



## Cardiomyopathy in Pregnancy and Racial Disparities

Splash Page

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### Course Description:

- In all of the United States' public health, pregnancy-related mortality has the widest and most persistent racial and ethnic disparity (inequality). Alarming is the fact that African-American women have a 3 to 4-fold greater risk of maternal mortality than women of other ethnic or racial groups. The disparities stem from social, medical, clinical care and health system factors. Provider and institutional biases are factors impacting these health disparities as well.
- Cardiomyopathy has both intrigued and terrified obstetricians for more than 150 years. It is the leading cause of maternal mortality with cardiovascular disease accounting for one-third of all pregnancy-related deaths! Terrorizing is the fact that only a small fraction of these women had a known diagnosis of heart disease prior to death. However, the majority of women who died had presented with symptoms either during pregnancy or postpartum.

**Approximate Time to Complete:** 60 minutes



*Click here to download a  
print version of this course.*



Introduction



**This course will:**

- Help participants develop sound critical judgement regarding the possibility of cardiomyopathy.
- Expand participant's knowledge base on learning theories and instructional implications regarding symptoms of cardiomyopathy.
- Enable participants to develop, implement and evaluate healthcare delivery in practice setting prior to an actual event.
- Enhance participant's ability to put knowledge into active health care delivery.
- Prepare participants to address issues and implement changes in the health care setting as necessary to ensure a safe environment.
- Help participants understand racial disparities.
- Enhance participant's abilities to understand their own bias as provider's of healthcare.
- Prepare participants to address social determinants of health for a more equitable health care system.



-  Main Contents
  -  Table of Contents
  -  Cardiomyopathy
  -  Cardiovascular Disease (CVD)
  -  Case Presentation
  -  Racial Disparities - Maternal and Pregnancy-Related Mortality
  -  Racial Disparities - CVD Incidence and Comorbidities
  -  Racial Disparities - Peripartum Cardiomyopathy (PPCM) Prevalence
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  -  B-type Natriuretic Peptide (BNP) a tool
  -  Presentation of Women with CVD
  -  American College of Obstetricians & Gynecologists (ACOG) table
  -  Contributing Factors to Maternal Morbidity and Mortality with CVD
  -  Review of Cardiac Physiology Related to Pregnancy
  -  Risk Factors
  -  Incidence of Peripartum Cardiomyopathy
  -  Defining Peripartum Cardiomyopathy
  -  Risk Factors for PPCM
  -  Theory on Pathophysiology
  -  Physiologic Contributors of PPCM
  -  Pearls for Providers
  -  Algorithm



-  Racial Disparities - CVD Incidence and Comorbidities
-  Racial Disparities - Peripartum Cardiomyopathy (PPCM) Prevalence
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-  Pearls for Providers
-  Algorithm
-  Diagnosis
-  Studies
-  Summary
-  Pregnancy Complications Infographic
-  Patient Education
-  Course Completed Page

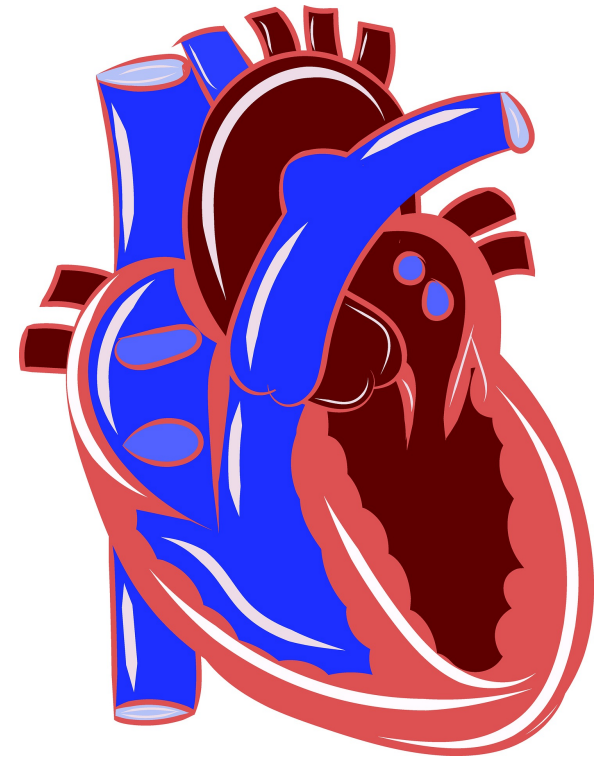




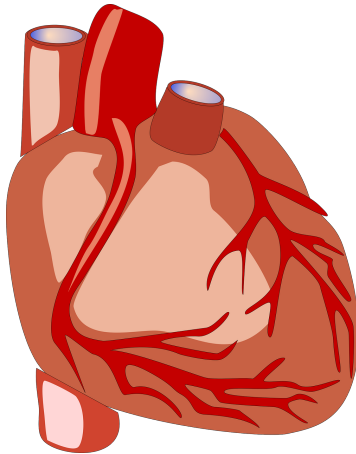
## Cardiovascular Disease (CVD) <sup>[3]</sup>

Cardiovascular disease is the leading cause of maternal mortality in the United States.

- It accounts for 1/3 of all pregnancy-related deaths.
- The majority of women who die from cardiovascular disease have no cardiac-related diagnosis at the onset of pregnancy.

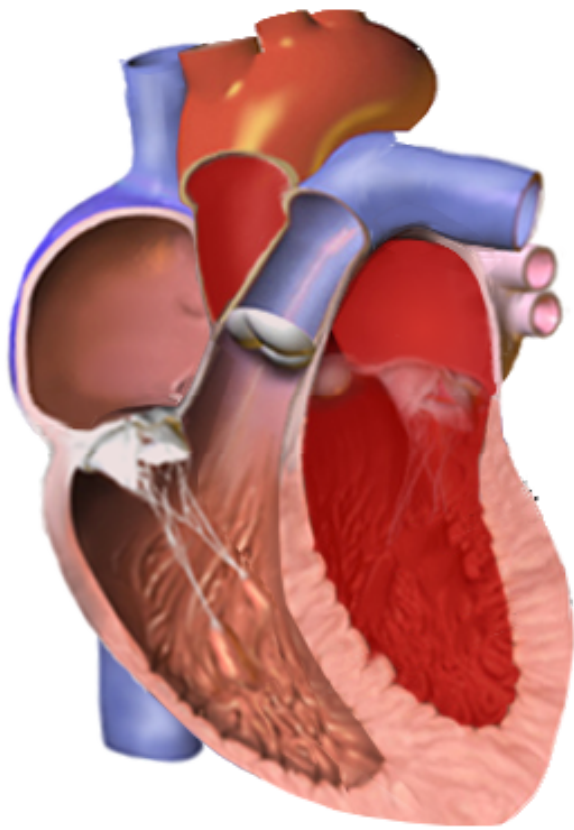


# Cardiomyopathy [\[1,2\]](#)

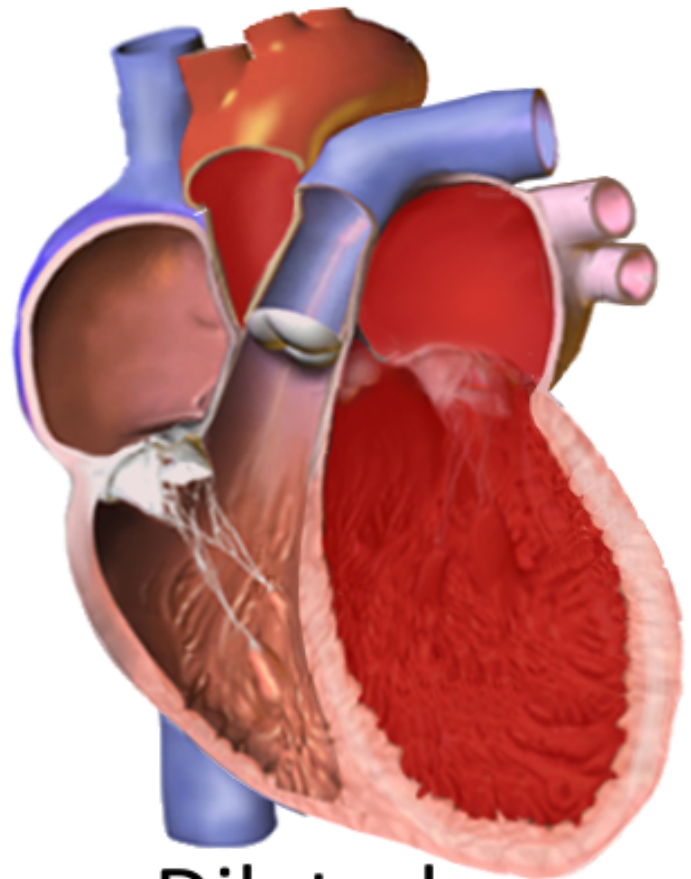


Click the heart for some pictures of common cardiomyopathies.

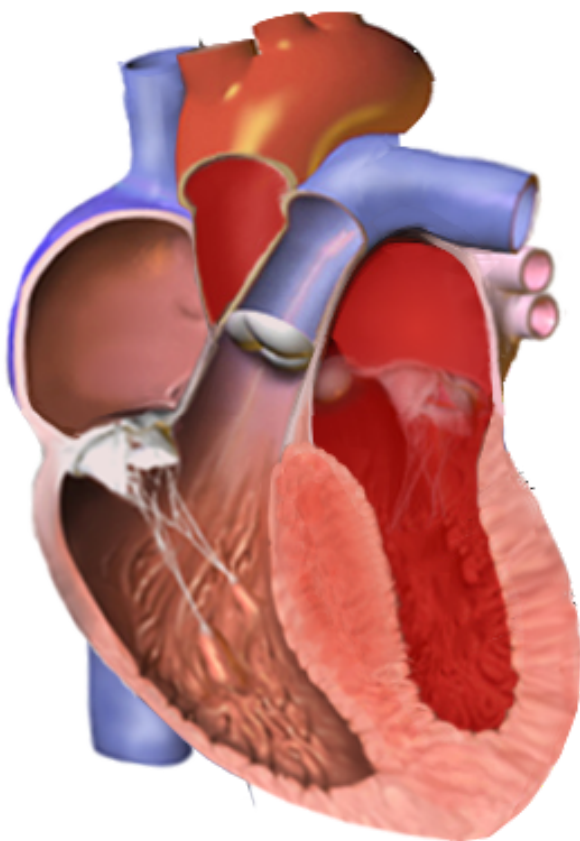
- Cardiomyopathy is a disorder in which the myocardium is either structurally or functionally abnormal in the absence of alternative etiology.
- The most common cardiomyopathies are:
  - Hypertrophic
  - Dilated
- Rare types are:
  - Arrhythmogenic right ventricular
  - Restrictive
  - Takotsubo cardiomyopathy
  - Left ventricular non-compaction cardiomyopathy.



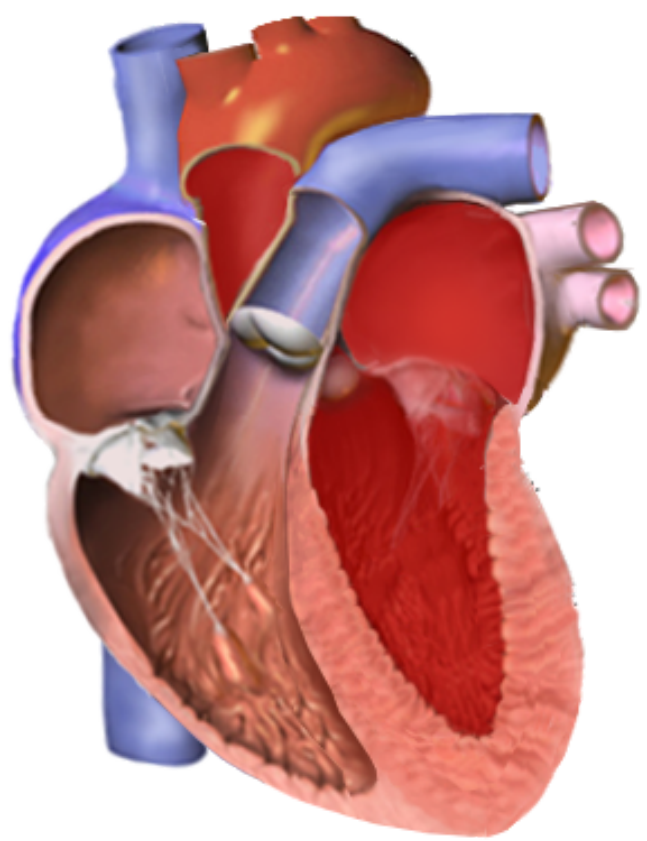
Normal



Dilated



Hypertrophic



Restrictive



## Case Presentation

"A 25-year-old obese African-American G2P2 presents to Urgent Care on postpartum day #10 with complaints of fatigue and persistent cough since delivery.

