate 93% in symptomatic
cases identified as screen-positive
or high risk for CVD.

Reference: Hameed, AB, Morton, CH and A Moore. Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum Developed under contract #11-10006 with the California Department of Public Health, Maternal, Child and Adolescent Health Division. Published by the California Department of Public Health, 2017.

**We propose a system
wide implementation
of this algorithm**

CENTRAL ILLUSTRATION: Universal Cardiovascular Disease Risk Assessment in Pregnancy and Postpartum





Modified from: ©California Department of Public Health, 2017; supported by Title V funds. Developed in partnership with California Maternal Quality Care Collaborative Cardiovascular Disease in Pregnancy and Postpartum Taskforce.

Initial Opening or Chart Visit

The screenshot displays the Epic EMR interface for a patient visit. The top navigation bar shows the patient name 'Achilles, Virginia Pren...' and various system icons. The left sidebar contains patient demographics: Achilles, Virginia Prenatal, Female, 27 y.o., 12/3/1994, MRN: 05179001, and current location 'BRONX EAST PRACTICE OB/GYN GENERALISTS'. The central panel is titled 'Visit' and features a 'BestPractice Advisories' section with two yellow alerts: 'Depression screening: This patient is 21 or older and is due for an annual depression screening...' and 'WIC Referral Suggested - A WIC referral has not been ordered for this pregnancy episode...'. The right sidebar includes a red 'Cardiovascular Risk Assessment Required' banner, 'Vitals as of 2/28/22' (Blood Pressure 120/80, Weight 136 lb, Height 5' 5"), and a 'Problem List' with 'Respiratory Seasonal rhinitis'. A purple arrow points from the top right towards the 'Cardiovascular Risk Assessment Required' banner.

Step 1: Pull Data From Chart

Hyperspace - BRONX EAST PRACTICE OB/GYN GENERALI 1567 Orders 16 1: Overdue Enc Completion 8

Epic Patient Lookup Remind Me Personalize HCS-ISTOP UptoDate NYC CIR CPM Guidelines Sign My Visits Print Secure Log Out

Achilles, Virginia Pren... PLY FRANCIS-OBGYN A.

VA

Visit

Achilles, Virginia Prenatal
Female, 27 y.o., 12/3/1994
MRN: 05179001
Cur Location: BRONX EAST PRACTICE OB/GYN GENERALISTS
Code: Not on file (has ACP docs)
Primary Team: None
Observation Status: None

COVID-19 Vaccine: Unknown
Obstetrician: Me
Coverage: None
Allergies: Strawberry
SA, TWG: 12w2d, -120 lb 10.1 oz
7:45 AM NEW OBSTETRICAL VISIT
Weight: 136 lb >7 days
TWG: -120 lb
Pregavid BMI: 21.63 kg/m²

THIS PREGNANCY
Hx: G3P1011
SA: 12w2d (10/10/2022)
Blood Type: None

OB CVD ASSESSMENT

Pull Data from Chart Pull Data from the chart for 1st assessment of cardiovascular risk. To reassess risk, data items must first be cleared before this button is used to recheck data

Self Reported Symptoms (*NYHA Class Vital Signs > = II)

Suggestive of Heart Failure

Resting HR > =110 bpm	<input type="checkbox"/> Yes <input type="checkbox"/> No	Age 40+	<input type="checkbox"/> Yes <input type="checkbox"/> No
Shortness of breath	<input type="checkbox"/> Yes <input type="checkbox"/> No	Systolic BP > =140 mmHg	<input type="checkbox"/> Yes <input type="checkbox"/> No
Short of breath lying flat	<input type="checkbox"/> Yes <input type="checkbox"/> No	Respiratory Rate > =24	<input type="checkbox"/> Yes <input type="checkbox"/> No
Rapid heart rate	<input type="checkbox"/> Yes <input type="checkbox"/> No	Oxygen Sat < =96%	<input type="checkbox"/> Yes <input type="checkbox"/> No
Asthma unresponsive to therapy	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Suggestive of Arrhythmia

Palpitations	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Fainting or loss of consciousness	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Suggestive of Coronary Artery

Chest pain	<input type="checkbox"/> Yes <input type="checkbox"/> No		
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Risk Factors

African American	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pre-pregnancy obesity (BMI > =35)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pre-existing diabetes	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hypertension	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cancer Diagnosis or History	<input type="checkbox"/> Yes <input type="checkbox"/> No
History of chemotherapy or chest radiation	<input type="checkbox"/> Yes <input type="checkbox"/> No

Physical Exam

Heart: Loud murmur	<input type="checkbox"/> Yes <input type="checkbox"/> No
Lungs: Basilar crackles	<input type="checkbox"/> Yes <input type="checkbox"/> No

Substance Use

Nicotine use:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Alcohol use:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Use of risky drugs: Cocaine, Depressants (Alcohol),	<input type="checkbox"/> Yes <input type="checkbox"/> No

