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# Clinical Characteristics and Outcomes in Women with Peripartum Cardiomyopathy in the Lehigh Valley Health Network

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## Background

- Peripartum cardiomyopathy (PPCM) is the rare development of heart failure in the late antepartum or early postpartum period
- Confirmed by echocardiogram showing left ventricular ejection fraction (LVEF)  $\leq 45\%$
- Idiopathic in nature and diagnosis of exclusion
- Etiology remains undetermined and likely multifactorial
- Known risk factors are age  $> 30$ , black/African race, multifetal gestation, and hypertensive disorders of pregnancy (HDP)
- There is no difference in baseline characteristics between patients with cardiac recovery (LVEF  $\geq 55\%$ ) and those without
- The purpose of this case series is to compare Lehigh Valley Health Network PPCM data with national trends and identify clinical parameters that may portend a better prognosis for recovery

## Problem Statement

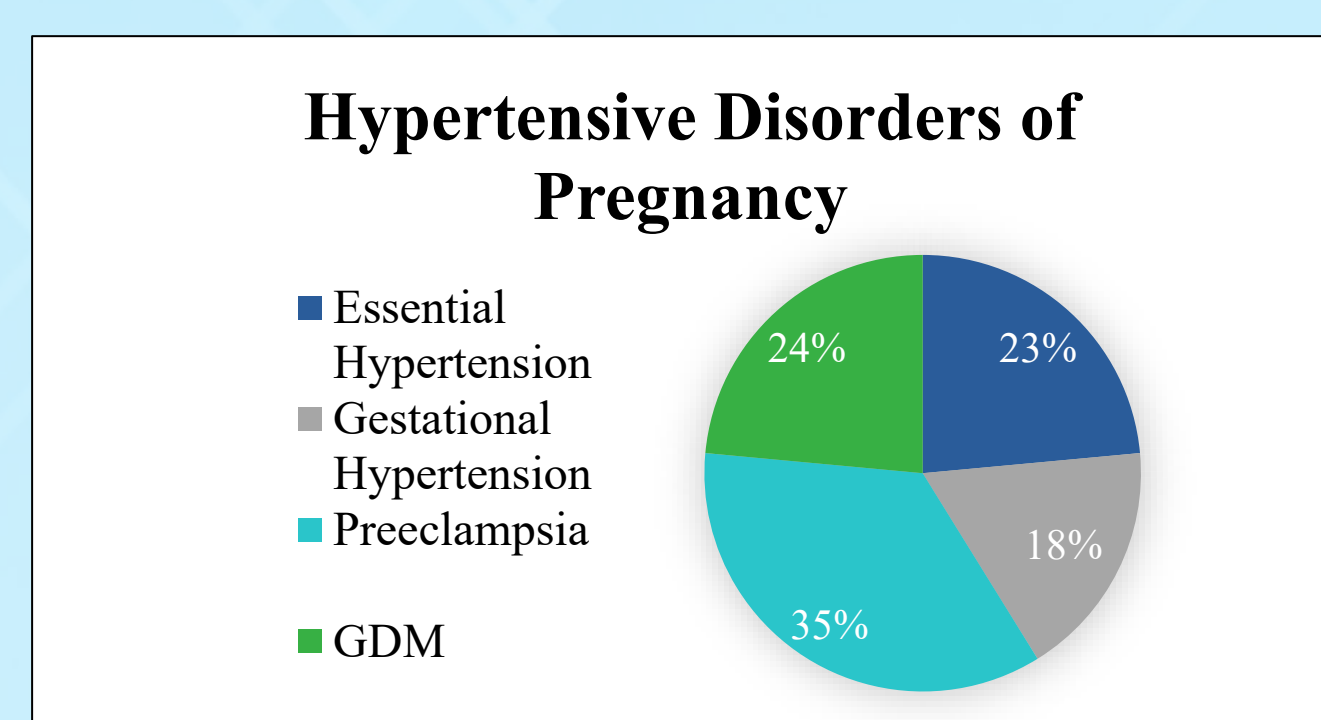
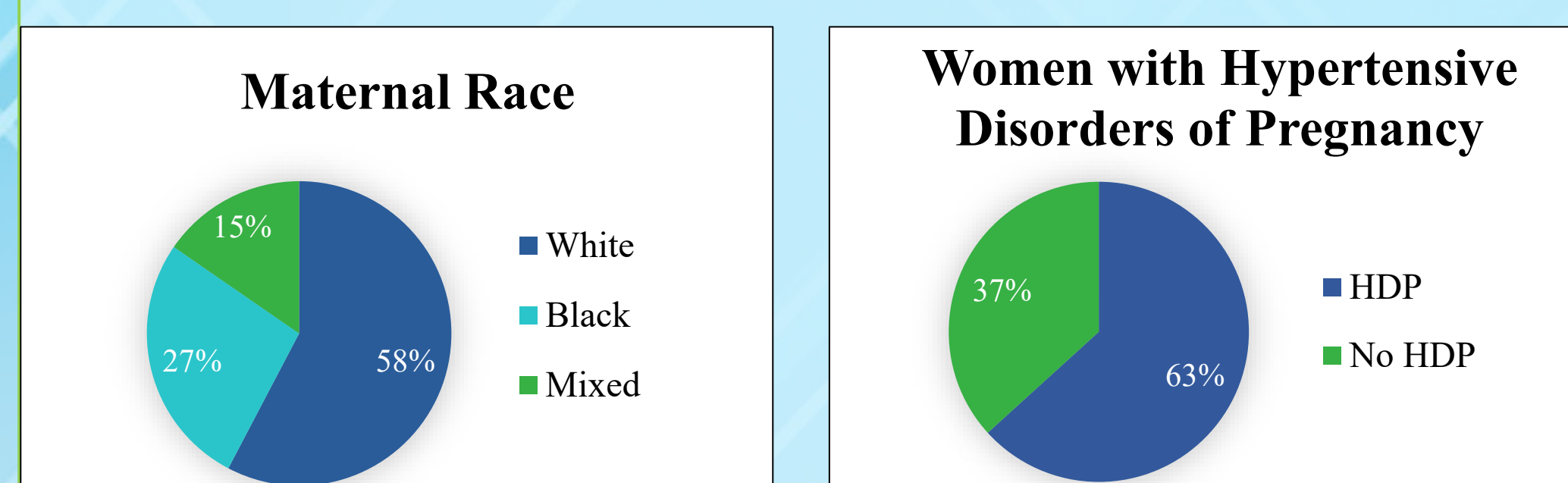
- Which baseline characteristics, including patient demographics, pregnancy history, diagnostic results, and medical management, impact the severity and outcomes of peripartum cardiomyopathy?