- Afebrile
- BP 110/80 mmHg
- HR 110 bpm
- RR 28 per minute
- O2 saturation 94% on room air

A chest x-ray is obtained that demonstrates bilateral infiltrates."

1 of 3



Click the next arrows to  
read the case study







## Case Presentation

"The patient is diagnosed with a respiratory infection. Fatigue is attributed to lack of sleep due to the care of a newborn. She is prescribed an antibiotic and is discharged home.

One week later, she presents again with the same symptoms. The woman is now prescribed inhalers due to a presumptive diagnosis of asthma.

Two days later, the patient experiences cardiac arrest at home. Resuscitation attempts are unsuccessful. Autopsy demonstrates cardiomyopathy."

« 2 of 3 »



Click the next arrows to  
read the case study







## Case Presentation

"The case is representative of numerous deaths that are attributed to cardiovascular disease, particularly in African American women.

Deaths from cardiovascular disease are at least partially attributed to lack of awareness at the level of both the patient and the provider, which contributes to delayed or missed diagnoses." [\[4\]](#)

« 3 of 3 »



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## Racial Disparities - Maternal and Pregnancy-Related Mortality

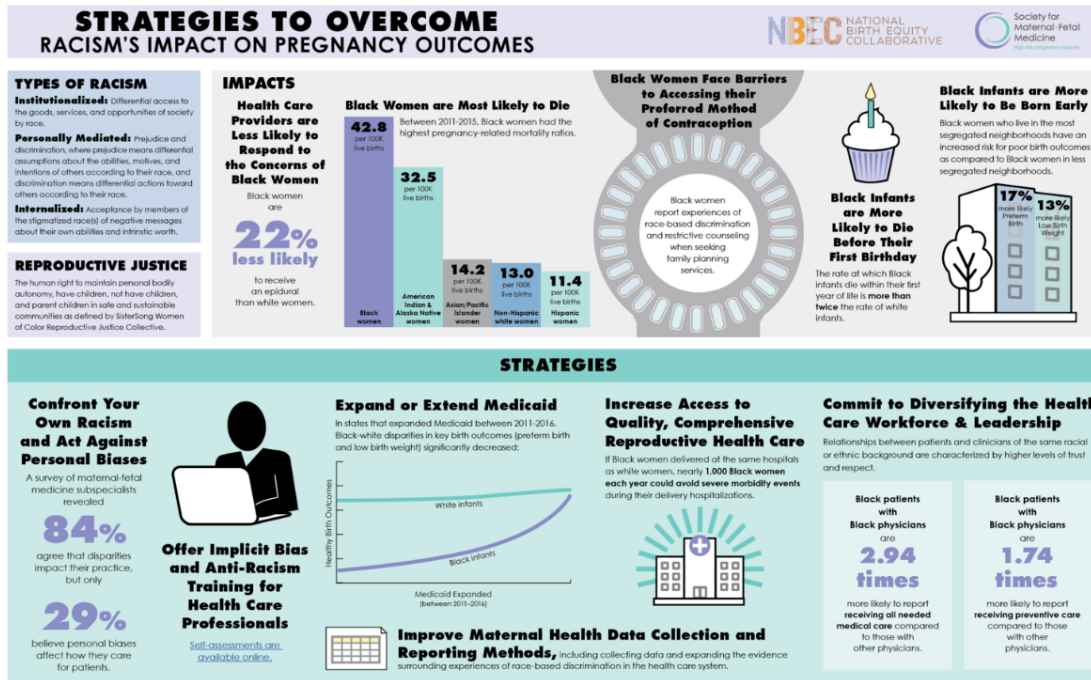
- African-American women have a 3-4 fold greater risk of maternal mortality than women of other ethnic or racial groups. [\[5\]](#).
- In California, pregnancy-related CVD is more than 8 times higher in African-American women than that for white women [\[6\]](#).
- Pregnancy-related mortality has the widest and most persistent racial and ethnic disparity in all of U.S. public health.



## Racial Disparities - CVD Incidence and Comorbidities [5,6]

- Higher rates of pre-existing CVD occurs among African-American women [5].
- Comorbid conditions, such as hypertensive disorders of pregnancy, are more pervasive among African-American women.
  - Hypertensive disorders correlate to all types of CVD.
- It has been reported that African-American women have a lower number of visits for prenatal care and seek care later in pregnancy when compared to women of other racial and ethnic groups [7].





Click the image for a larger view of the infographic





# STRATEGIES TO OVERCOME RACISM'S IMPACT ON PREGNANCY OUTCOMES

## TYPES OF RACISM

**Institutionalized:** Differential access to the goods, services, and opportunities of society by race.

**Personally Mediated:** Prejudice and discrimination, where prejudice means differential assumptions about the abilities, motives, and intentions of others according to their race, and discrimination means differential actions toward others according to their race.

**Internalized:** Acceptance by members of the stigmatized race(s) of negative messages about their own abilities and intrinsic worth.

## REPRODUCTIVE JUSTICE

The human right to maintain personal bodily autonomy, have children, not have children, and parent children in safe and sustainable communities as defined by SisterSong Women of Color Reproductive Justice Collective.

## IMPACTS

**Health Care Providers are Less Likely to Respond to the Concerns of Black Women**

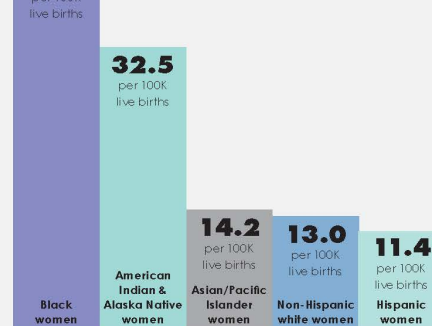
Black women are

**22% less likely**

to receive an epidural than white women.

## Black Women are Most Likely to Die

Between 2011-2015, Black women had the highest pregnancy-related mortality ratios.



## Black Women Face Barriers to Accessing their Preferred Method of Contraception

Black women report experiences of race-based discrimination and restrictive counseling when seeking family planning services.

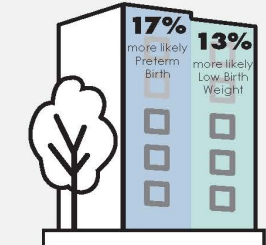


**Black Infants are More Likely to Die Before Their First Birthday**

The rate at which Black infants die within their first year of life is **more than twice** the rate of white infants.

## Black Infants are More Likely to Be Born Early

Black women who live in the most segregated neighborhoods have an increased risk for poor birth outcomes as compared to Black women in less segregated neighborhoods.



## STRATEGIES

### Confront Your Own Racism and Act Against Personal Biases

A survey of maternal-fetal medicine subspecialists revealed

**84%**

agree that disparities impact their practice, but only

**29%**

believe personal biases affect how they care for patients.

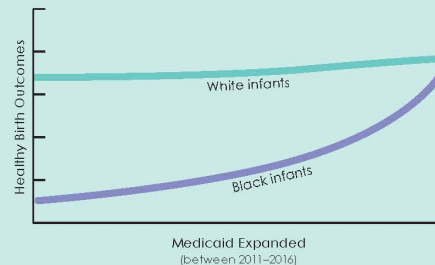


**Offer Implicit Bias and Anti-Racism Training for Health Care Professionals**

[Self-assessments are available online.](#)

### Expand or Extend Medicaid

In states that expanded Medicaid between 2011-2016, Black-white disparities in key birth outcomes (preterm birth and low birth weight) significantly decreased:



### Improve Maternal Health Data Collection and Reporting Methods,

including collecting data and expanding the evidence surrounding experiences of race-based discrimination in the health care system.

### Increase Access to Quality, Comprehensive Reproductive Health Care

If Black women delivered at the same hospitals as white women, nearly **1,000 Black women each year could avoid severe morbidity events** during their delivery hospitalizations.



### Commit to Diversifying the Health Care Workforce & Leadership

Relationships between patients and clinicians of the same racial or ethnic background are characterized by higher levels of trust and respect.

Black patients with Black physicians are

**2.94 times**

more likely to report receiving all needed medical care compared to those with other physicians.

Black patients with Black physicians are

**1.74 times**

more likely to report receiving preventive care compared to those with other physicians.

For more information, visit **SMFM.org/equity**.



## Racial Disparities - Peripartum Cardiomyopathy (PPCM) [8-11]

- All forms of hypertensive disease in pregnancy increase the risk for to PPCM
  - Women with gestational hypertension, chronic hypertension, and mild preeclampsia had 2- to 5-fold increases in odds of PPCM.
  - Women with severe preeclampsia had a 17-fold increase in odds of PPCM
  - Women with eclampsia had a 25-fold increase in PPCM.
- Compared to white women, African American women with PPCM are typically:
  - Younger
  - Have more severe symptoms
  - More commonly present postpartum



## Racial Disparities [\[12-19\]](#):

Maternal mortality and morbidity are impacted by racial and ethnic disparities that stem from social, medical, and health system factors.

1 of 5 



Click the next arrows to read more information.





## Racial Disparities [\[12-19\]](#):

The incidence of hypertension and preeclampsia is higher with African-American women, yet these women are less likely to be hospitalized for treatment.

◀ 2 of 5 ▶



Click the next arrows to  
read more information.





## Racial Disparities [\[12-19\]](#):

Maternal health outcomes are likely impacted by the chronic stress and experiences of racism over the course of life, which may contribute to the higher rates of low birth weight infants and infant mortality.

◀ 3 of 5 ▶



Click the next arrows to  
read more information.







## Racial Disparities [\[12-19\]](#):

Birth outcomes have known factors where high stress levels (the allostatic load) both before and after pregnancy impact the outcomes. African-American women are subject to higher loads which is multi-factorial with ‘embodied inequality’ arising from environmental, social, and genetic factors.

◀ 4 of 5 ▶



Click the next arrows to read more information.



## Racial Disparities [\[12-19\]](#):

- Social factors that have been shown to impact maternal health include:
  - Malnutrition
  - Illicit substance exposure
  - Intimate partner violence
  - Smoking
  - Infections
  - Racism
  - Inadequate medical care
  - Inadequate dental care
- These social factors highly correlate with socioeconomic status.
- African American women living in underserved areas often lack resources to maintain a healthy lifestyle, which further impacts the negative cycle of poor reproductive and maternal health.
- Even African American women with higher socioeconomic status and education do not necessarily have improved pregnancy outcomes.

◀ 5 of 5



## Racial Disparities - Provider and Institutional Bias [[19-23](#)]

- Provider demographics have been shown to be linked to varying levels of racism and bias.
- The doctor-patient interaction is influenced by racial bias (conscious or not), gender bias (conscious or not), social ideas about race and class. These issues can shape and influence treatment disparities.



Click the picture to learn more about provider and institutional bias.

- African American patients are less likely to be offered cardiovascular treatment of proven benefit [7-26].
- African American patients are more likely to have worse outcomes, including higher mortality rates, after cardiac procedures [7-26].





## Racial Disparities - Clinical Implications [24-26]

Complaints from patients need to be taken seriously, and clinicians need to maintain a high suspicion for CVD, especially when seeing African-American women who are pregnant or postpartum.

1 of 7 



Click the next arrows to read more information.







## Racial Disparities - Clinical Implications [24-26]

- Careful evaluation should occur if an African American woman presents with any of the following symptoms either during pregnancy or in the postpartum period, particularly if the pregnancy is complicated by hypertension or obesity:
  - Extreme shortness of breath, especially when lying down
  - Persistent cough unrelieved with treatment
  - Significant fatigue
  - Palpitations
  - Swelling
  - Chest pain
  - Abnormal vital signs

◀ 2 of 7 ▶



Click the next arrows to read more information.





## Racial Disparities - Clinical Implications [24-26]

- Everyone has an opportunity to reduce disparities when diagnosing and treating CVD by implementing standardized protocols

◀ 3 of 7 ▶



Click the next arrows to read more information.





## Racial Disparities - Clinical Implications [24-26]

This video explains systemic racism:

Systemic Racism Explained



<http://www.youtube.com/watch?v=BMrCpoghDd0>

▶ 0 00:00 | 07:21 🔊 📺



4 of 7



Click the next arrows to read more information.





## Racial Disparities - Clinical Implications [24-26]

Advancing Quality & Racial Equity in Maternal and Postpartum Care is Multi-factorial:

- Fund, support, and amplify Black women/Black people-led community initiatives that focus on activating the power, potential, passion, and promise, not pathology, of Black lives and livelihoods (ethics)
- Operationalize Black women's/people's theories in naming, defining, examining the challenges and solutions (knowledge)
- Examine leadership's proximity to the outcome(s) of interest and the communities most impacted and how proximity, positionality, and power impact 4Ts: Truth, Trust, Transparency, & Transformation (leadership)

◀ 5 of 7 ▶



Click the next arrows to read more information.