Mark All Symptoms Negative

+ ADD ORDER + ADD DX (0) PRINT AVS SIGN VISIT

Step 2: Fill Blank Boxes - Symptoms, Risk Factors, Physical Exam

Diomedes, Virginia Prenatal
Female, 27 y.o., 11/20/1994
MRN: 05179005
Cur Location: BRONX EAST PRACTICE OB/GYN GENERALISTS
Code: Not on file (has ACP docs)
Primary Team: None
Observation Status: None

OB CVD ASSESSMENT

Self Reported Symptoms (*NYHA Class > = II)

Symptom	Yes	No
Suggestive of Heart Failure		
Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>
Short of breath lying flat	<input type="checkbox"/>	<input type="checkbox"/>
Rapid heart rate	<input type="checkbox"/>	<input type="checkbox"/>
Asthma unresponsive to therapy	<input type="checkbox"/>	<input type="checkbox"/>

Vital Signs

Vital Sign	Yes	No
Resting HR > =110 bpm	<input type="checkbox"/>	<input type="checkbox"/>
Systolic BP > =140 mmHg	<input type="checkbox"/>	<input type="checkbox"/>
Respiratory Rate > =24	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen Sat < =96%	<input type="checkbox"/>	<input type="checkbox"/>

Risk Factors

Risk Factor	Yes	No
Age 40+	<input type="checkbox"/>	<input type="checkbox"/>
African American	<input type="checkbox"/>	<input type="checkbox"/>
Pre-pregnancy obesity (BMI > =35)	<input type="checkbox"/>	<input type="checkbox"/>
Pre-existing diabetes	<input type="checkbox"/>	<input type="checkbox"/>
Hypertension	<input type="checkbox"/>	<input type="checkbox"/>
Cancer Diagnosis	<input type="checkbox"/>	<input type="checkbox"/>

Cardiovascular Risk Assessment Required

Vitals as of 2/15/22

Blood Pressure: 120/80
Weight: 136 lb
Height: 5' 5"

Strawberry Allergies

Strawberry Hives, Itching

Mark as Reviewed
Reviewed by Stacy Island, NP on 2/15/2022

CVD Positive Yes Each Bucket

The screenshot displays the Epic Hyperspace interface for a patient visit. The patient is Achilles, Virginia Prenatal. The main content area contains several clinical checkboxes, with purple arrows pointing to the 'Yes' buttons for 'Short of breath lying flat', 'Respiratory Rate >=24', 'Oxygen Sat <=96%', 'Chest pain', and 'Mark All Symptoms Negative'. The 'Calculated Risk' section is highlighted in red, showing 'Not at risk' and 'Possible Risk for Cardiovascular Disease'. The 'OB CVD ASSES...' section is also highlighted in red, showing 'At Risk for Cardiovascular Disease'. The interface includes a navigation bar, a patient information sidebar, and a main content area with various clinical checkboxes.

Question	Yes	No
Short of breath lying flat	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Rapid heart rate	<input type="checkbox"/>	<input type="checkbox"/>
Asthma unresponsive to therapy	<input type="checkbox"/>	<input type="checkbox"/>
Palpitations	<input type="checkbox"/>	<input type="checkbox"/>
Fainting or loss of consciousness	<input type="checkbox"/>	<input type="checkbox"/>
Chest pain	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Respiratory Rate >=24	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Oxygen Sat <=96%	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Heart: Loud murmur	<input type="checkbox"/>	<input type="checkbox"/>
Lungs: Basilar crackles	<input type="checkbox"/>	<input type="checkbox"/>
Pre-pregnancy obesity (BMI >=35)	<input type="checkbox"/>	<input type="checkbox"/>
Pre-existing diabetes	<input type="checkbox"/>	<input type="checkbox"/>
Hypertension	<input type="checkbox"/>	<input type="checkbox"/>
Cancer Diagnosis or History of chemotherapy or chest radiation	<input type="checkbox"/>	<input type="checkbox"/>
Nicotine use:	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol use:	<input type="checkbox"/>	<input type="checkbox"/>
Use of risky drugs: Cocaine, Depressants (Alcohol, Barbituates, Benzodiazepines), MDMA, Ecstasy, Methamphetamines, or Opiates	<input type="checkbox"/>	<input type="checkbox"/>
Substance use poses risk:	<input type="checkbox"/>	<input type="checkbox"/>

Calculated Risk

Not at risk	Possible Risk for Cardiovascular Disease
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OB CVD ASSES...

At Risk for Cardiovascular Disease

Signed by: Achilles, Francis-OBGYN, MD | 3/30/2022 | 02:06 PM | Now

Order Set

The screenshot displays the Epic EMR interface for a prenatal visit. The patient is Achilles, Virginia, a 27-year-old female with MRN 05179001. The visit is an initial prenatal visit on 3/30/2022 with Francis-Obgyn Achilles, MD. The order set includes various tests and referrals, with some already performed or expected.