## Methods

- Retrospective case study with appropriate Institution Review Board approval as Human Studies Research
- Identified 26 patients diagnosed with peripartum cardiomyopathy using ICD-10 codes between 2015-2019
- Patients with prior personal history of heart disease or insufficient data were excluded
- Data extraction involved manual chart review and recording parameter data
- Baseline characteristics collected: age and time of diagnosis, race, ethnicity, BMI, gravidity, parity, delivery mode, and HDP
- Clinical parameters reviewed: NT-proBNP and troponin at diagnosis, left ventricular diastolic dimension (LVDD), and LVEF both at and 6-months after diagnosis
- Management and outcome parameters:  $\beta$ -blocker, ACEi/ARB, bromocriptine use, subsequent hospitalizations, presence of cardiogenic shock, and need for LVAD or heart transplant

## Results

- n = 26 patients
- **Demographics:**
  - Mean age at diagnosis was  $30.5 \pm 5.5$ , range from 19 to 41
  - Mean BMI was  $30 \pm 9.1$ , 69% (18/26) were overweight or obese
  - 92% (24/26) had postpartum diagnosis
  - 15% (4/26) had multifetal gestations



- **Clinical Parameters:**
  - Some patients were diagnosed outside of the Lehigh Valley Health Network; therefore, not all 26 charts had access to the full echocardiogram report
  - Mean LVEF was  $31\% \pm 11.5$  at diagnosis
  - 36% (8/22) had LVEF recovery at 6 months to  $\geq 55\%$
  - Only 54% (14/26) had NT-proBNP and troponin drawn at presentation
  - 100% of the 14 patients had elevated NT-proBNPs and 43% had elevated troponins

	All LVHN Patients	Patients with LVEF Recovery to $\geq 55\%$	Worldwide Averages <sup>1</sup>
Initial LVEF	31%	35.7%	32%
Initial LVDD	5.61cm	5.04cm	6.03cm

- **Management and Outcomes:**
  - 84% (21/25) of women were treated with both  $\beta$ -blockers and ACEi/ARB
  - 8% (2/25) received bromocriptine
  - 28% of all patients (7/25) had subsequent heart failure admissions
  - 14% (3/21) developed cardiogenic shock and mean LVEF at diagnosis was 21.7%
  - 66% of women with cardiogenic shock did not have LVEF recovery to  $\geq 55\%$
  - 0 women needed LVAD placement or heart transplant

## Discussion

- Our population had similar demographics when compared to national data, including mean age of 30 and multifetal gestations
- It falsely appears that PPCM is more prevalent in Caucasian women
- A national database of over 900 women reported 37% of patients with PPCM have HDP compared to 63% in our cohort
- Preeclampsia is still the most common HDP
- NT-proBNP is an underutilized diagnostic tool
- The more critically ill the patient is at presentation, the less likelihood there is of LVEF recovery
- PPCM has a comparable healthcare burden (i.e. subsequent admissions) to general heart failure
- Our providers' treatment regimens reflect compliance with the gold standard of  $\beta$ -blockers and ACEi/ARB
- 8% bromocriptine use in our patient population is an impressive indicator that our providers are incorporating novel treatment strategies

## Conclusions

- Our demographic results, prognostic indicators, and management align with national standards
- Locally, HDP may play a more significant role in the development of PPCM
- Represents SELECT VBPC domain, as gender is a social determinant of health and females face underdiagnosis of cardiac conditions
- **Limitations and Future Directions**
  - Small sample size due to the rarity of PPCM and possible inaccurate coding
  - Opportunity to develop a prospective patient database for long-term follow-up
  - Future studies to focus on strategies to decrease local morbidity and mortality

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