## Racial Disparities - Clinical Implications [24-26]

Advancing Quality & Racial Equity in Maternal and Postpartum Care is Multi-factorial:

- Operationalize Black women's/people's theories in naming, defining, examining the challenges and solutions and prioritize methods of data collection and analysis of BOTH qualitative (narratives) and quantitative (numbers) data that illuminate the nuances, diversity, beauty, complexity, and power of Black women's/Black people's humanity (science)
- Implement measurement, monitoring, and mitigation strategies that best uncovers the problems and solutions as defined for, by, and with Black patient, community, and content experts (measurement strategies)

◀ 6 of 7 ▶



Click the next arrows to read more information.







## Racial Disparities - Clinical Implications [24-26]

Advancing Quality & Racial Equity in Maternal and Postpartum Care is Multi-factorial:

- Consider data sources/types and how data is collected, analyzed, interpreted, utilized, stored, triangulated, integrated, and distributed (data quality and accessibility)
- How does your data reinforce power inequities, racism, misogyny?
- Data sovereignty, sharing, & ownership
- Acknowledge, activate, affirm, and amply community participation and partnership with equitable compensation without structural and institutional barriers (e.g., traditional reimbursement practices) throughout the other six QI pain points (community participation and partnership)
- Examine power: differential risks, facilitators, barriers, burdens, and benefits between community, funder, and MCH agency



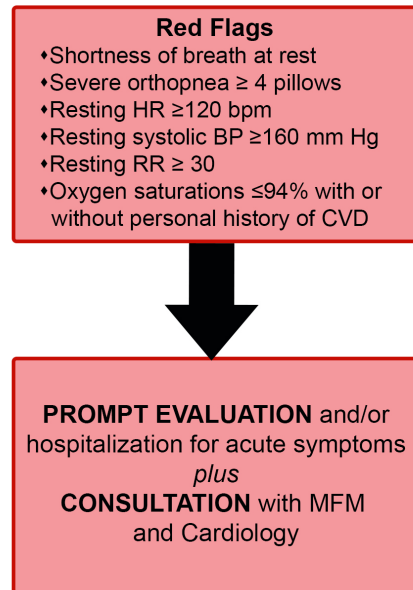
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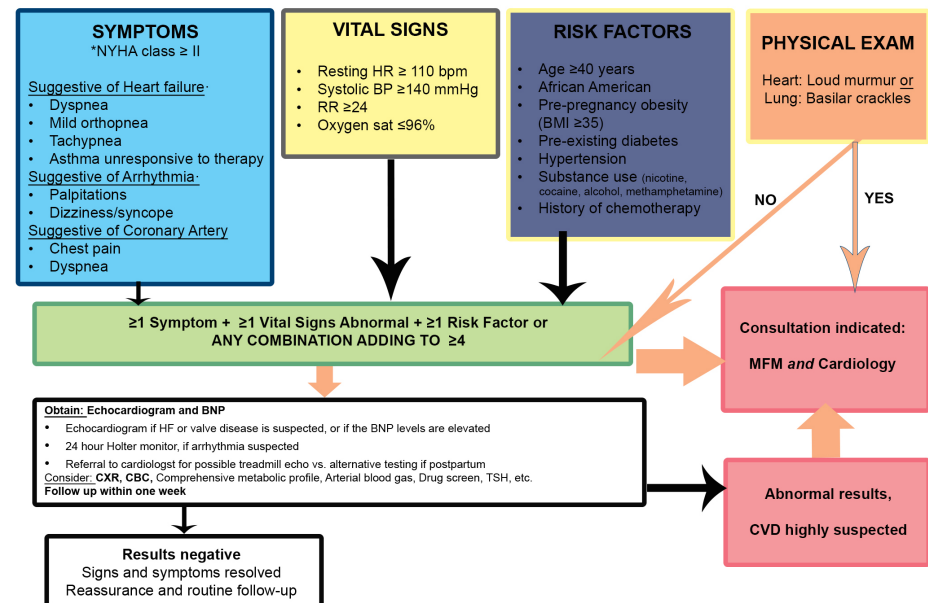
7 of 7



## Cardiomyopathy: an algorithm that starts with red flags on the left and for persons with out any red flags on the right. [4]



No red flags and/or no personal history of CVD and hemodynamically stable:



Algorithm

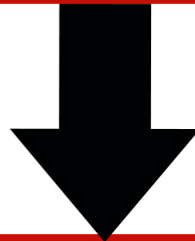


Click the picture for a larger view



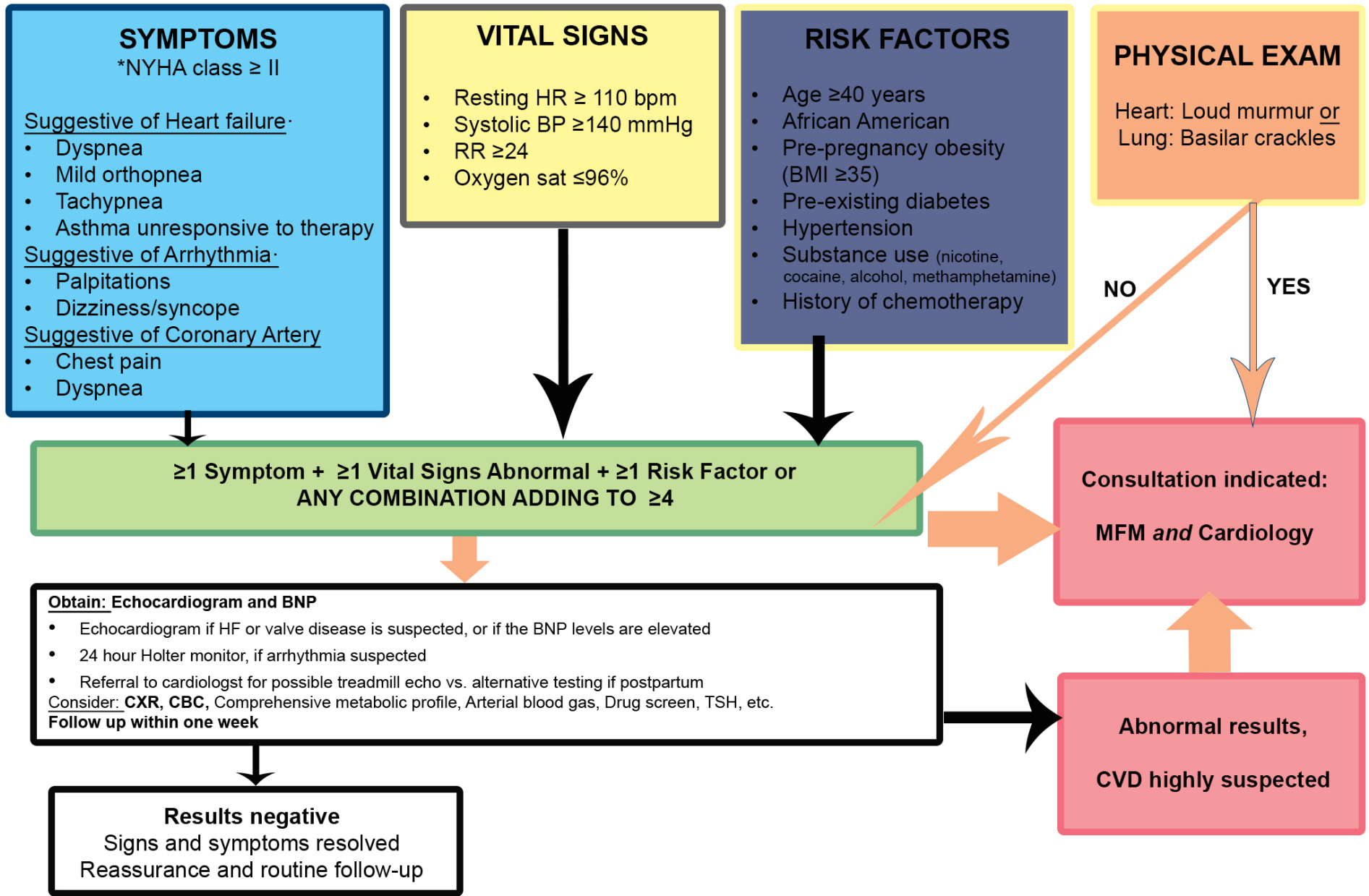
### **Red Flags**

- ♦ Shortness of breath at rest
- ♦ Severe orthopnea  $\geq 4$  pillows
- ♦ Resting HR  $\geq 120$  bpm
- ♦ Resting systolic BP  $\geq 160$  mm Hg
- ♦ Resting RR  $\geq 30$
- ♦ Oxygen saturations  $\leq 94\%$  with or without personal history of CVD



**PROMPT EVALUATION** and/or  
hospitalization for acute symptoms  
*plus*  
**CONSULTATION** with MFM  
and Cardiology

## If no red flags, proceed with this evaluation



Women presenting with postpartum shortness of breath (SOB), ask if she has:

- been to the ER since giving birth
- a history of substance use 7/or nicotine
- a history of cardiac or pulmonary symptoms
- experienced a failure to lose weight or unusual weight gain and how much
- an inability to lie flat due to SOB, and if this has changed, how many pillows are needed
- unexpected fatigue, for example, need to stop walking frequently when walking
- pedal or lower extremity edema, if it is improving or worsening
- new onset cough or wheezing
- chest pain, palpitations or dizziness
- symptoms that are deteriorating
- difficulty performing activities of daily living
- worsen level of exercise tolerance

#### KEY POINTS

- **Symptoms related to physiologic changes of pregnancy should be improving postpartum**
- **visits to ER for dyspnea should raise suspicion for CVD**
- **women of childbearing age should be questioned about recent pregnancies, in addition to their last menstrual period**
- **postpartum dyspnea or new onset cough is concerning for CVD**



## Evaluation of Cardiac Patient

Click here to  
review the case  
study.

- Electrocardiogram (EKG)
- Echocardiogram
- B-type natriuretic peptide (BNP)
- Other tests to consider:
  - Holter monitor
  - Chest X-ray
  - Complete blood count (CBC)
  - Comprehensive metabolic panel (CMP)
  - Arterial blood gas (ABG)
  - TSH
  - Urine drug screen



Click the next arrows on the clipboard  
to read more information.

1 of 2 >>





## Evaluation of Cardiac Patient

Click here to  
review the case  
study.

The following Red Flags **MUST** prompt further evaluation and possible hospitalization or Maternal Fetal Medicine consultation [4]:

- Shortness of breath at rest
- Severe orthopnea  $\geq 4$  pillows
- Resting HR  $\geq 120$  bpm
- Resting systolic BP  $\geq 160$  mmHg
- Resting RR  $\geq 30$
- Oxygen saturations  $\leq 94\%$  with or without personal history of cardiovascular disease



Click the next arrow to continue

◀ 2 of 2



"A 25-year-old obese African-American G2P2 presents to Urgent Care on postpartum day #10 with complaints of fatigue and persistent cough since delivery.

- Afebrile
- BP 110/80 mmHg
- HR 110 bpm
- RR 28 per minute
- O2 saturation 94% on room air

A chest x-ray is obtained that demonstrates bilateral infiltrates.

The patient is diagnosed with a respiratory infection. Fatigue is attributed to lack of sleep due to the care of a newborn. She is prescribed an antibiotic and is discharged home.

One week later, she presents again with the same symptoms. The woman is now prescribed inhalers due to a presumptive diagnosis of asthma.

Two days later, the patient experiences cardiac arrest at home. Resuscitation attempts are unsuccessful. Autopsy demonstrates cardiomyopathy."

The case is representative of numerous deaths that are attributed to cardiovascular disease, particularly in African American women.

Deaths from cardiovascular disease are at least partially attributed to lack of awareness at the level of both the patient and the provider, which contributes to delayed or missed diagnoses [\[4\]](#)."



- BNP is a neurohormone secreted predominantly by the cardiac ventricles in response to volume expansion or pressure overload.
- BNP acts as the body's defense against volume overload by virtue of its vasodilatory and renin-angiotensin-aldosterone system inhibitory properties that lead to natriuresis and diuresis.
- BNP may help identify asymptomatic women with left ventricular dysfunction.

1 of 6



Click the next arrows to  
read more information.





### BNP Facts [[4,40-44](#)]:

- Half-life is 20 minutes
- BNP level <100pg/mL is considered normal
- Women tend to have higher levels than men
- Known to be elevated in patients with renal insufficiency or renal failure
- Obesity is associated with lower plasma BNP compared to non-obese
- BNP level under 50pg/mL has a negative predictive value of 96% in excluding heart failure



2 of 6



Click the next arrows to  
read more information.

B-type Natriuretic Peptide (BNP) a tool







## BNP and Pregnancy:

- BNP levels remain stable throughout the pregnancy and postpartum period, despite an increase in left ventricular wall mass and end-diastolic dimensions during normal pregnancy [[44](#)].



3 of 6



Click the next arrows to  
read more information.

B-type Natriuretic Peptide (BNP) a tool





## Preexisting Heart Disease:

- Serial measurements of N-terminal pro-BNP (NT-proBNP) are shown to be predictive of adverse cardiovascular outcomes in women with *preexisting* dilated cardiomyopathy [[29](#)].

Click here for more information on  
BNP and pregnancy.