Order Set Details:

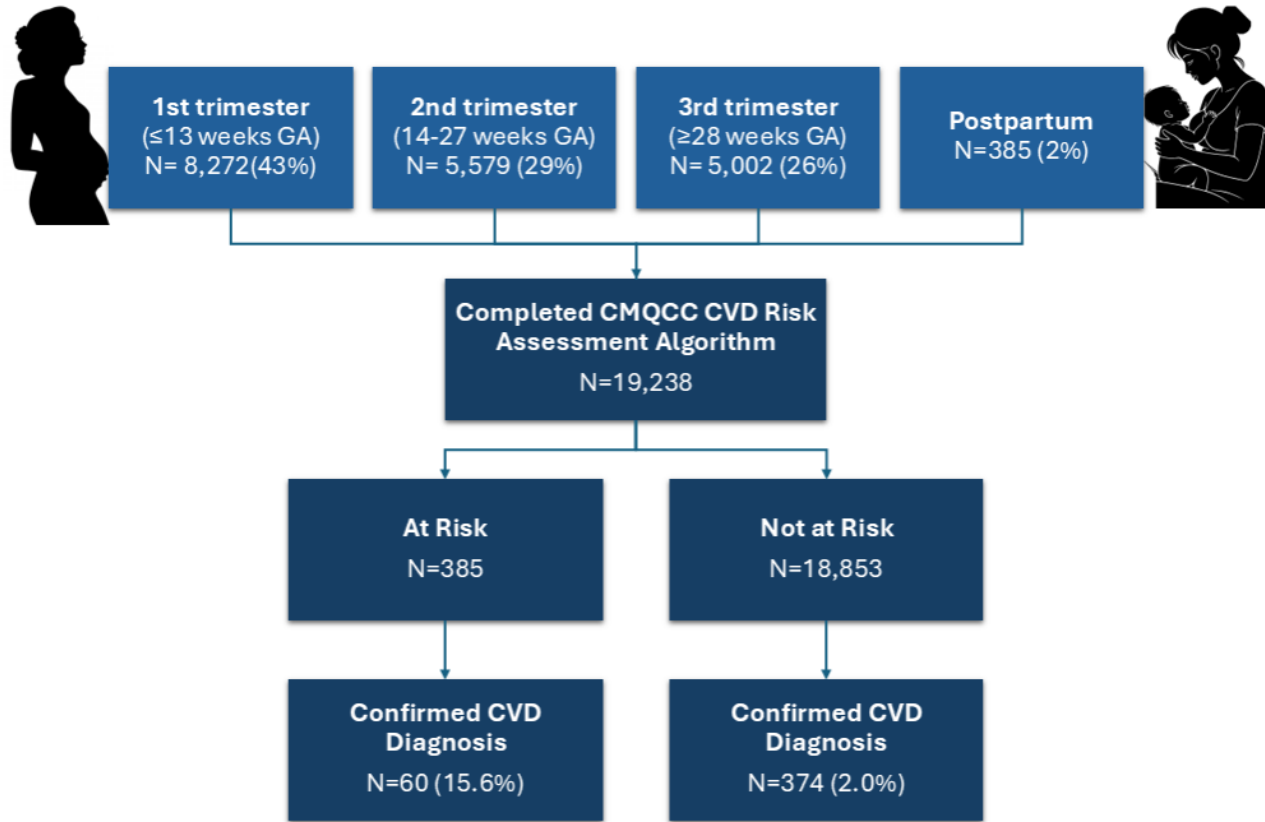
- Arterial, Blood Gas, Comprehensive ■
Lab Collect
- Urine, Drugs Screen ■
- Cardiac Testing**
 - Cardiac Tests**
 - ECG 12 Lead ■
Routine, Clinic Performed
 - Transthoracic Echo Adult ■
P Expected: 3/30/2022, Expires: 3/30/2023, Routine, Ancillary Performed
 - XR CHEST FRONTAL VIEW ■
Routine
 - Holter/Event Monitor ■
Routine
- Referrals**
 - Referral to MFM Cardiology**
 - Ambulatory referral to MFM - Cardiology ■
Internal Referral, Routine, Cardiology, Office Visit
- Additional SmartSet Orders**
 - Search
 - You can search for an order by typing in the header of this section.

