

A Population Level Epidemiological Study of Peripartum Cardiomyopathy in Olmsted County, Minnesota and 26 surrounding counties

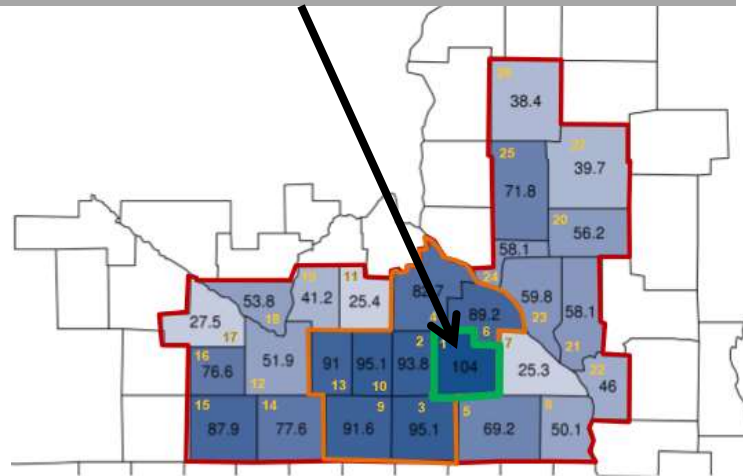
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Study Region: Rochester Epidemiology Project

- Links medical records of providers in Olmsted County, MN
- 27 Counties in SE Minnesota and SW Wisconsin, USA
- One of the few places in the world where population level research can be done
- Olmsted County 15 cases
- Entire Region 48 cases

Incidence (Olmsted County, MN)
 $I = 18.2$ cases/100,000 live births



County numbers		
1 Olmsted (MN)	10 Steele (MN)	19 Le Sueur (MN)
2 Dodge (MN)	11 Rice (MN)	20 Eau Claire (WI)
3 Mower (MN)	12 Blue Earth (MN)	21 Trempealeau (WI)
4 Goodhue (MN)	13 Waseca (MN)	22 La Crosse (WI)
5 Fillmore (MN)	14 Faribault (MN)	23 Buffalo (WI)
6 Wabasha (MN)	15 Martin (MN)	24 Pepin (WI)
7 Winona (MN)	16 Watonwan (MN)	25 Dunn (WI)
8 Houston (MN)	17 Brown (MN)	26 Barron (WI)
9 Freeborn (MN)	18 Nicollet (MN)	27 Chippewa (WI)

Percent coverage in 2010
 REP Census vs. US Census

Olmsted County
 REP_N = 150,049 (104.0% coverage)
 US_{cen} = 144,248

8-county Region
 REP_N = 344,619 (96.2% coverage)
 US_{cen} = 358,324

27-county Region
 REP_N = 717,119 (63.7% coverage)
 US_{cen} = 1,126,148



A Minnesota and Wisconsin Collaboration

Demographics & Baseline Characteristics

Demographics	n (%)
Age, years, mean(range)	28 (15-44)
Race	
African/African American	9 (18.8%)
White	38 (79.2%)
American Indian	1 (0.02%)
Education	
<high school	6 (12.5%)
High school or GED	12 (29.2%)
Some College	15 (31.3%)
College/Graduate Degree	12 (25%)
Health Insurance	
Private	21 (43.8%)
Medical Assistance	24 (50%)

Medical History	n (%)
Obese or Overweight	32 (48.9%)
Mental Health Diagnosis	26 (54.2%)
Asthma	11 (23.4%)
Allergies	23 (48.9%)
Infections	32 (68.1%)
Migraines	21 (44.7%)

Obstetrics History	n (%)
Primiparous	22 (45.8%)
Hypertensive Disease of Pregnancy	8 (30.8)
Gestational HTN	7 (87.5%)
Preeclampsia	5 (62.5%)

Index Pregnancy	n (%)
Access to Standard Medical Care	26 (55.3%)
Unplanned Pregnancy	23 (40.4%)
Gestational Age	
<37 weeks	21 (43.8%)
37-42 weeks	22 (45.8%)
Low Birth Weight (<2500 grams)	22 (46%)
Multigravidas	8 (16.7%)
Antibiotic Use during pregnancy	21 (43.8%)
Hypertensive Disease of Pregnancy	27 (56.3%)
Gestational HTN	10 (37%)
Preeclampsia	18 (66.7%)
Eclampsia	1 (3.7%)
Preeclampsia superimposed on chronic HTN	2 (7.4%)
Unspecified	3 (11.1%)

Comparison by Race

Demographics	All n (%)	White n (%)	Black n (%)
Age, years, mean(range)	28 (15-44)	28 (18-44)	25 (15-33)
Education			
<high school	6 (13)	3 (8)	3 (37)
High school or GED	12 (29)	10 (28)	2 (25)
Some College	15 (31)	14 (39)	1 (13)
College/Graduate Degree	12 (25)	9 (25)	2 (25)
Health Insurance			
Private	21 (44)	20 (53)	1 (11)
Medical Assistance	24 (50)	15(40)	8 (89)