4 of 6



Click the next arrows to  
read more information.

B-type Natriuretic Peptide (BNP) a tool







## BNP Facts in Pregnancy [[40-44](#)]:

- The median level of BNP was noted to be 19pg/mL during pregnancy versus 10pg/mL in the non-pregnant state from a longitudinal study group of plasma levels.
- Significant elevations are seen in patients with hypertensive disorders including preeclampsia.



4 of 6



Click the next arrows to  
read more information.

B-type Natriuretic Peptide (BNP) a tool





## Pregnant Women with Symptoms [45]:

- BNP levels correlate with elevated left ventricular filling pressures in symptomatic pregnant women.
- Can help determine both systolic and diastolic left ventricular dysfunction.

[Click for a diagram of the heart with BNP](#)



5 of 6

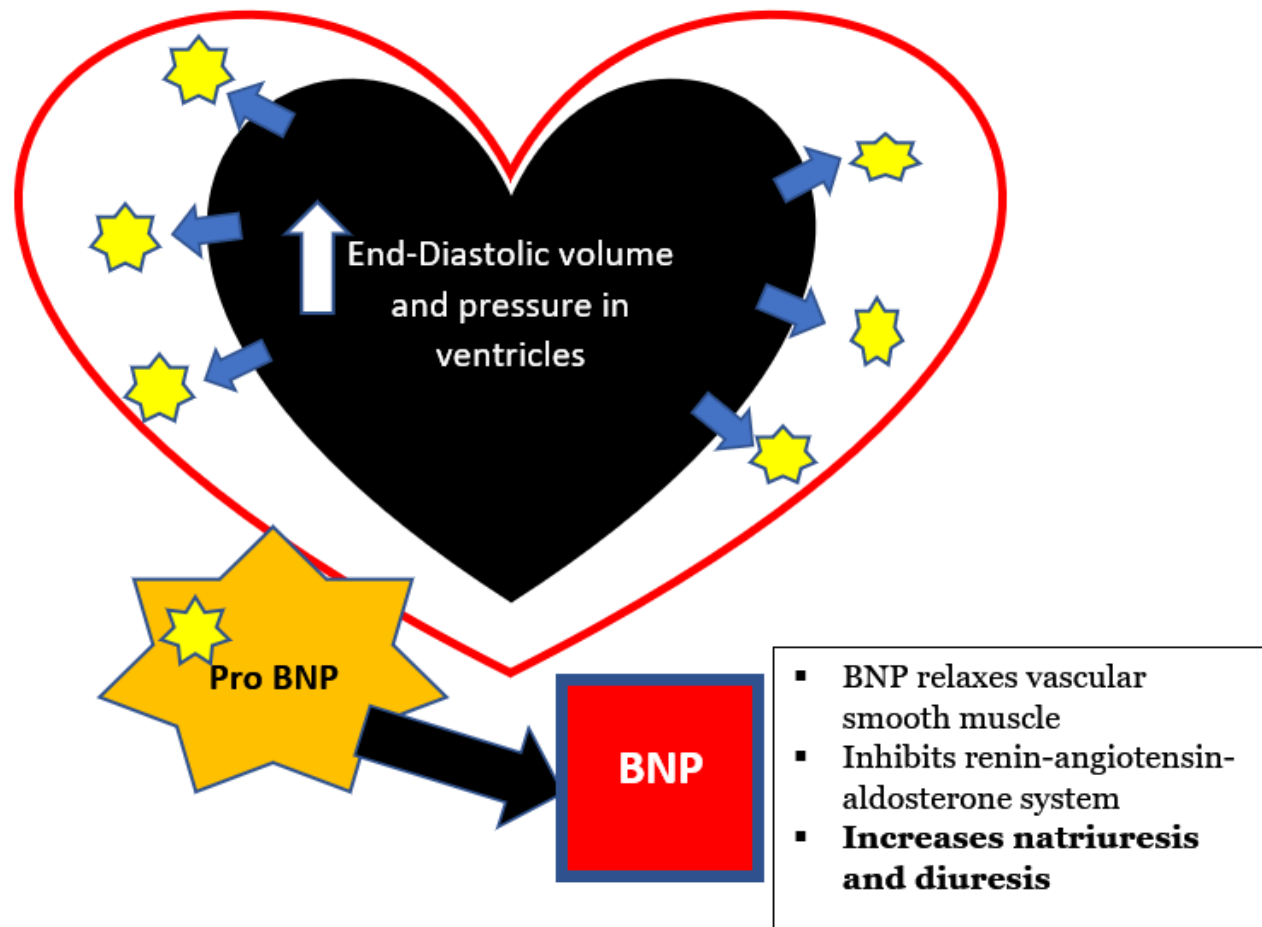


Click the next arrows to read more information.

B-type Natriuretic Peptide (BNP) a tool



Neurohormone secreted by the cardiac ventricles in response to ventricular volume expansion and pressure overload





## In Summary [\[4\]](#):

- BNP may assist clinicians in triaging patients who present symptoms concerning for cardiovascular disease:
  - Simple test
  - Relatively inexpensive
  - Readily available



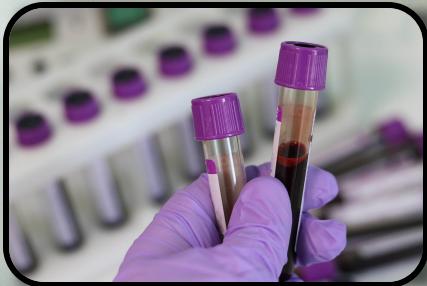
6 of 6



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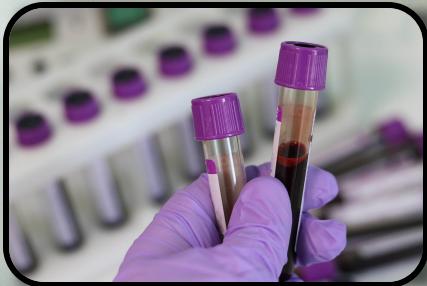
Click the image above to read more information.

## B-type Natriuretic Peptide (BNP) [[27-29](#)]

- BNP is a neurohormone that is secreted predominantly by the cardiac ventricles in response to volume or pressure overload.
- BNP level of <100 pg/mL is normal.
- BNP may help identify asymptomatic women with left ventricular dysfunction BNP may help identify asymptomatic or mildly symptomatic women with left ventricular dysfunction.
- BNP acts as the body's defense against volume overload by virtue of its vasodilatory and renin-angiotensin-aldosterone system inhibitory properties that lead to natriuresis and diuresis.





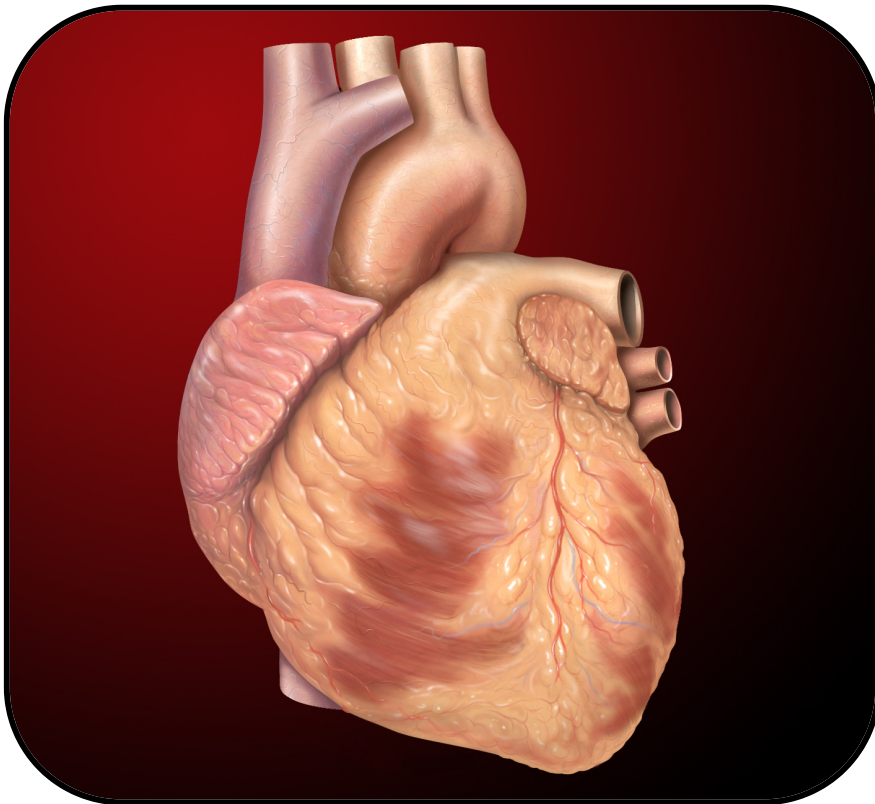


Click the image above to read more information.

## B-type Natriuretic Peptide (BNP) [[27](#)-[29](#)]

- BNP levels in pregnancy remain within normal range despite significant volume overload in pregnancy.
- An elevated BNP level should trigger an echocardiogram to evaluate cardiac function.
- Serial measurements of BNP in pregnant women with dilated cardiomyopathy are shown to be predictive of adverse cardiovascular outcomes.





## Presentation of Women with CVD:

- Diagnosis of CVD in pregnancy is difficult due to the overlap of symptoms with typical symptoms of pregnancy such as:
  - Shortness of breath
  - Fatigue
  - Exercise limitation
  - Swelling
- Cardiovascular risk assessment should be performed in all pregnant women at their first prenatal visit [\[4\]](#).



## How to differentiate common signs and symptoms of normal pregnancy versus those that are abnormal and indicative of underlying cardiac disease\*

|                               | <b>ROUTINE CARE</b><br>Reassurance                                        | <b>CAUTION</b><br>Nonemergent Evaluation                                              | <b>STOP</b><br>Prompt Evaluation Pregnancy Heart Team                                                          |
|-------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>HISTORY OF CVD</b>         | None                                                                      | None                                                                                  | Yes                                                                                                            |
| <b>SELF-REPORTED SYMPTOMS</b> | 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 |
| Fatigue                       | Mild                                                                      | Mild or moderate                                                                      | Extreme                                                                                                        |
| <b>VITAL SIGNS</b>            |                                                                           |                                                                                       |                                                                                                                |
| Heart Rate                    | <90                                                                       | 90-119                                                                                | ≥120                                                                                                           |
| <b>PHYSICAL EXAMINATION</b>   | Normal                                                                    |                                                                                       |                                                                                                                |
| Edema                         | Mild                                                                      | Moderate                                                                              | Marked                                                                                                         |

\*This is an abbreviated list—see Practice Bulletin *Pregnancy and Heart Disease* for complete table of symptoms.

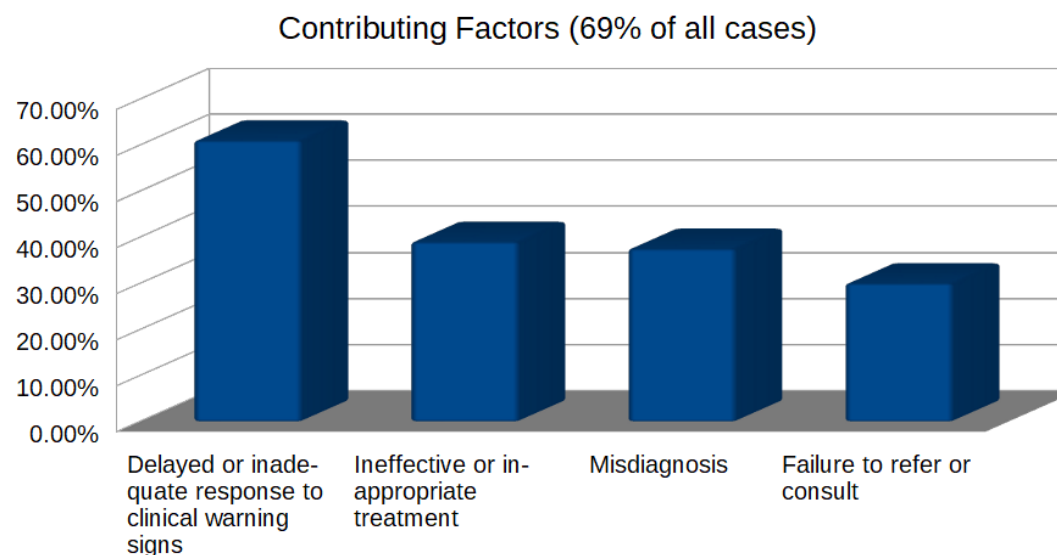


Eliminate preventable maternal mortality  
#EveryMomEveryTime

Another contributing factor to maternal morbidity and mortality with CVD from the health care provider perspective:

- Insufficient use of hypertensive medications and misdiagnosis of “new onset asthma” or other respiratory illness