Left Panel (Patient Information):

- Achilles, Virginia Prenatal**
- Female, 27 y.o., 12/3/1994
- MRN: 05179001
- Cur Location: BRONX EAST PRACTICE OB/GYN GENERALISTS
- Code: Not on file (has ACP docs)
- Primary Team: None
- Observation Status: None
- COVID-19 Vaccine: Unknown
- Obstetrician: Me
- Coverage: None
- Allergies: Strawberry
- GA, TWG: 12w2d, -120 lb 10.1 oz
- 7:45 AM NEW OBSTETRICAL VISIT
- Weight: 136 lb >7 days
- TWG: -120 lb
- Pregavid BMI: 21.63 kg/m²
- THIS PREGNANCY**
- Hx: G3P1011
- GA: 12w2d (10/10/2022)
- Blood Type: None

Bottom Bar:

- + ADD ORDER
- + ADD DX (1)
- PRINT AVS
- SIGN VISIT



Study Cohort

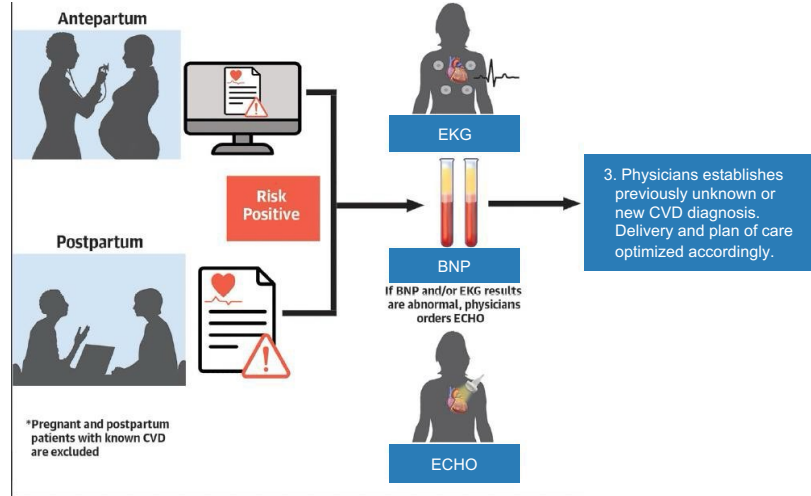
Among 19,238 pregnant and postpartum patients without prior known CVD who were assessed for CVD risk, 2.0% were identified as being at risk for developing CVD

Main Findings

- Among total study population, 2.3% of patients were later confirmed to have CVD
- Physical examination findings were the most predictive elements of the CVD risk assessment

1. Physicians completes CVD risk assessment

2. Physicians orders follow-up cardiac diagnostic testing and patient completes ASAP (within 30 days)



The Conclusion

The CVD risk assessment algorithm embedded in routine obstetric care demonstrates moderate predictive value and improves identification of undiagnosed CVD, with significant enhancement utilizing physical exam findings.

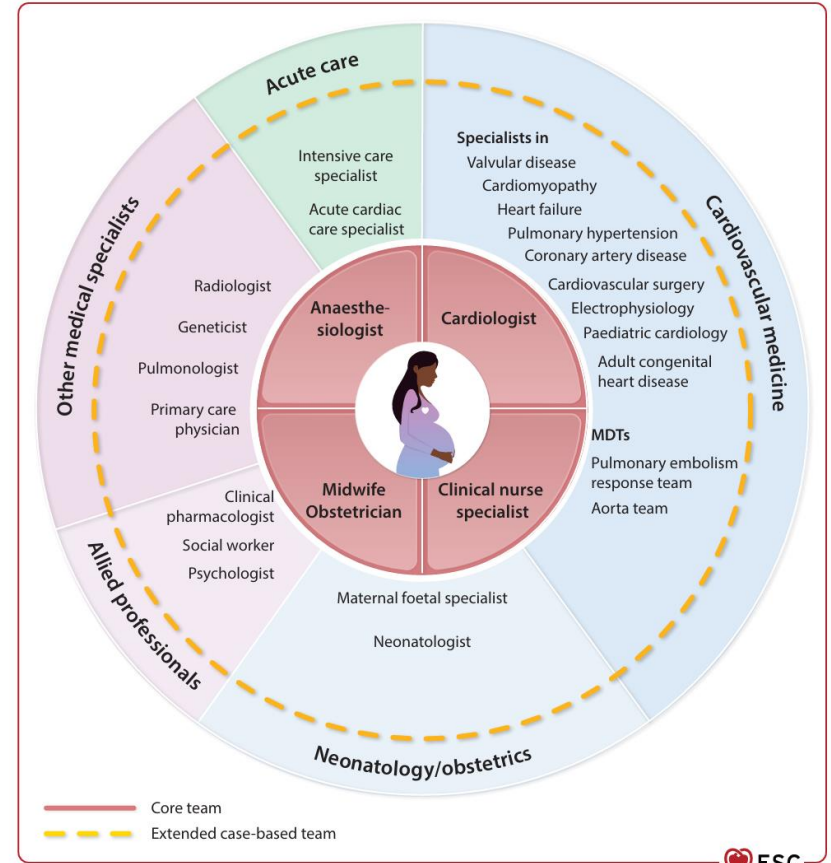
Calculation of the Positive Predictive Value (PPV)

True positive (N= 60)/True positive (n=60) + False positive (n = 325) = 15.6%

READINESS (EVERY CLINICAL SETTING)

4. Establish a Multidisciplinary *Pregnancy Heart Team*, or Consultants Appropriate to the Facility's Designated Level of Maternal Care to Care for People Experiencing Cardiac Conditions in Pregnancy and Postpartum

Every facility where a pregnant or postpartum person may present should have a plan for convening a Pregnancy Heart Team or a plan to access one when needed through telehealth or remote consultation. The team can be comprised of onsite obstetric care professionals and subspecialists or wholly or in part as a virtual team in hospitals where subspecialists are not readily available onsite. Table 1 provides examples of suggested team members and roles.