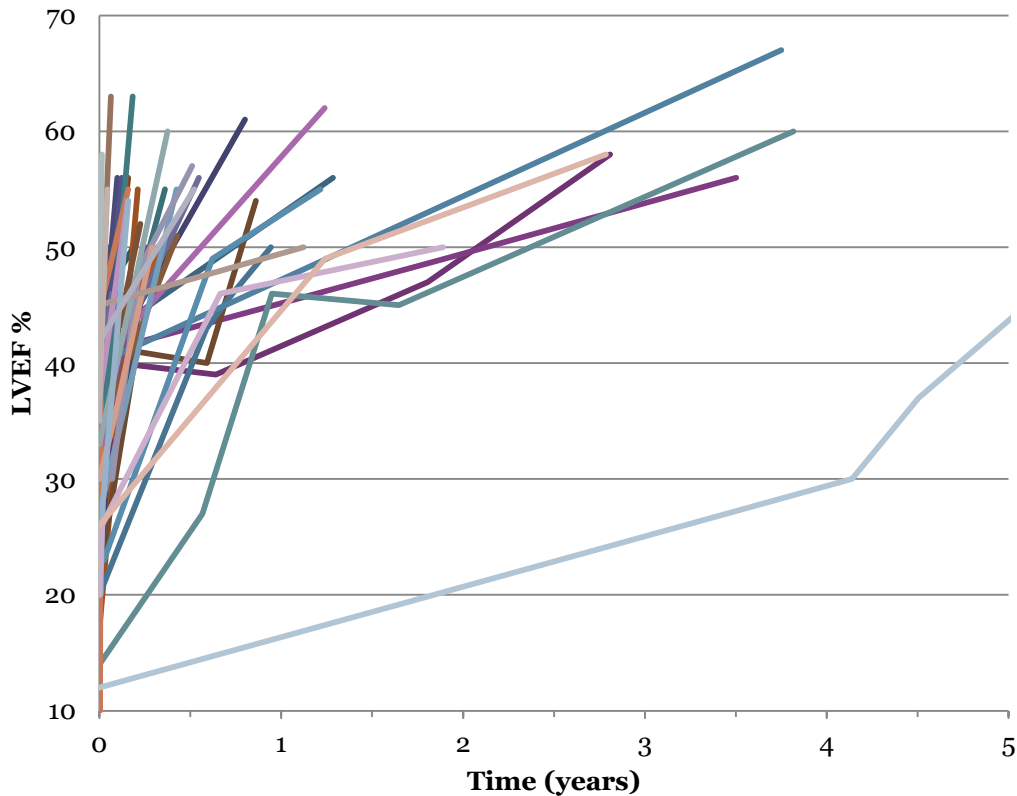
Medical History	n (%)	White	Black
Obese or Overweight	32 (49)	28 (74)	5 (56)
Depression	22 (47)	17(45)	5 (56)
Anxiety	12 (27)	11 (29)	1(11)
Other Mental Health	15 (32)	12 (32)	3 (33)
Asthma	11 (23)	8 (21)	3 (33)
Allergies	23 (49)	20 (53)	3 (33)
Infections	32 (68)	23 (61)	9 (100)
Migraines	21 (45)	18 (47)	3 (33)

Obstetrics History	n (%)	White	Black
Primiparous	22 (46)	17 (45)	5 (56)
Hypertensive Disease of Pregnancy	8 (31)	5 (13)	2 (22)
Gestational HTN	7 (88)	4 (80)	2 (100)
Preeclampsia	5 (63)	3 (60)	1 (50)

Index Pregnancy	n (%)	White	Black
Access to Standard Medical Care	26 (55)	22 (44)	4 (58)
Unplanned Pregnancy	23 (40)	14 (45)	6 (67)
Gestational Age			
<37 weeks	21 (44)	18 (53)	3 (38)
37-42 weeks	21 (46)	16 (47)	5 (62)
Low Birth Weight (<2500 grams)	22 (46)		
Multigravidas	8 (17)	7 (19)	1 (11)
Antibiotic Use during pregnancy	21 (44)	16 (42)	5 (56)
Hypertensive Disease of Pregnancy	27 (56)	22 (58)	5 (56)
Gestational HTN	10 (37)	9 (41)	1 (20)
Preeclampsia	18 (67)	14 (64)	4 (80)
Eclampsia	1 (4)	1 (5)	0 (0)
Preeclampsia superimposed on chronic HTN	2 (7)	2 (9)	1 (20)
Unspecified	3 (11)	2 (9)	1 (20)

Echocardiography Data

LVEF Trends from diagnosis to recovery (years 0-5)

