

The impact of a multidisciplinary clinic on pregnancy management, care, and perinatal outcomes in women with cardiovascular disease

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The impact of a multidisciplinary clinic on pregnancy management, care, and perinatal outcomes in women with cardiovascular disease

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Introduction

- Cardiovascular disease in pregnancy:
 - Complicates 1-4% of pregnancies^{1,2,3}
 - Leading cause of indirect death^{1,2,3}
- Physiological cardiovascular changes in pregnancy:
 - Optimize oxygen delivery to fetus
- Heart in Pregnancy Program:
 - Started in March 2010
 - Multidisciplinary visits with both cardiologist and maternal fetal medicine (MFM)

Problem Statement

To describe obstetric and cardiac management and outcomes of pregnant women with pre-existing cardiac disease seen in a multidisciplinary clinic.

Methodology

- Location:
 - Multidisciplinary clinic (HPP)
 - Hospital with Level I Trauma and Level IV NICU designation as well as Level III subspecialty care
- Retrospective record review
 - Women entered into database upon each visit to HPP
 - Inclusion criteria: seen between March 2010 and June 2017
 - Exclusion Criteria:
 - Never pregnant
 - No underlying cardiac disease
 - Cardiac symptoms limited to pregnancy
 - Delivered at outside hospital

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Results

Records available for review after exclusion criteria: n=189

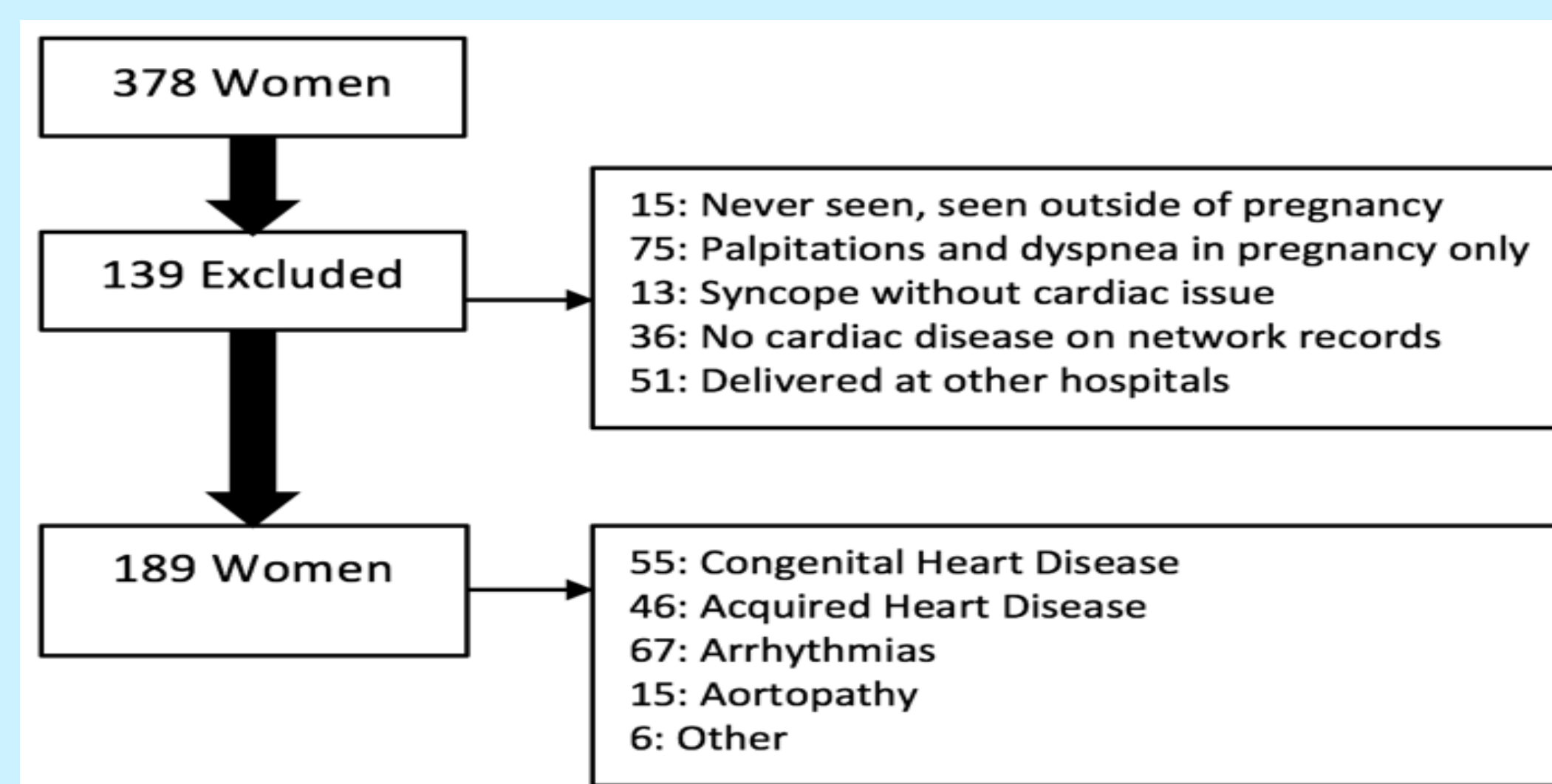


Figure 1. Flow Diagram for Included and Excluded Patients

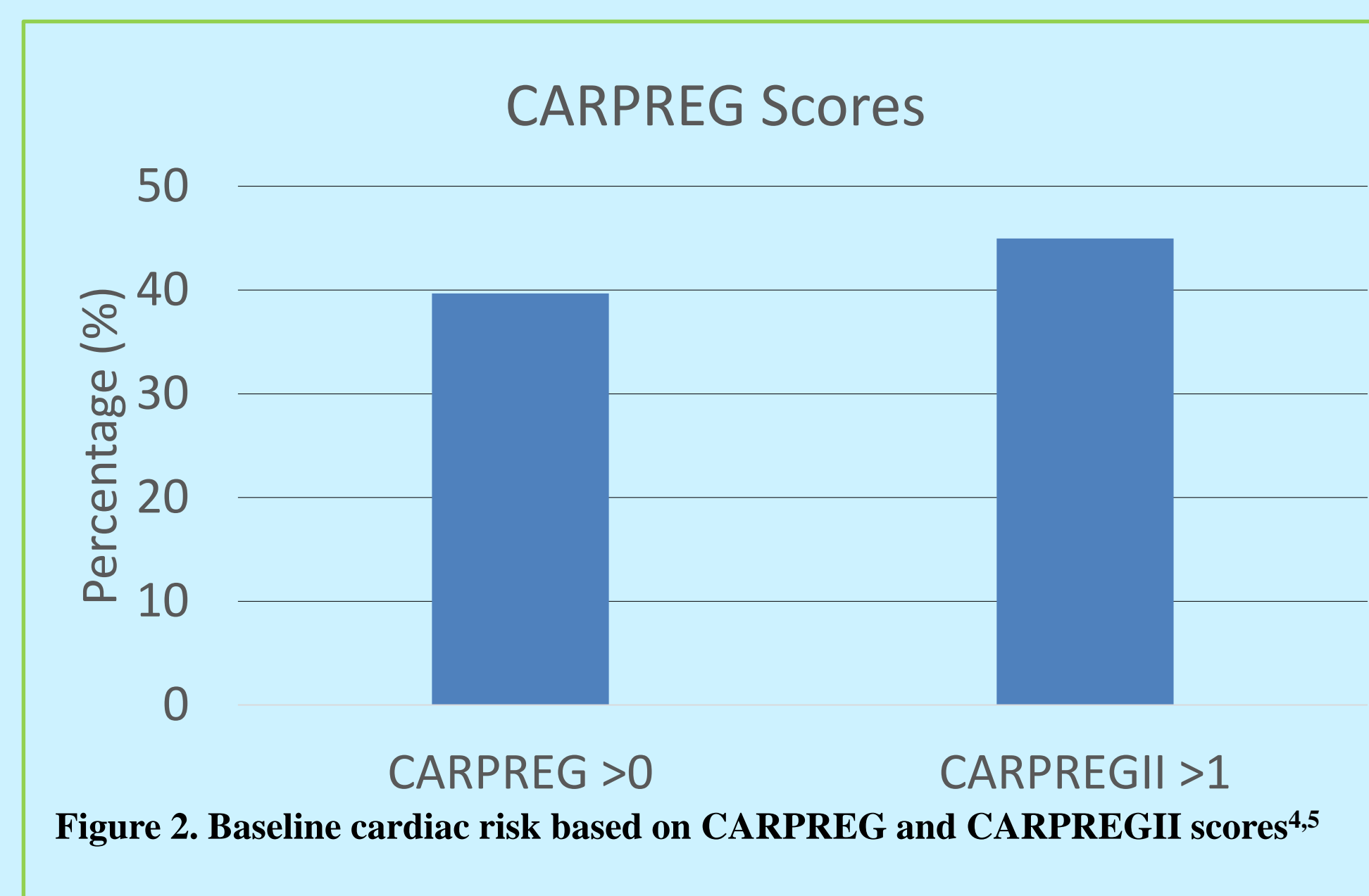


Figure 2. Baseline cardiac risk based on CARPREG and CARPREGII scores^{4,5}

Discussion

- Leading cause of indirect maternal death in developed world^{1,2,3}
- Maternal mortality rate (MMR) is used as quality marker of healthcare
- **Improving quality of care** through multidisciplinary approach
 - More standard work based on diagnosis
 - Risk stratification
 - Clearer communication amongst specialists