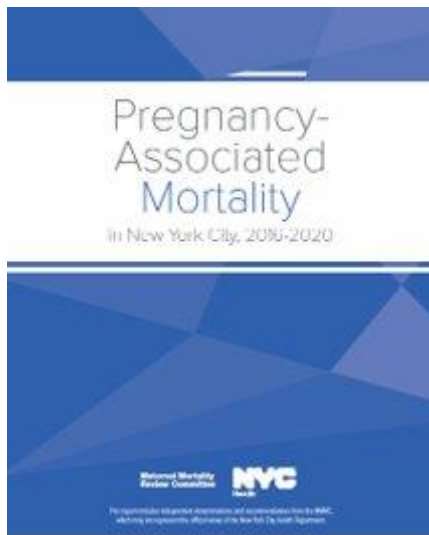
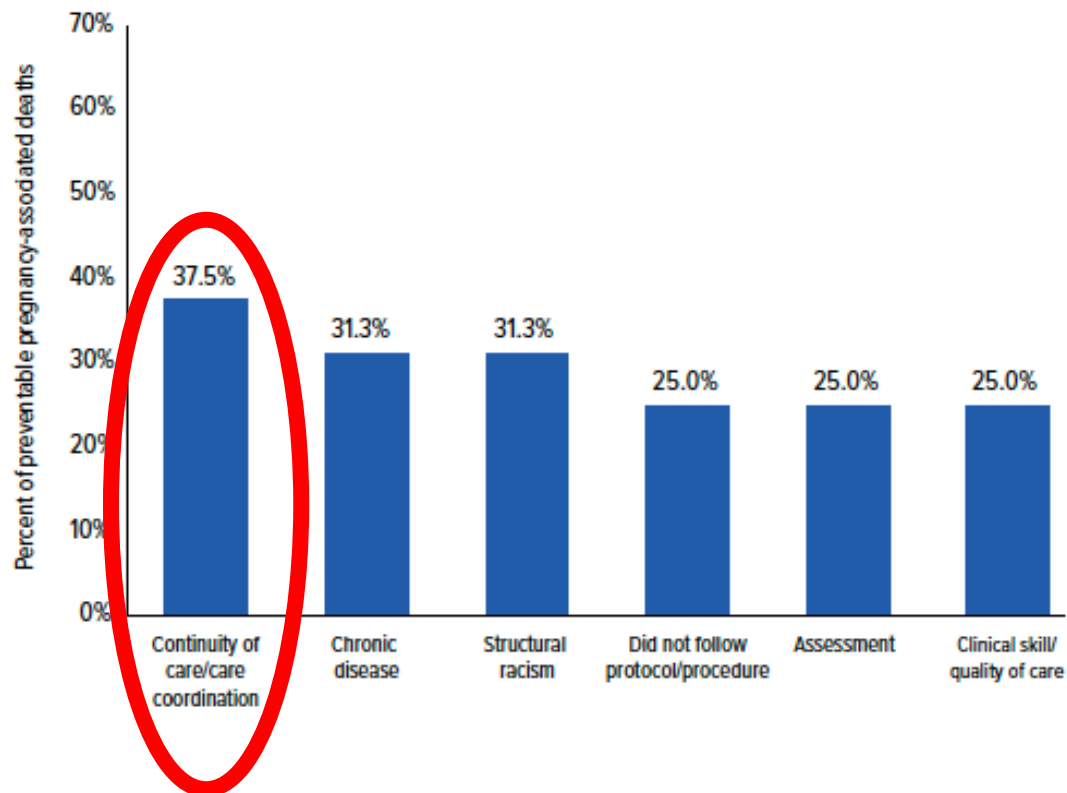
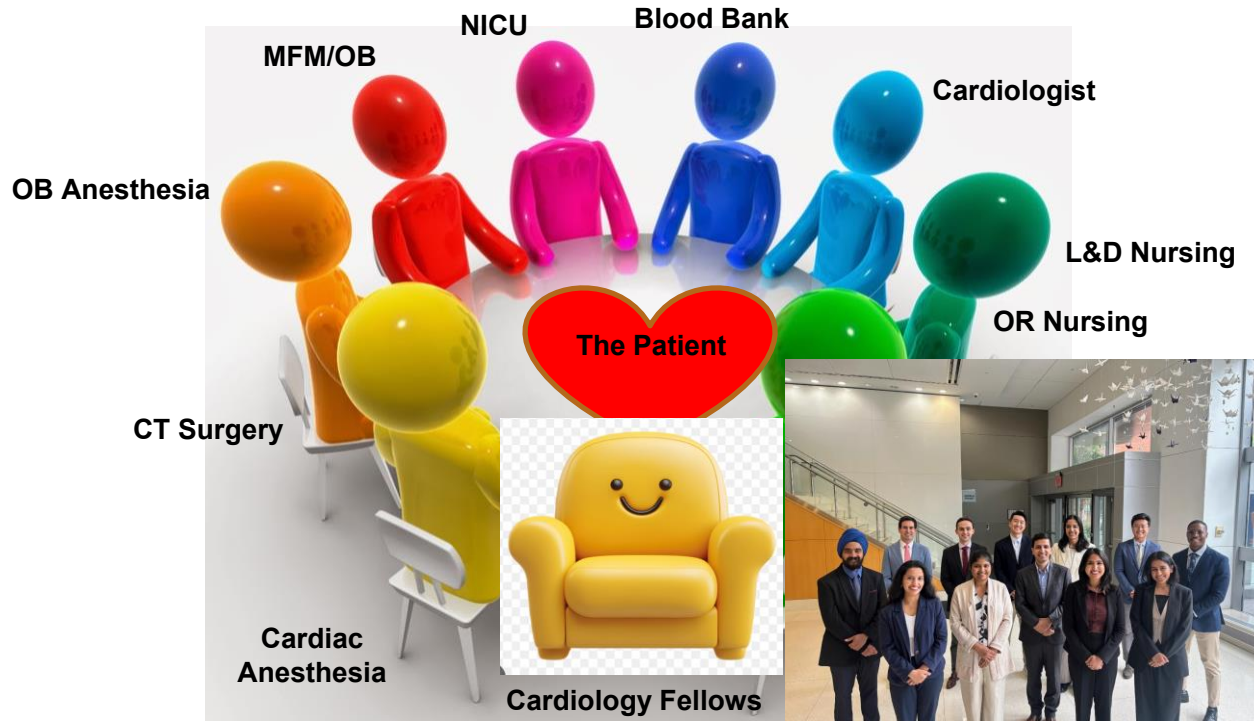