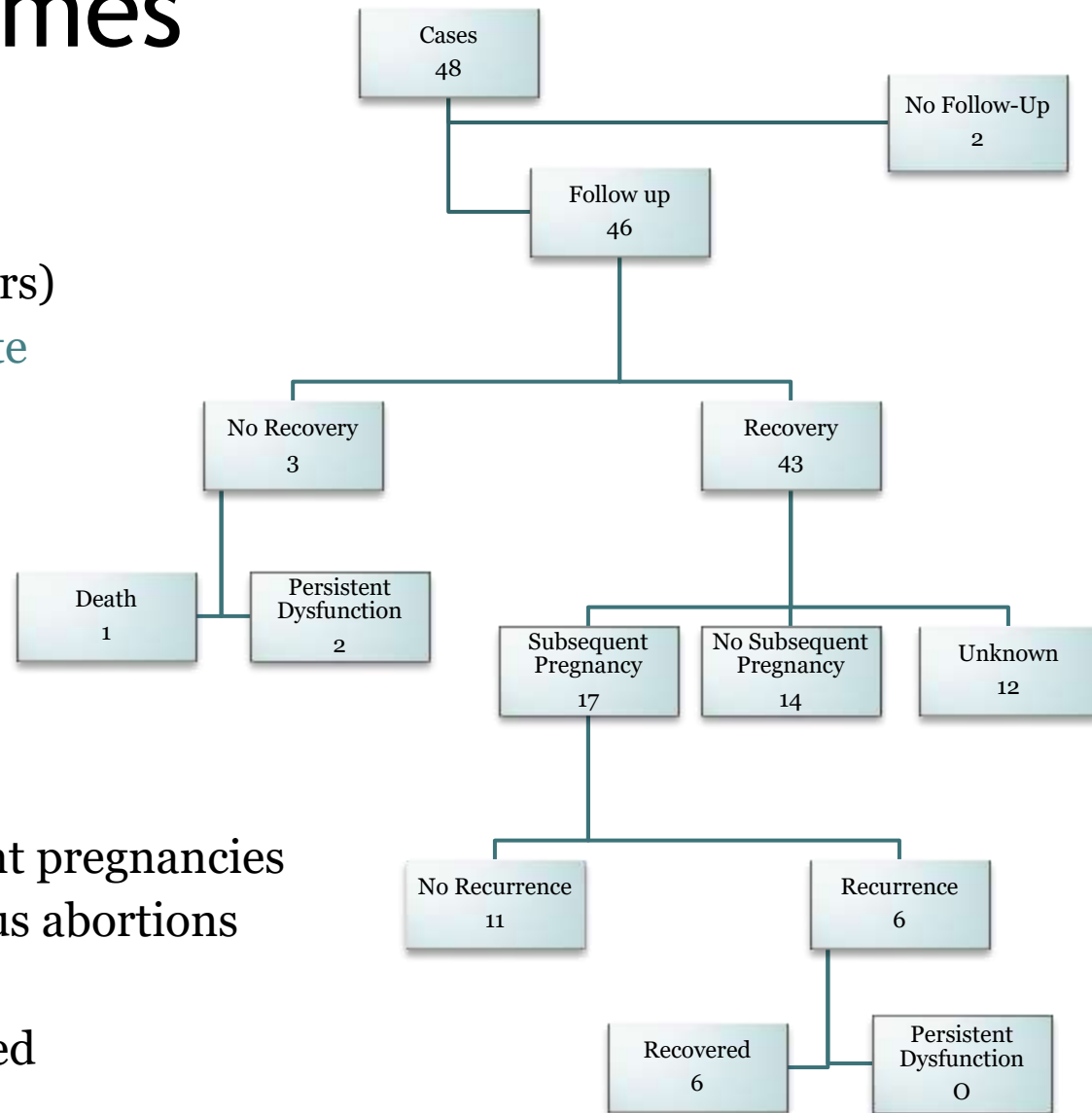


Mean LVEF (%)	All	White	Black	p
Diagnosis	34	34	32	0.7
Recovery	56	55	57	0.4
Highest Reached for Recovered	61	60	62	0.1
Subsequent Pregnancy (No Recurrence)	60	61	57	0.6
Recurrence	43	43	44	0.4
Recurrence Recovery	53	55	50	0.02

Mean LVEDD (mm)	All	White	Black	p
Diagnosis	55	55	56	0.7
Recovery	48	47	49	0.4
Highest Reached for Recovered	45	46	44	0.3
Subsequent Pregnancy (No Recurrence)	49	49	46	0.5
Recurrence	52	54	48	0.4
Recurrence Recovery	51	52	48	0.1

Outcomes

- 48 Cases
- 46 Cases w/ follow-up
 - Mean 6.6 years (0.1-26.5 years)
- 43 recovered – 8 Black/35 White
- 3 did not recover
 - 1 death – 1 White
 - 2 persistent disease
 - 1 Black & 1 White
- 0 transplants
- 3 received devices
- Subsequent Pregnancies
 - 17 patients had 27 subsequent pregnancies
 - 7 terminations, 5 spontaneous abortions
 - 25 deliveries
 - 6 mild relapses – all recovered
 - 3 Black & 3 White



Summary

- 48 Cases of PPCM within Rochester Epidemiology Project Area
- Additional potential risk factors identified - mental health, migraines, infections, allergies
- Differences in demographics and characteristics by race and similar outcomes by ECHO but Blacks higher rate of recurrence
- Very Good Outcomes:
 - 43 recovered – recovery can take over 5 years
 - 1 death
 - no transplants
 - 2 persistent dysfunction
 - 17 patients had 25 subsequent pregnancies with delivery
 - Only 6 recurrences – all recovered