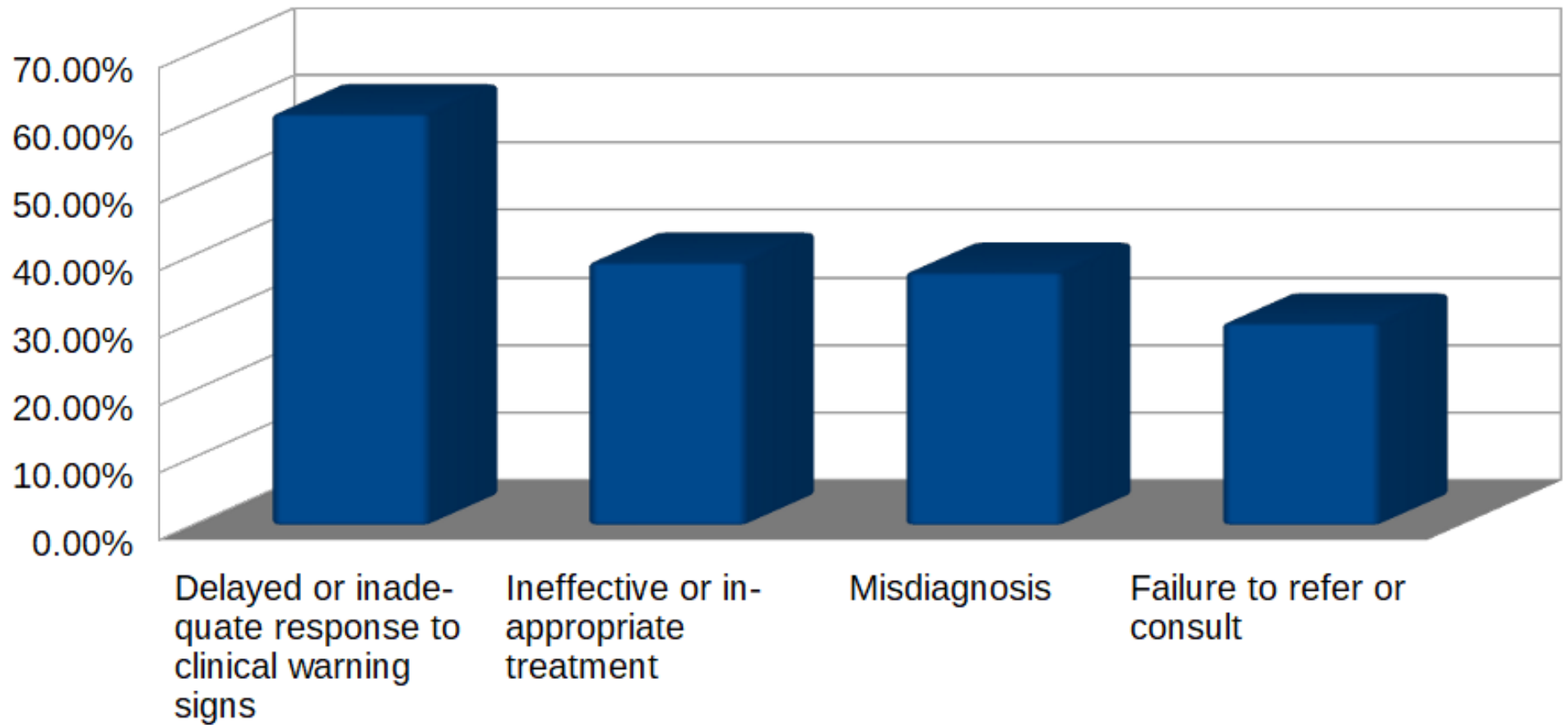
Click here for  
a list of  
improvement  
opportunities.



Click the graph  
above for a larger



### Contributing Factors (69% of all cases)





Improvement opportunities [\[4\]](#):

- Better recognition of signs and symptoms of CVD in pregnancy:
  - Shortness of breath, fatigue
  - Tachycardia, BP change, and low oxygen saturation
- Improved hypertensive management
- Cautious diagnosis of new onset asthma, asthma exacerbation or other respiratory pathology

## Review of Cardiac Physiology in Pregnancy

- Cardiac changes begin at 5-6 weeks gestation
- 30-50% increase in cardiac output
- Decreased systemic vascular resistance
- Decreased systolic and diastolic blood pressure [[1](#),[35](#)].
- Hormones secreted by the corpus luteum likely orchestrate these early cardiovascular changes [[1](#),[35](#)].
- These hormones induce profound changes in systemic vascular resistance and result in significantly decreased systolic and diastolic blood pressures as early as 5 weeks [[1](#),[36](#)].



Click the next arrow to review information on cardiac physiology in pregnancy.





## Review of Cardiac Physiology in Pregnancy

- At least half of the total rise in cardiac output during pregnancy has manifested as early as 8 weeks gestation [[37](#),[38](#)].
- Mean BP nadirs at 16-29 weeks gestation [[37](#),[38](#)].
- “From early pregnancy until about 16 weeks of gestation a reduction in peripheral vascular resistance occurs causing stroke volume to be augmented and increase after this time in gestation, typically stroke volume plateaus along with cardiac output [[1](#)].”



Click the next arrow to review information on cardiac physiology in pregnancy.



2 of 3





## Review of Cardiac Physiology in Pregnancy

- Left ventricular contractility does not change.
- It is uncharacteristic in a high output cardiac state with hyperdynamic function to maintain normal left ventricular function as it is in pregnancy [[35](#)].
- Pregnancy induced hypervolemia causes cardiac enlargement
- Cardiac remodeling is a normal physiologic response to pregnancy that typically resolves by 3 months postpartum



Click the next arrow to continue



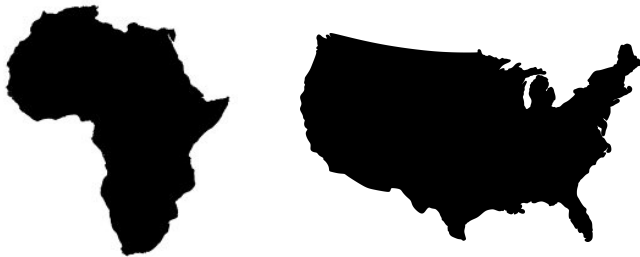
3 of 3



## **Risk factors for cardiomyopathy during pregnancy [[1](#),[34](#), [51-53](#)]:**

- Multiparity
- Advanced maternal age
- Multifetal pregnancy
- Preeclampsia
- Gestational HTN
- African-American race
- History of preeclampsia, eclampsia, or postpartum hypertension
- Maternal cocaine abuse
- >4 weeks of oral tocolytic therapy with beta adrenergic agonists such as terbutaline





Africa and Haiti

United States



Mouse over each map above for more on cardiomyopathy incidence in each location

## Incidence of Peripartum Cardiomyopathy [\[30\]](#):

- Incidence varies widely owing to numerous factors [\[32\]](#):
  - Geographic difficult area
  - Differing definitions
  - Evolving diagnostic criteria
  - Lacking of accurate data

The incidence of peripartum cardiomyopathy in the U.S. has increased from 1 in 4,350 births in the early 1990s to 1 in 2,230 births in the mid-2000's [[31](#)].

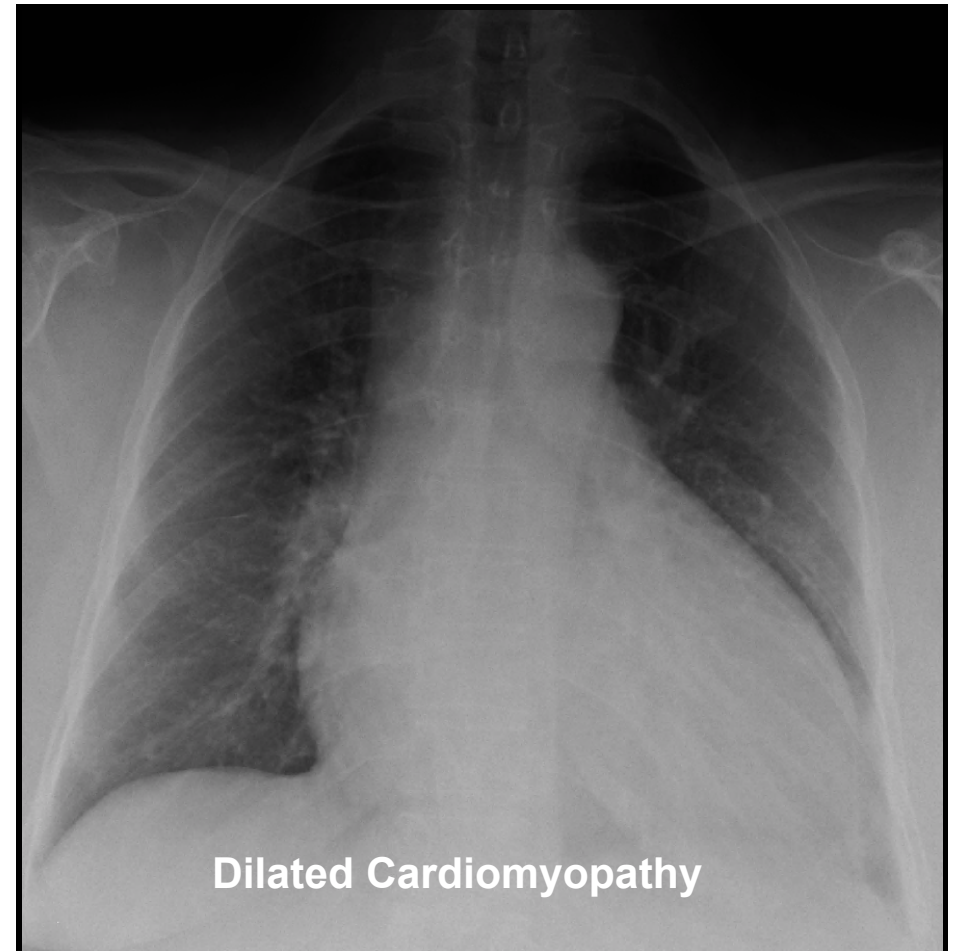
Worldwide, peripartum cardiomyopathy affects approximately 1 per 1,000 pregnancies with geographic hot spots found in Africa--up to 1 per 100 pregnancies-- and Haiti--1 in 300 births [[30](#)]. Genetic predisposition may contribute to geographical variation.

Peripartum cardiomyopathy is defined by:

- Left ventricular dysfunction
- Development of cardiac failure without a known cause
- Occurring in the final month of pregnancy
- Up to 5 months postpartum [\[1\]](#).



Click the xray for more information.



## **Definition of Cardiomyopathy**

Absence of another identifiable cause for the heart failure [\[46\]](#):

- Left ventricular (LV) systolic dysfunction with an ejection fraction (LVEF) of less than 45% [\[46\]](#).
- The LV may or may not be dilated [\[46\]](#).





## Risk Factors for PPCM

### Advanced maternal age [[39](#)]:

- More than half of PPCM occurs in women >30 years old.
- The incidence of PPCM is 10-fold higher in women >40 years old compared with those <20 years old.



Click the next arrows to read more information.

1 of 4 >>





## Risk Factors for PPCM

**African American race is strongly associated risk factor for PPCM [10]:**

- In the US, there is a 5-15% increased risk for PPCM in African American women, as compared to other races



Click the next arrows to read more information.

◀ 2 of 4 ▶





## Risk Factors for PPCM

### Hypertensive Disorders of Pregnancy

- Pre-eclampsia significantly increases the risk for development of PPCM.
- The incidence of PPCM, when associated with hypertensive disorders, increases from 5 fold to 30 fold.
  - Pulmonary edema caused by preeclampsia can mimic cardiogenic edema caused by heart failure from peripartum cardiomyopathy.
  - Distinguishing between the two etiologies is imperative to management and outcome.



Click the next arrows to read more information.

« 3 of 4 »



## Risk Factors for PPCM

### **Multifetal pregnancy:**

- 9% of cases of peripartum cardiomyopathy were in women with a multifetal pregnancy.