Figure 36. Contributing Factors Among Preventable Deaths Due to Cardiovascular Conditions, NYC, 2016-2020



Interdisciplinary Team Meeting in CICU



Checklist for Interdisciplinary Team Delivery Planning

Delivery Plan Checklist

IDT Cardio- Obstetric Delivery Plan

ATTENDEES, SERVICE REPRESENTED

MFM Cardiology L&D Att L&D Director Patient Safety

Anesthesia Pediatrics L&D Nursing Blood Bank Other: _____

PATIENT INFORMATION

Name: _____ MRN: _____
 Age: _____ EDD: _____ BMI: _____ Parity: _____
 Health care Proxy: _____

CARDIAC PATHOLOGY

Major Cardiac Pathology: _____

mWHO RISK I, II, III, IV _____

Structural heart disease: _____ Arrhythmia: _____
 Yes No Yes No

CARDIAC STUDIES

EKG: _____
 Date: _____
 Findings: _____

ECHO: _____
 Date: _____
 Findings: _____

Holter: _____
 Date: _____
 Findings: _____

Other: _____
 Date: _____
 Findings: _____

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ANTEPARTUM PLAN

INCLUDE MEDICATIONS AND SURVEILLANCE

DELIVERY PLAN

DATE / TIME OF DELIVERY: _____

GA AT DELIVERY: _____

LOCATION: Tertiary Community

MODE OF DELIVERY Safe to Labor Assisted 2nd Stage Cesarean

INTRAPARTUM MONITORING:

Telemetry: Yes No Fluid: Strict i/Os Other: _____
 Cardiac Nursing Yes No
 Pulse Ox: Yes No Endocarditis PPs: Yes No
 Line Central Arterial Peripheral

Notes: _____

Anesthesia Plan: _____

SPECIAL SITUATIONS:

Medications to Avoid: _____

Hemorrhage:

Hemorrhage	Methergine	Misoprostol	Painin	TXA
Yes	Yes	Yes	Yes	Yes
<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Preeclampsia: _____

Desires Future Fertility?: Yes No Undecided

Birth Control: IUD Nexplanon POPs Condoms STL

Other: _____

Key Points:

Risk of Maternal Cardiac Event:

2.5-5% 5.7-10.5% 10-19% 19-27% 40-100%

Risk of Mortality:

Low Medium High

POSTPARTUM PLAN

Consults: _____

Postpartum Care: _____

POSTPARTUM MONITORING:

Telemetry Yes No Fluid: Strict i/Os Other: _____
 Cardiac Nursing Yes No
 Pulse Ox: Yes No Endocarditis PPs: Yes No
 Lines: Central Arterial Peripheral