Conclusions

- This descriptive project suggests areas for more standardized workflow for patients
- Future studies could look into the difference between groups– more specifically the increased risk of women with acquired heart disease

Table 1. Cardiac Management by Diagnostic Groups

	Overall (n=189)	CHD (n=55)	Acquired (n=46)	Arrhythmias (n=67)	Aortopathy (n=15)	Other (n=6)	p value
Prenatal Management							
Prenatal Imaging							
-TTE, n (%)	139 (73.5)	41 (74.6)	39 (84.8)	50 (74.6)	5 (33.3)	4 (66.7)	<.001
-MRI + TTE, n(%)	15 (7.9)	5 (9.1)	1 (2.2)	0 (0.0)	8 (53.3)	1 (16.7)	
Fetal ECHO, n(%)	66 (34.9)	37 (67.3)	4 (8.7)	16 (23.9)	9 (60.0)	0 (0.0)	<.001
Inpatient Management							
Cardio consult n(%)							
- Antepartum	17 (9.0)	6 (10.9)	2 (4.4)	7 (10.5)	2 (13.3)	0 (0.0)	0.63
- Intrapartum	22 (11.6)	7 (12.7)	4 (8.7)	9 (13.4)	2 (13.3)	0 (0.0)	0.83
- Postpartum	35 (18.3)	9 (14.6)	10 (21.7)	13 (19.4)	4 (26.7)	0 (0.0)	0.57
Postpartum Management							
Telemetry postpartum, n(%)	26 (13.8)	3 (5.5)	5 (10.9)	16 (23.9)	2 (13.3)	0 (0.0)	0.04
Days between discharge and follow-up, n(%)	24.05±15.7	23.13±13.4	19.11 ± 13.4	27.87 ±17.4	24.71 ± 20.0	25.17±11.7	0.11
Follow up TTE, n(%)	31 (16.4)	11 (20.0)	8 (17.4)	6 (9.0)	5 (33.3)	1 (16.7)	0.17

Table 2. Complications and Outcomes by Diagnostic Groups

	Overall (n=189)	CHD (n=55)	Acquired (n=46)	Arrhythmias (n=67)	Aortopathy (n=15)	Other (n=6)	p value
Intrapartum complications	51 (27.5)	16 (29.1)	17 (37.0)	14 (20.9)	4 (26.7)	1 (16.7)	0.61
Postpartum complications	61 (32.4)	17 (31.5)	22 (47.8)	16 (23.9)	4 (26.7)	2 (33.3)	0.29
Escalation of cardiac meds	17 (9.0)	3 (5.6)	7 (15.2)	5 (7.46)	1 (6.7)	1 (16.7)	0.45
Use of diuretics	12 (6.4)	3 (5.5)	7 (15.2)	2 (3.0)	0 (0.0)	0 (0.0)	0.07
EF drop > 5%	9 (4.2)	1 (1.8)	5 (10.9)	1 (1.5)	1 (6.7)	0 (0.0)	0.11
Postpartum hemorrhage	18 (9.5)	9 (16.4)	4 (8.7)	3 (4.5)	2 (13.3)	0 (0.0)	0.21

Table 3. Neonatal Outcomes by Diagnostic Groups

	Overall (n=189)	CHD (n=55)	Acquired (n=46)	Arrhythmias (n=67)	Aortopathy (n=15)	Other (n=6)	p value
Infant resuscitation, n (%)	22 (11.8)	8 (14.8)	8 (17.8)	4 (6.0)	2 (14.3)	0 (0)	0.42
Infant admitted to NICU/transition unit, n (%)	33 (17.5)	8 (14.5)	13 (28.3)	7 (10.5)	4 (26.7)	1 (16.7)	0.44
SGA (<10 percentile), n (%)	9 (4.8)	1 (1.8)	4 (8.9)	4 (6.0)	0 (0)	0 (0)	0.70
Neonatal complications, n (%)	63 (34.2)	18 (32.7)	21 (48.8)	15 (22.7)	7 (50.0)	2 (33.33)	0.18
Neonatal length of stay (days) +/- SD	4.0 ±6.5	3.87 ±6.0	6.02 ±10.8	3.09 ±5.0	2.8 ±1.8	2.5 ±.5	<.001