### **Common pregnancy complications may increase the risk for PPCM**

- Obesity
- Anemia
- Infection

◀◀ 4 of 4



Click the next  
arrow to continue



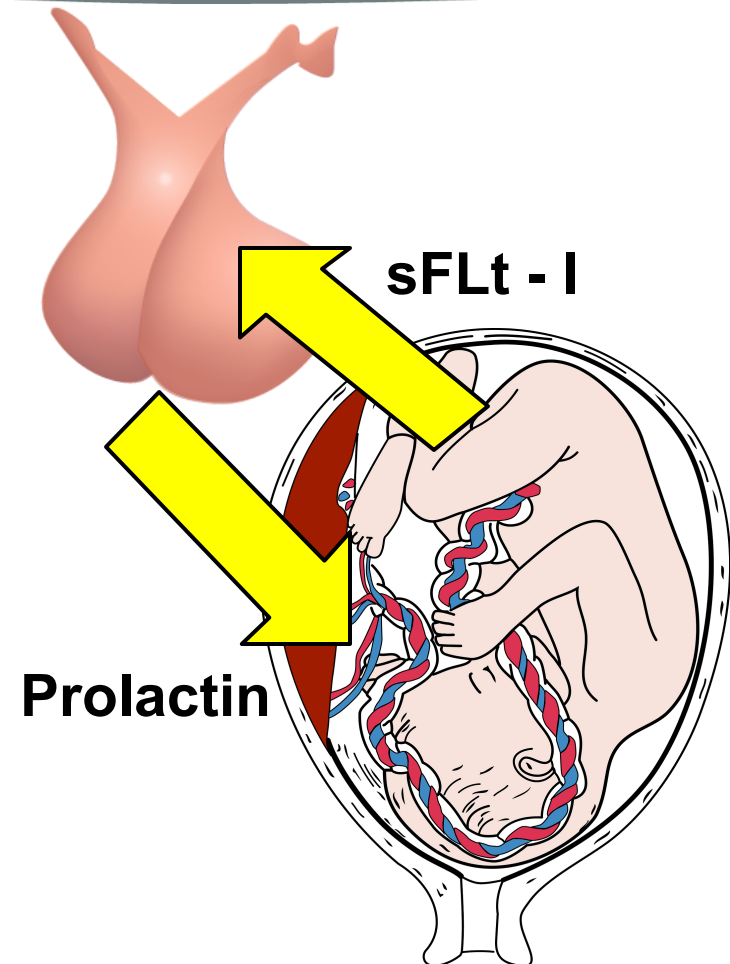
## Two hit Hypothesis [1]:

Peripartum cardiomyopathy affects genetically susceptible women who carry one of the following gene mutations

- TTNC1
- TTN
- STAT3



Click the picture to read more information.





## Two hit Hypothesis [1]:

Peripartum cardiomyopathy affects genetically susceptible women who carry one of the following gene mutations

- TTNC1
- TTN
- STAT3



Click the picture to read more information.

Term pregnancy is also characterized by prodigious secretions of prolactin by the maternal pituitary and at the same time the placenta secretes high levels of the antiangiogenic molecule, sFLT-1:

- So altered prolactin processing is believed to be involved in the pathogenesis of PPCM.
- A fragment of the prolactin molecule is hypothesized to trigger vasoinhibin-acts which is thought to cause myocardial damage with ventricular dysfunction.
- Pregnancy also results in high levels of vascular endothelial growth factor inhibitory molecule, sFLT1.
  - Levels are further increased by pre-eclampsia and multifetal gestation

## Physiologic Contributors of PPCM

### Angiogenic Imbalance [\[47\]](#):

- PPCM may be caused by systemic angiogenic imbalance which may explain why preeclampsia and multiple gestations are risk factors for PPCM.
- Angiogenic imbalances may damage the vasculature leading to PPCM issues.

1 of 6 >>





## Physiologic Contributors of PPCM

### Prolactin [\[48\]](#):

- Altered prolactin processing is believed to be involved in the pathogenesis of PPCM.
- Alterations in prolactin processing may contribute to angiogenic imbalances.

◀ 2 of 6 ▶





## Physiologic Contributors of PPCM

### Myocarditis [\[49\]](#):

- Viral genomes have been noted in research where the endomyocardium was biopsied.
- However, myocarditis is not always present with PPCM.

« 3 of 6 »





## Physiologic Contributors of PPCM

### Abnormal Immune Response [[50](#)]:

- The maternal immunologic response to a fetal antigen has been suggested as an etiology leading to PPCM.

◀ 4 of 6 ▶







## Physiologic Contributors of PPCM

### Genetic Predisposition:

- PPCM may develop as a result of interaction between pregnancy-related factors and a susceptible genetic background.
- African genomic ancestry may be a risk factor for the development of PPCM and explain the high prevalence of PPCM in Haitian, African, and black women in the U.S.

◀ 5 of 6 ▶





## Physiologic Contributors of PPCM

### Hemodynamic Factors:

- In pregnancy there is a 40 to 50% increase in blood volume and cardiac output resulting in left ventricular remodeling and hypertrophy. It is possible this remodeling is an exaggerated response with a decrease in left ventricular systolic function in women who develop PPCM.
- The hemodynamic stress of hypertensive disorders of pregnancy may contribute to the develop of heart failure, given that hypertensive disorders of pregnancy are a known risk factor for PPCM.

◀ 6 of 6





## Pearls for Providers

The highest risk period for a preexisting cardiac condition to manifest is generally in the late 2nd trimester — 24-28 weeks — or in the postpartum period [[4](#)].

1 of 14



Click the next arrows to read more information.





## Pearls for Providers

The first presentation of cardiovascular disease may occur during pregnancy or in the early postpartum time frame [\[4\]](#).

« 2 of 14 »



Click the next arrows to read more information.





## Pearls for Providers

Cardiovascular risk assessment needs to occur in all pregnant women, with or without symptoms [\[4\]](#).



3 of 14



Click the next arrows to read more information.







## Pearls for Providers

Pregnant or postpartum women presenting with symptoms of shortness of breath, cough, or excessive fatigue should be evaluated in the context of risk factors, vital sign abnormalities, and abnormal physical examination findings [\[4\]](#).



4 of 14



Click the next arrows to read more information.





## Pearls for Providers

A symptom of heart failure may present as persistent respiratory symptoms and 'new-onset' asthma [[4](#)].



5 of 14



Click the next arrows to read more information.







## Pearls for Providers

When a chest x-ray shows bilateral infiltrates, this may be due to heart failure rather than pneumonia, correlate these findings clinically [[4](#)].



6 of 14



Click the next arrows to read more information.





## Pearls for Providers

Counsel women currently pregnant or postpartum with significant cardiovascular risk factors regarding their future cardiovascular risk [\[4\]](#).

Involving the woman's primary care provider (PCP) early is crucial to ensure a smooth transition postpartum [\[4\]](#).



7 of 14



Click the next arrows to read more information.





## Pearls for Providers

Emphasizing awareness of risk factors, sign and symptoms of cardiac disease, and compliance with follow-up are key patient education points [\[4\]](#).



8 of 14



Click the next arrows to read more information.





## Pearls for Providers

Optimally, when a woman has known CVD, she should receive preconception and interconception care by perinatology and cardiology [\[4\]](#).



9 of 14



Click the next arrows to read more information.







## Pearls for Providers

In any patient with CVD, contraception should be discussed throughout pregnancy and a plan should be implemented postpartum. [[4](#)].

◀ 10 of 14 ▶



Click the next arrows to read more information.







## Pearls for Providers

Key elements to a successful outcome includes [\[4\]](#):

- . High index of suspicion
- . Early diagnosis
- . Appropriate referrals
- . Follow up



11 of 14



Click the next arrows to read more information.





## Pearls for Providers

When Red Flags are present immediate evaluation and/or hospitalization is recommended [4]:

- Shortness of breath at rest
- Severe orthopnea  $\geq 4$  pillows
- Resting HR  $\geq 120$  bpm
- Resting systolic BP  $\geq 160$  mmHg
- Resting respiratory rate  $\geq 30$
- Oxygen saturation  $\leq 94\%$  with or without personal history of CVD

◀ 12 of 14 ▶



Click the next arrows to read more information.





## Pearls for Providers

Confront your own racism and act against personal bias

- 84% agreed that disparities impact their practice.

Offer implicit bias and anti-racism training; self assessments are available on line



13 of 14



Click the next arrows to read more information.





## Pearls for Providers

Health care providers are less likely to respond to the concerns of black women, 22% less likely.

**Listen to women.**



14 of 14

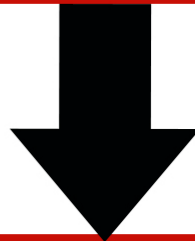


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### **Red Flags**

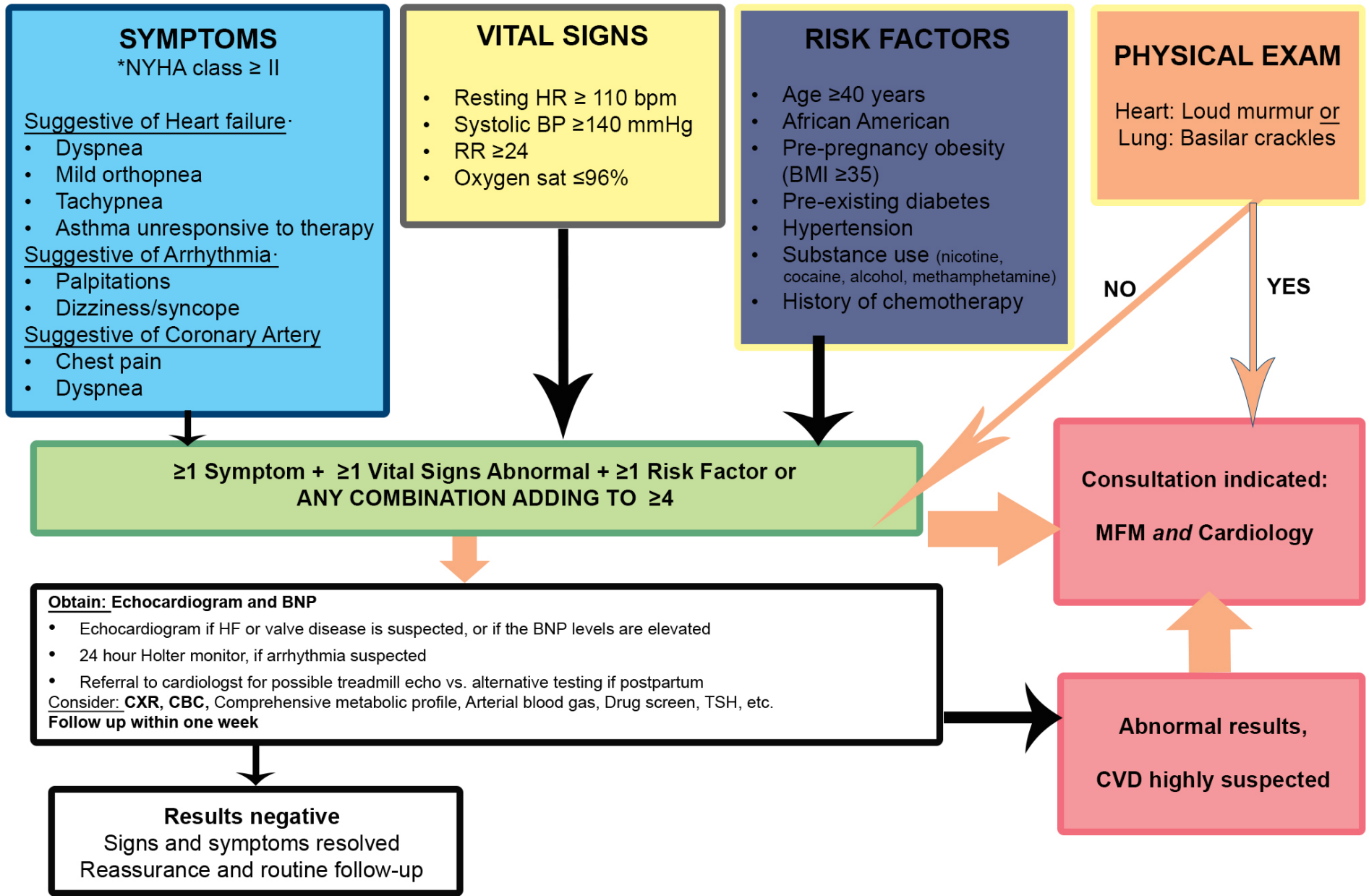
- ♦ Shortness of breath at rest
- ♦ Severe orthopnea  $\geq 4$  pillows
- ♦ Resting HR  $\geq 120$  bpm
- ♦ Resting systolic BP  $\geq 160$  mm Hg
- ♦ Resting RR  $\geq 30$
- ♦ Oxygen saturations  $\leq 94\%$  with or without personal history of CVD



**PROMPT EVALUATION** and/or  
hospitalization for acute symptoms  
*plus*  
**CONSULTATION** with MFM  
and Cardiology



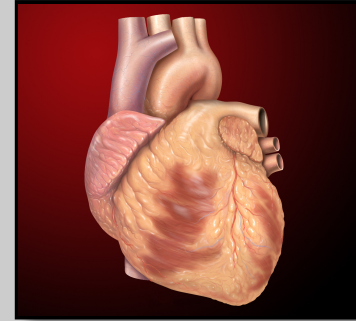
## If no red flags, proceed with this evaluation