Notes: _____

Anticoagulation Plan: _____

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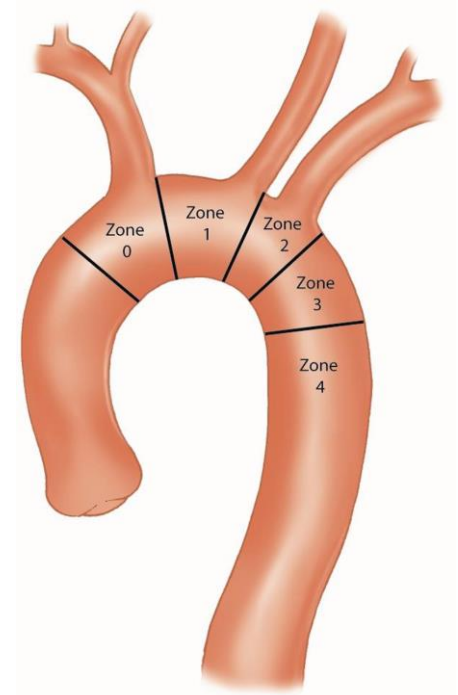
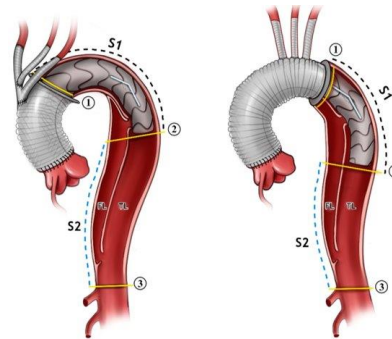
40 yo IVF pregnancy 36 wk 1d presents to ED with Left Arm Tingling

Clinical Challenge

- Full term, viable pregnancy
- Acute type A aortic dissection with root and ascending aneurysm
- Dissection extending into all head vessels
- Left upper extremity mal-perfused due to dynamic obstruction of left subclavian artery
 - Pain, neuromuscular deficits
 - Absent left radial and brachial pulse

Optimal Timing

- ❖ Proximal aortic disease
 - Root
 - Hemiarch
 - Arch replacements
- ❖ Distal aortic disease and LUE mal-perfusion



Proximal landing zones for aortic arch and upper descending thoracic aorta | [Download Scientific Diagram](#)

Obstetric Concerns

Blood Pressures

- Developing Pre-eclampsia?
- Hypotension and Fetal Perfusion

Maternal Cardiac Compromise

- Decreased Cardiac Output
- Potential Cardiac Collapse
- Cardiac Bypass/ECMO concerns

Fetal Compromise

- Opiate Effects
 - Maternal Hypotension
- Reduced Uterine Perfusion
- General Anesthesia

Delivery Considerations

- Rapid Delivery
- Postpartum Hemorrhage
- Surgical approach and planning

Surgical Planning



Skin Incision

Hx of Stage IV Endometriosis

Possible Hysterectomy

Midline Vertical Skin Incision w/ Staple Closure

Uterine Incision

Full-Term

Breech Presentation

Low Transverse Incision

Postpartum Hemorrhage Risk

Patient to be fully heparinized

Use of inhaled anesthetics

1. Postpartum oxytocin infusion
2. Prophylactic Bakri Balloon Placement
3. Vistaseal over hysterotomy
4. Staple Closure with GynOnc on standby

Neonate

Potential Fetal Compromise

Unknown Fetal Status

1. NICU Team on standby in separate OR
2. Rapid Delivery

Prophylactic surgery



40 mm

45 mm

50 mm



Vaginal delivery
(Class I)

Vaginal delivery with
epidural anaesthesia and
an expedited second stage
(Class IIa)

Caesarean section
(Class IIb)

Caesarean section
(Class IIa)

MFS (*FBN1*) with risk factors^a
(Class IIb)

nsHTAD with risk factors^a
(Class IIb)

LDS-*TGFBR1/2*
(Class IIb)

MFS (*FBN1*)
(Class I)

LDS-*TGFBR1/2*
(Class I)

nsHTAD
(Class I)

LDS-*TGFBR2/B3, SMAD2/3*
(Class IIa)

BAV with risk factors^b
(Class IIa)

BAV
(Class I)

TAD w/o P/LP variant
(Class I)

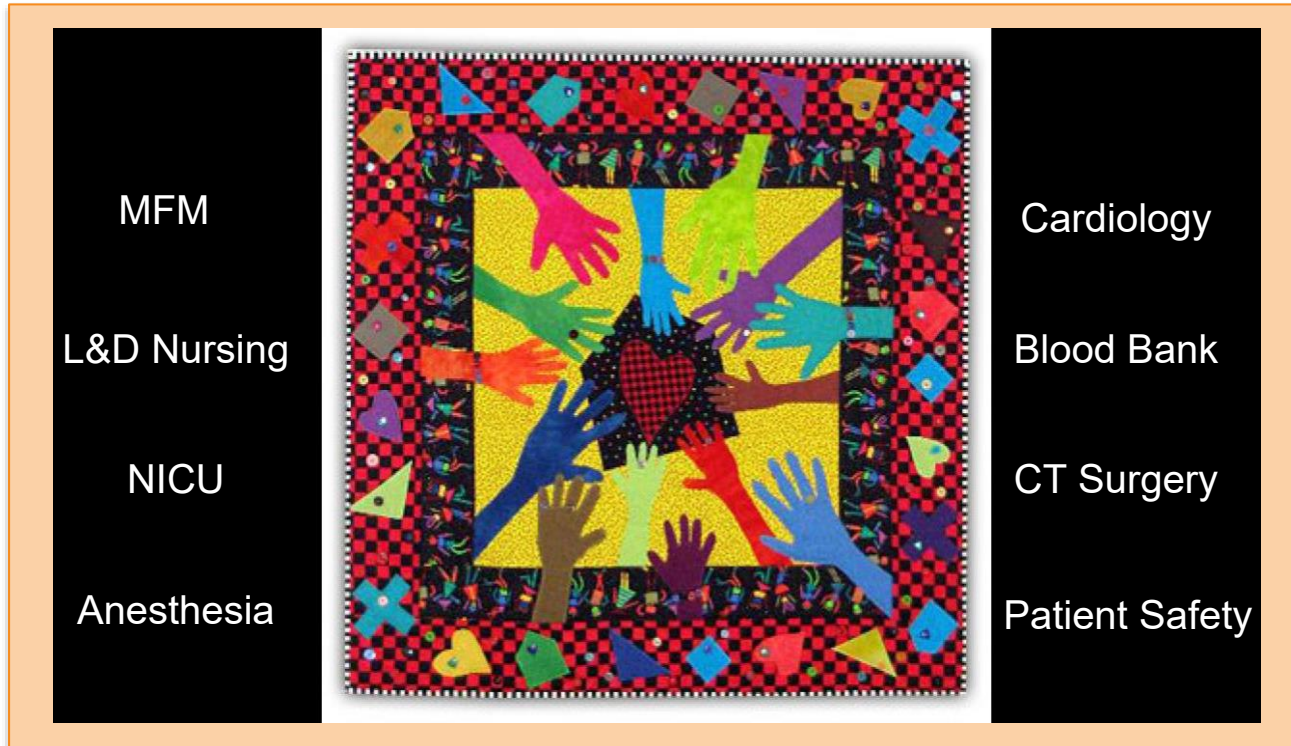
Mode of
delivery



BAV: bicuspid aortic valve
LDS: Loews–Dietz syndrome
MFS: Marfan syndrome
nsHTAD: non-syndromic heritable thoracic aortic disease
P/LP: pathogenic/likely pathogenic
TAD: thoracic aortic disease

Risk factors: family history of dissection, rapid aortic growth (≥ 3 mm/year), uncontrolled hypertension

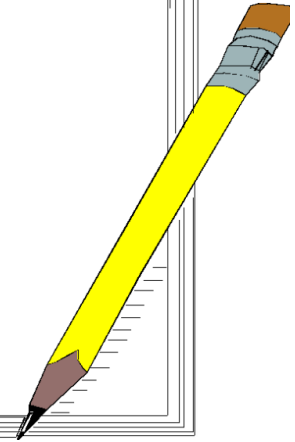
Interdisciplinary Team



Take Home Message

**A Multidisciplinary
Team is Required**

European Heart Journal 2011;32:2147-97



AHA Scientific Statement

Existing adult CHD and pregnancy guidelines recommend that patients with complex CHD should be managed and delivered at a regional or tertiary center where a multidisciplinary team with knowledge and experience in adult CHD is available.^{68,73,86} This team includes a cardiologist, a high-risk obstetrician, an anesthesiologist, and a neonatologist. Additional providers, including a geneticist, an advanced practice nurse, a social worker, and an ethicist, should be identified to assist in the coordination of care as required. Early coordination and ongoing communication between members of the multidisciplinary team are crucial to optimizing maternal

Circulation 2017;136:e50-e87

AIM Clinical Refresher Series

Sepsis in Obstetric Care ✓

May 6, 2026

Cardiac Conditions in Obstetric Care ✓

May 13, 2026

Severe Hypertension in Pregnancy

May 20, 2026 at 12:30 - 1:00 PM ET

Safe Reduction of Primary Cesarean Birth

May 27, 2026 at 12:30 - 1:00 PM ET

Join us at the 2026 AIM Annual Meeting



REGISTRATION OPEN
2026 AIM ANNUAL MEETING

June 15-17
Hyatt Regency Crystal City
Arlington, VA



Thank you!

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This webinar was developed with funding from the Health Resource and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS). The contents are those of the author(s) and do not necessarily represent the official views of, nor endorsement, by the current cooperative agreement holder, HRSA, HHS, or the U.S. Government.