**The diagnosis of PPCM is based on 3 clinical criteria [[50](#), [54-56](#)]:**

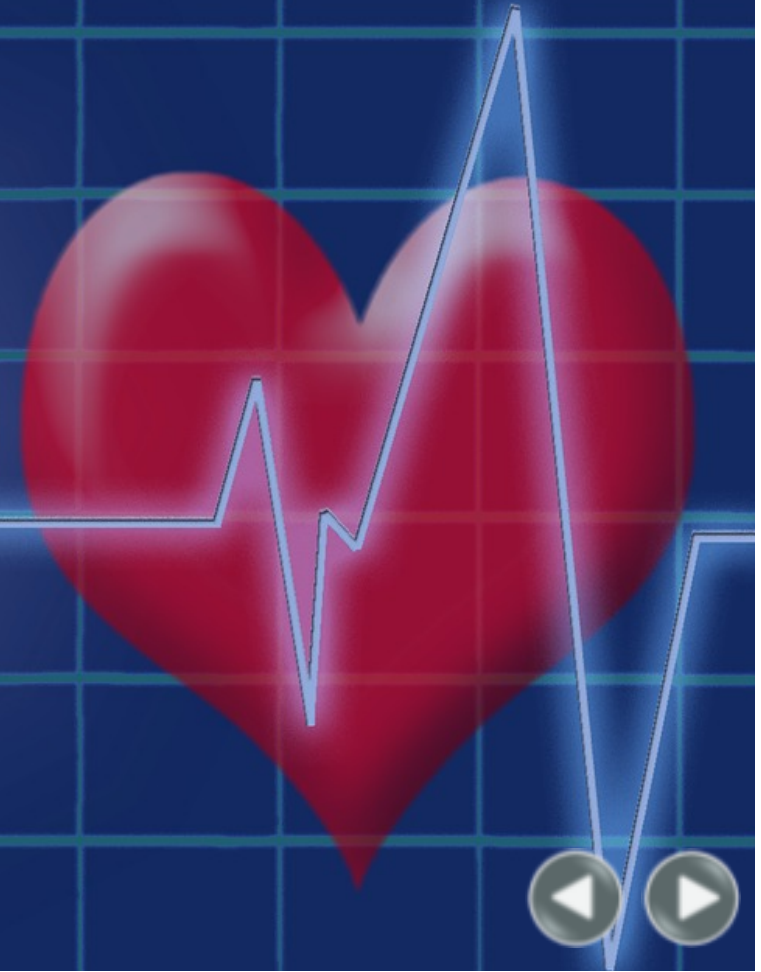
1. Development of heart failure within one month prior to delivery or five months postpartum.
2. Absence of another identifiable cause of heart failure.
3. Left ventricular systolic dysfunction with a left ventricular ejection fraction generally  $<45\%$ .

- There are no pathognomonic findings in PPCM and it is a diagnosis of exclusion.
- Ordering an electrocardiogram (ECG) and echocardiogram are prudent actions in those suspected of having PPCM.
  - A normal ECG does not rule out PPCM [57].
  - An ECG may be helpful in differentiating between other diagnosis such as a myocardial infarction (MI) or pulmonary embolism (PE).
  - An echocardiogram generally reveals global reduction in left ventricular function with LVEF nearly always  $<45\%$ ; the left ventricle is frequently dilated, but not always.



Click the heart for more information.

- BNP, chest X-ray (with fetal shielding when pregnant), cardiac magnetic resonance (CMR), cardiac catheterization and may be helpful in certain cases.
  - BNP can help evaluate patients suspected of having heart failure when the diagnosis is uncertain [[58](#)].
  - Concern should raise if the BNP level is above 100pg/mL because a BNP <100pg/mL is considered normal.



## Summary

Preexisting cardiovascular disease and/or new-onset peripartum cardiomyopathy may initially present during pregnancy or in the postpartum period [\[4\]](#).

- Women with peripartum cardiomyopathy typically present in the 1st week postpartum with 75% of women with peripartum cardiomyopathy presenting in the 1st month [\[47\]](#).
- New-onset cough or shortness of breath are the most frequent complaints of women presenting with pregnant or postpartum women with CVD [\[6\]](#).
- A high index of suspicion for underlying CVD needs to occur by all providers when a woman presents with symptoms, signs and risk factors concerning for heart disease.





# Summary

Ask the following questions when a woman presents in the postpartum period with complaints of shortness of breath [\[4\]](#):

- Intolerance of exercise
- Activities of daily living are difficult to complete
- Deteriorating symptoms
- Dizziness
- Palpitations
- Chest pain
- New-onset cough
- Wheezing
- Lower extremity edema or pedal edema
- Fatigue that is not expected (i.e. frequent stops while out walking)
- Orthopnea (if present, ask how many pillows are used)
- Weight gain or inability to lose weight
- History of cardiac or pulmonary conditions
- History of tobacco and/or substance abuse
- Has received care by other providers or Emergency Departments (ED) during the postpartum period





## Summary

Common symptoms of pregnancy overlap with those indicative of cardiovascular disease [\[4\]](#):

- Shortness of breath
- Fatigue
- Edema





## Summary

**Differential diagnosis for postpartum dyspnea [[4](#)]:**

- Congestive heart failure (CHF)
- Myocarditis
- Endocarditis
- PE
- Pulmonary hypertension
- Asthma
- Infection



## Summary

### Key Points [\[4\]](#):

- The postpartum period should involve improved symptoms related to physiologic changes of pregnancy.
- ED visits for dyspnea need to raise suspicion for CVD.
- Concerns for CVD should be raised when postpartum dyspnea or new-onset cough is present.



## Summary

Physical examination findings that raise concern for CVD include [\[4\]](#):

- Vital signs:
  - HR  $\geq 120$  bpm
  - BP  $\geq 160$  mm Hg
  - RR  $\geq 30$
  - Oxygen saturation ( $O_2$  Sat)  $\leq 94\%$
- Lung exam:
  - Crackles
  - Wheezing
- Cardiac exam:
  - Loud murmur
  - Jugular venous distention (JVD)
- Extremities:
  - Edema
  - Taunt shiny skin



## Summary

Evaluation of postpartum dyspnea [4]:

- Chest Radiograph
  - Frequently normal in asthma
- EKG
  - May be normal in cardiomyopathy, except for sinus tachycardia
  - Should be obtained on an emergency basis if the patient has abnormal vital signs or is very symptomatic
    - Normal LV ejection fraction does not exclude heart failure
    - Normal RV function does not exclude pulmonary embolism



## Summary

Evaluation of postpartum dyspnea [4]:

- Labs
  - CBC
  - Basic Metabolic Panel (BMP)
  - Thyroid Function Test
  - BNP (concern raises when the BNP level is above 100pg/mL)
  - D-dimer - May normally be elevated in pregnancy, however, may be considered for negative predictive value
  - Toxicology screen
- Venous doppler ultrasound and/or computed tomography (CT) pulmonary angiogram for PE
- Cardiology consultation as needed





## Summary

Key points [\[4\]](#):

- New-onset asthma is rare in adults.
- Bilateral crackles on lung examination are most likely associated with CHF.
  - Improvement of dyspnea with bronchodilators does not confirm the diagnosis of asthma, as CHF may also improve with bronchodilators.
- Response to bronchodilators should prompt the consideration of a diagnosis other than asthma.





## Summary

### Disposition:

- If considering discharge:
  - Repeat vital signs to ensure they are persistently normal, the symptoms have improved, and the patient is stable for discharge.
  - Arrange for early follow-up with PCP or cardiologist as indicated.
- Admission and cardiology consultation may be indicated for:
  - Persistent symptoms or abnormal vital signs, in particular, HR >120 bpm, BP >160 mmHg, RR >30, and O<sub>2</sub> Sat <94%.
  - Lack of response to treatment.
  - Newly-diagnosed cardiomyopathy or pulmonary hypertension.







## Summary

### Racial disparities in CVD [4]

- **Listen to women.** Take patient complaints seriously and maintain a high index of suspicion for CVD especially in ALL African-American women.
- any co-morbidities should further heighten the clinical index of suspicion
- African-American women with chronic or gestational hypertension, high BMI (>35) who present with symptoms suggestive of CVD or vital signs as noted should be evaluated carefully and thoroughly for potential CVD.

### Hear HER campaign

<https://www.cdc.gov/hearher/index.html>



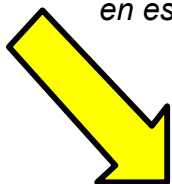




Click the picture on the right to download this infographic (English)



Click the picture to below to download this infographic in Spanish (Haga clic en la imagen de abajo para descargar esta infografía en español)



Which pregnancy complications can increase your risk for heart disease as you age?



**HIGH BLOOD PRESSURE**

5-10% of all pregnant women



**GESTATIONAL DIABETES**

7-14% of all pregnancies



**PRETERM BIRTH**

11.5% of babies were born preterm in 2012.

Can include:

Gestational hypertension  
Preeclampsia  
once known as Pregnancy Induced Hypertension (PIH) and Toxemia  
Eclampsia  
HELLP syndrome



If you had **PREECLAMPSIA**, you have **2x** the risk of **stroke**, **heart muscle damage**, or **blood clot** and **4x** the risk of developing **high blood pressure** for the rest of your life!



Mothers who had gestational diabetes are more likely to have the condition again in a future pregnancy.



If you had **GESTATIONAL DIABETES**, you are **50%** more likely to develop **Type II diabetes** within 5 years, putting you at higher risk for heart disease.



Babies born before 37 completed weeks of pregnancy are preterm, or premature.



Women with **PRETERM BIRTH AND PREECLAMPSIA** have an **8-10x** higher chance of **death** from heart disease.

If you had complications in pregnancy, you can lower your risk:

**New Mothers**



See your health care provider 3-6 months after birth to check your overall physical health. Discuss your pregnancy and any complications you experienced.



Get a copy of your pregnancy and post-delivery medical records to share with your providers for the rest of your life. Don't wait – records may be destroyed.



Breastfeed as long as possible. Women whose total lifetime breastfeeding is 6-12 months were 10% less likely to develop heart disease (and it's good for baby too).

If you had one of these complications, speak with your provider when planning your next pregnancy to optimize your health.



**REMEMBER!**

It's a **MYTH** that **ALL** pregnancy related high blood pressure and gestational diabetes complications go away after the baby is born!

Get more information and stay heart healthy.  
[www.cmqcc.org](http://www.cmqcc.org)

**Mothers With Kids Over One Year**



Get annual checkups and be screened for heart disease. At this visit, your provider should check your overall physical condition.



Ask your provider what your test results mean and how you can lower your heart disease risk.



These screening numbers show desirable results:

Blood Pressure < 120/80 mm hg  
Total Cholesterol < 200 mg/dl  
Fasting Blood Glucose < 100 mg/dl  
Body Mass Index < 25 kg/m2



Try a mobile app to automatically retrieve and store your medical records, so you always have them handy.



Eat healthy! A diet low in salt, fat, cholesterol and sugar can help you lower your risk for obesity, diabetes and heart disease.



Maintain a healthy weight. Body Mass Index (BMI) is an estimate of body fat based on height and weight. Less than 25 is healthy.



Get active for 30 minutes a day, or as recommended by your provider.



If you smoke, make a plan to quit. Your provider may have resources to support you.



Take medications as directed. Sometimes a healthy diet and exercise is not enough to lower your risk for heart disease, so your provider may prescribe medications to help.

**SISTER TO SISTER**  
The Women's Heart Health Foundation

**CMQCC**  
CALIFORNIA MATERNAL  
QUALITY CARE COLLABORATIVE

**California Department of  
Public Health**





# DID YOU HAVE COMPLICATIONS DURING PREGNANCY?

You may be at a higher risk for heart disease over your lifetime

## Which pregnancy complications can increase your risk for heart disease as you age?



### HIGH BLOOD PRESSURE

5-10% of all pregnant women



### GESTATIONAL DIABETES

7-14% of all pregnancies



### PRETERM BIRTH

11.5% of babies were born preterm in 2012.

**Can include:**

- ♥ Gestational hypertension
- ♥ Preeclampsia  
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- ♥ Eclampsia
- ♥ HELLP syndrome



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### Mothers With Kids Over One Year



**Get annual checkups and be screened for heart disease.** At this visit, your provider should check your overall physical condition.



**Ask your provider** what your test results mean and how you can lower your heart disease risk.

These screening numbers show desirable results.

|                   |                |                       |             |
|-------------------|----------------|-----------------------|-------------|
| Blood Pressure    | < 120/80 mm hg | Fasting Blood Glucose | < 100 mg/dl |
| Total Cholesterol | < 200 mg/dl    | Body Mass Index       | < 25 kg/m2  |



**Try a mobile app** to automatically retrieve and **store your medical records**, so you always have them handy.



**Eat healthy!** A diet low in salt, fat, cholesterol and sugar can help you lower your risk for obesity, diabetes and heart disease.



**Maintain a healthy weight.** Body Mass Index (BMI) is an estimate of body fat based on height and weight. Less than 25 is healthy.



**Get active for 30 minutes a day**, or as recommended by your provider.



**If you smoke, make a plan to quit.** Your provider may have resources to support you.



**Take medications as directed.** Sometimes a healthy diet and exercise is not enough to lower your risk for heart disease, so your provider may prescribe medications to help.

Get more information and stay heart healthy.  
[www.cmqqc.org](http://www.cmqqc.org)



**SISTER TO SISTER**  
The Women's Heart Health Foundation

**CMQCC**  
CALIFORNIA MATERNAL  
QUALITY CARE COLLABORATIVE





# ¿TUVO COMPLICACIONES DURANTE SU EMBARAZO?



**Usted puede correr mayor riesgo de enfermedades del corazón por el resto de su vida**

¿Cuáles son las complicaciones del embarazo que pueden aumentar el riesgo de enfermedades del corazón con el paso de los años?



## PRESIÓN ARTERIAL ALTA

5-10% de todas las mujeres embarazadas



## DIABETES GESTACIONAL

7-14% de todos los embarazos



## NACIMIENTO PREMATURO

11.5% de todos los bebés nacieron prematuros en el 2012

Puede incluir:

- ♥ Hipertensión gestacional
- ♥ Preeclampsia, anteriormente conocida como hipertensión inducida por el embarazo o toxemia
- ♥ Eclampsia
- ♥ Síndrome HELLP (por sus siglas en inglés) que incluye hemólisis, enzimas hepáticas elevadas y un conteo bajo de plaquetas.



Si tuvo **PREECLAMPSIA**, tiene 2 veces más riesgo de tener un ataque al cerebro, daño en los músculos del corazón o un coágulo de sangre, y 4 veces más riesgo de desarrollar presión arterial alta por el resto de su vida.



Las madres que tuvieron diabetes gestacional tienen más probabilidad de volver a tenerla en un futuro embarazo.



Si usted tuvo **DIABETES GESTACIONAL**, tiene 50% más probabilidad de desarrollar diabetes tipo II dentro de 5 años, lo que aumenta su riesgo de enfermedades del corazón.



Los bebés que nacen antes de las 37 semanas completas de embarazo son prematuros.



Las mujeres con **PARTO PREMATURO Y PREECLAMPSIA** tienen de 6-10 veces más probabilidad de morir por enfermedades del corazón.

Si tuvo alguna complicación en su embarazo, usted puede disminuir su riesgo:

### Nuevas mamás



Consulte con su proveedor de atención médica de 3 a 6 meses después del parto para que le evalúe su salud física general. Cuéntele sobre su embarazo y cualquier complicación que haya tenido.



Obtenga una copia de los registros médicos de su embarazo y parto para poder compartir con sus proveedores el resto de su vida. No espere para hacerlo, ya que pueden destruir los registros.



Amamante el mayor tiempo posible. Las mujeres que han amamantado por un total de 6 a 12 meses de toda su vida tienen 10% menos probabilidad de desarrollar enfermedades del corazón (y también es bueno para el bebé).

Si usted tuvo una de estas complicaciones, consulte con su proveedor de atención médica al planear su siguiente embarazo para mantenerse lo más saludable posible.



## ¡RECUERDE!

Es un **MITO** que **TODA** presión arterial alta relacionada con el embarazo y **TODAS** las complicaciones de la diabetes gestacional desaparecen después de que nace el bebé.

Obtenga más información y mantenga su corazón sano.

[www.cmqcc.org](http://www.cmqcc.org) (en inglés)



Hágase un chequeo anual y pruebas de detección para las enfermedades del corazón. En su visita anual, su proveedor debe evaluarle su condición física en general.



Pregúntele a su proveedor qué significan los resultados de sus pruebas y cómo puede reducir su riesgo de las enfermedades del corazón.

Estos son los resultados deseados de las pruebas de detección:

Presión arterial < 120/80 mm Hg Glucosa en la sangre, en ayunas < 100 mg/dl  
Colesterol total < 200 mg/dl Índice de masa corporal < 25 kg/m²



Pruebe una aplicación móvil que pueda automáticamente recuperar y almacenar sus registros médicos para que siempre los tenga a la mano.



¡Coma sano! Una dieta baja en sal, grasa, colesterol y azúcar puede ayudar a reducir el riesgo de obesidad, diabetes y enfermedades del corazón.



Mantenga un peso saludable. El índice de masa corporal (IMC) es un cálculo de la grasa corporal que se basa en la estatura y el peso. Lo saludable es tener un índice menor de 25.



Manténgase activo por 30 minutos al día o lo que le recomiende su proveedor.



Si fuma, haga un plan para dejar de fumar. Su proveedor puede tener recursos para ayudarlo.



Tome los medicamentos siguiendo las indicaciones. A veces, no es suficiente seguir una dieta saludable y hacer ejercicio para reducir el riesgo de las enfermedades del corazón. Por eso, quizás su proveedor le recete medicamentos que le pueden ayudar.



**SISTER TO SISTER**  
The Women's Heart Health Foundation

**CMQCC**  
CALIFORNIA MATERNAL  
HEALTH CARE COORDINATOR



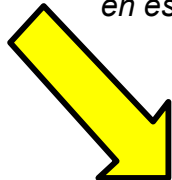




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## Signs & Symptoms of Heart Disease

Heart disease is the leading cause of death among women in the U.S. who are pregnant or gave birth in the last 5 months (postpartum).

*During Pregnancy and Postpartum*

**Symptoms to watch for in late pregnancy and up to five months postpartum:**



**NOTE:** While some of these symptoms are common in late pregnancy, they may be a sign of heart disease especially if they are severe and do not go away after treatment.



**If you have any of these symptoms and they don't go away:**

- ♥ Contact your OB, midwife, family medicine doctor, or your primary care provider
- ♥ Describe your symptoms clearly and explain how sick you feel
- ♥ If your symptoms arise postpartum, be sure to tell the provider that you recently had a baby
- ♥ If your provider says your symptoms are normal, ask what symptoms should cause you to call or come back



**Go to the Emergency Department**

If you have persistent chest pain or severe shortness of breath, or otherwise feel extremely sick. If possible, take someone with you.

**Any woman can develop heart disease in pregnancy or postpartum, but you are at **higher risk** if you:**

- ♥ Have prior heart disease
- ♥ Are over 40 years old
- ♥ Have preeclampsia or high blood pressure (hypertension)
- ♥ Are African-American (4X greater risk and 8-10X more likely to die of heart disease)
- ♥ Are obese



### Bottom line

- \* Trust your instincts when you feel something is wrong
- \* When you see a healthcare provider, bring your partner, friend or family member who can support you and help explain these symptoms are not normal for you
- \* Seek a second opinion if you don't feel listened to or your symptoms are not taken seriously

Get online support and information:

[www.myheartsisters.com](http://www.myheartsisters.com) | [www.womenheart.org](http://www.womenheart.org)

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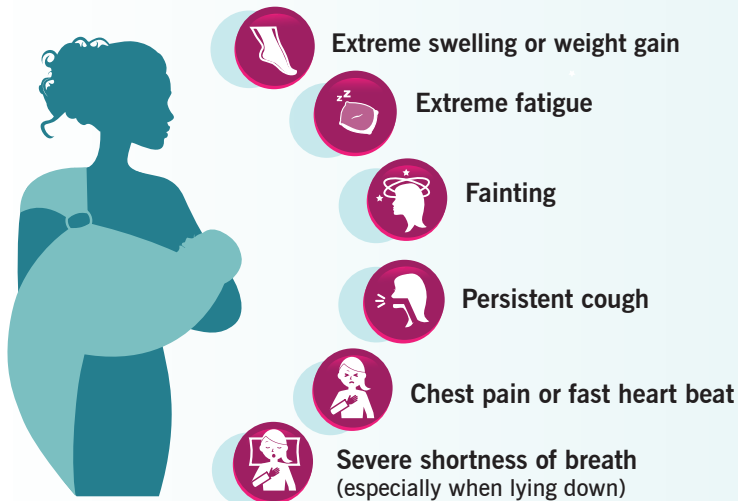
Funding for the development of this Infographic was provided by Federal Title V MCH block grant funding from the California Department of Public Health; Maternal Child Adolescent Health Division, and Stanford University.

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# Señales & Síntomas

En los Estados Unidos, las enfermedades del corazón son la principal causa de muerte en las mujeres que están embarazadas o que han dado a luz en los últimos 5 meses (posparto).

de enfermedades  
del corazón  
durante el embarazo  
y posparto

Esté atenta a los siguientes **síntomas** hacia el final de su embarazo y hasta 5 meses después de dar a luz:



**NOTA:** Aunque algunos de estos síntomas son comunes al final del embarazo, también pueden ser una señal de una enfermedad del corazón, especialmente si son graves y no desaparecen después de tener un tratamiento.



Si usted tiene cualquiera de los síntomas anteriores y éstos no desaparecen:

- ♥ Comuníquese con su obstetra, partera, médico general o proveedor de atención médica principal.
- ♥ Descríble claramente sus síntomas y dígame lo mal que se siente.
- ♥ Si sus síntomas aparecen después del parto, asegúrese de que su médico sepa que usted dio a luz hace poco.
- ♥ Si su médico u otro proveedor de atención médica le dice que sus síntomas son normales, pregúntele cuáles síntomas requieren que usted le llame de nuevo o vuelva a su consultorio.



**Vaya a la sala de emergencias** si usted tiene un dolor de pecho persistente, mucha dificultad para respirar, o se siente extremadamente enferma por alguna otra razón. De ser posible, trate de que alguien le acompañe.

**Cualquier mujer** puede desarrollar una enfermedad del corazón durante el embarazo o el posparto, pero usted corre **un riesgo más alto** si:

Ya tenía una enfermedad del corazón

Tiene más de 40 años

Es afroamericana  
(4 veces más riesgo y 8 a 10 veces más probabilidad de morir de una enfermedad del corazón)

Tiene preeclampsia o presión arterial alta (hipertensión)

Es obesa



## Conclusión

- \* Confíe en sus instintos si siente que algo anda mal.
- \* Cuando consulte a su proveedor de atención médica, vaya con su pareja, amigo o amiga o algún familiar que le pueda apoyar y ayudarle a explicar a su médico que estos síntomas no son normales para usted.
- \* Busque una segunda opinión si siente que su proveedor de atención médica no le escucha o que no toma en serio sus síntomas.

Obtenga apoyo e información en el internet: [www.myheartsisters.com](http://www.myheartsisters.com) | [www.womenheart.org](http://www.womenheart.org) | [www.womenheart.org/espanol](http://www.womenheart.org/espanol)

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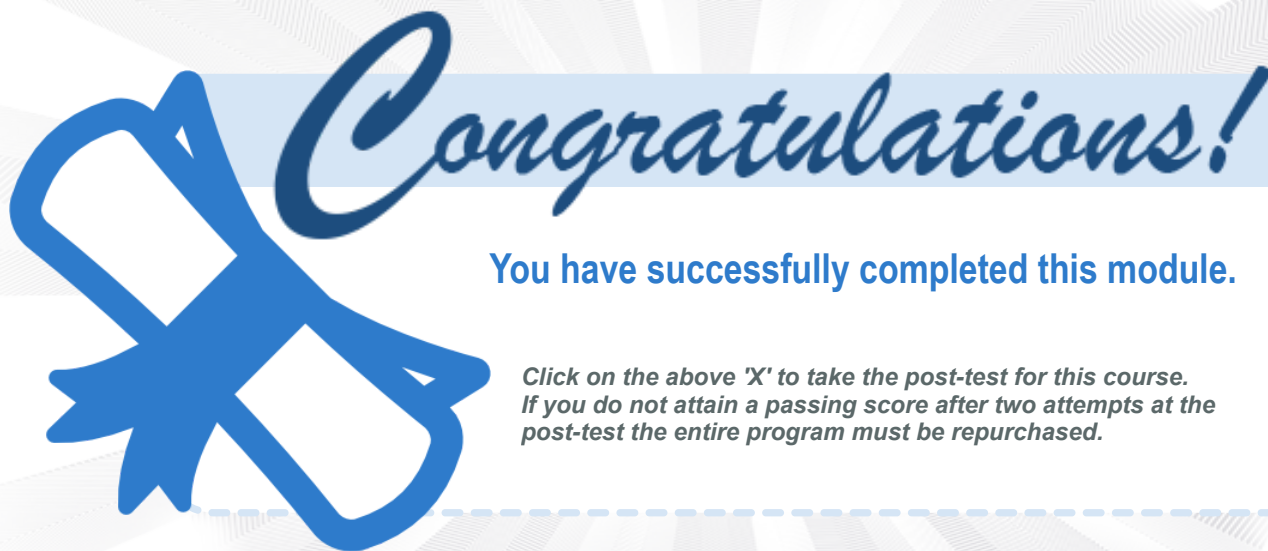
El financiamiento para el desarrollo de este infográfico proviene de una subvención federal en bloque del Título V de la Ley de Seguro Social destinada a la salud materno infantil del Departamento de Salud Pública de California; la División de Salud Maternal, Infantil y Adolescente, y la Universidad de Stanford.

## **Case of Severe Maternal Disparity and Resources:**

<https://www.jointcommission.org/-/media/tjc/newsletters/case-study-7-maternal-disparity-final-11-21-22.pdf>

## **Information to distribute from the Hear Her campaign:**

<https://www.cdc.gov/hearher/pregnant-postpartum-women/index.html#talk>



You have successfully completed this module.

*Click on the above 'X' to take the post-test for this course.  
If you do not attain a passing score after two attempts at the  
post-test the entire program must be repurchased.*

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