

**THE QUEEN'S
MEDICAL CENTER**

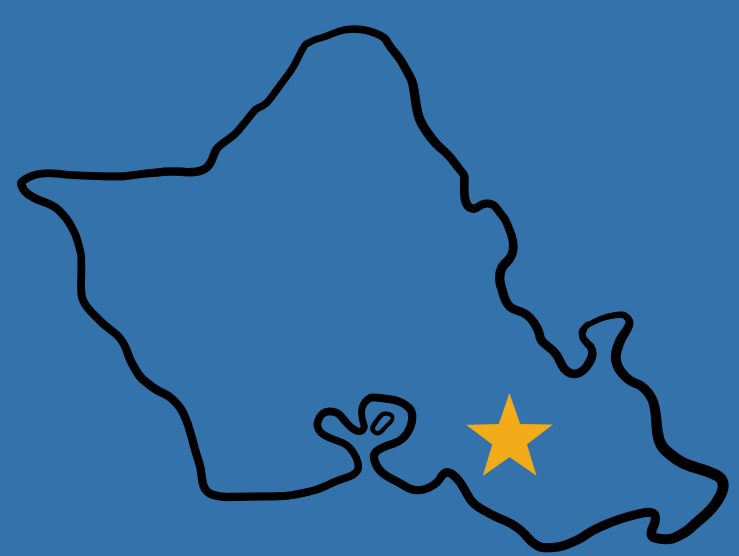
Characterizing Rheumatic Heart Disease (RHD) in Pregnancy: A Case Series from Hawai'i

Katelyn Corpuz, Mary Tschann, Bliss Kaneshiro, Elizabeth Mercer, Stacy Tsai; The Queen's Medical Center Office of Research and Development


Introduction

- RHD: chronic heart valve condition largely affecting reproductive-aged women (1)
- Prevented by antibiotic therapy
- Composes 30% of cardiac disease in pregnancy in developed countries and 90% in non-developed countries (2)
- May be diagnosed during pregnancy for the first time due to increased hemodynamic stress (3)
- Recognizing common morbidities for mother and child can inform optimization of care

Graphical Abstract:




Patients: 25;
20 (83%) NHPI
Pregnancies: 27
Live births: 24
Maternal deaths: 1



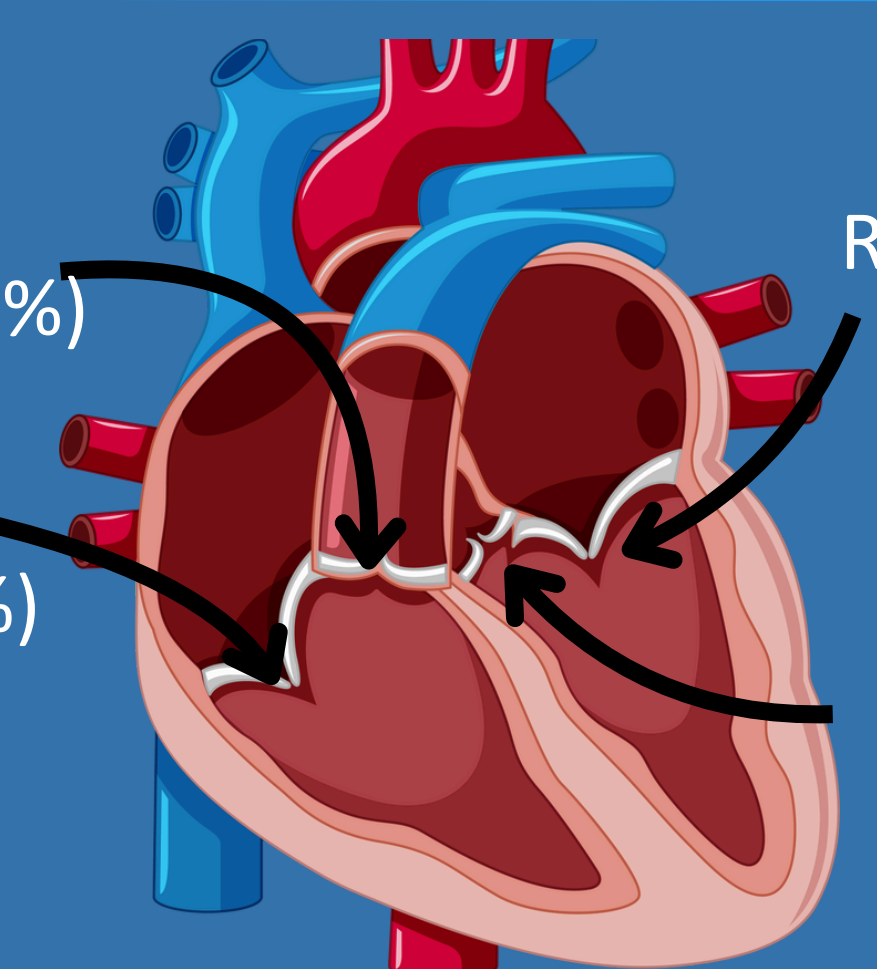
Health Insurance
Public (Medicaid/Quest): 21 (78%)
Private (HMSA): 5 (19%)
Uninsured: 1 (4%)

Pregnancies with prior heart valve replacement(s): 9 (33%)

Mechanical: 2
Prosthetic: 9



Cardiology specialty care before pregnancy: 17 (63%)
Known RHD before pregnancy: 19 (70%)




Pulmonic valve
Regurgitation: 10 (37%)

Tricuspid valve
Regurgitation: 22 (81%)


Mitral valve
Regurgitation: 15 (56%)
Stenosis: 16 (59%)

Aortic valve
Regurgitation: 10 (37%)
Stenosis: 4 (15%)



Long-term antibiotic therapy before pregnancy: 10 (37%)

Mean first prenatal visit GA: 15 weeks
Mean delivery GA: 37 weeks




Prenatal Complications

- ICU stay: 6 (22%)
- Pulmonary edema: 7 (26%)
- Heart failure: 18 (67%)
- Pulmonary hypertension: 17 (63%)
- Stillbirth: 2 (7%)

Postpartum Complications

- Emergent valve replacement surgery: 5 (19%)
- ICU stay: 7 (27%)
- Pulmonary edema: 8 (31%)
- Heart failure: 19 (70%)
- Pulmonary hypertension: 18 (67%)
- Maternal death: 1 (4%)



Take-Home Message:

This study is likely the first characterization of RHD in pregnancy in a predominantly NHPI population. We observed that RHD during pregnancy had higher frequency of complications, including heart failure, pulmonary edema, and stillbirth. We recognize that systemic barriers such as limited access to antibiotic treatment, late prenatal care, and missed postpartum follow-up may have contributed to these morbidities.

Results:

Antepartum outcomes

Characteristic	Mean (SD); n (%)
Antepartum ICU stay > 24 hours (n=27)	6 (22.2%)
Need for emergent surgery (n=27)	1 (3.7%)
Pulmonary edema (n=27)	7 (25.9%)
Thromboembolism (n=27)	2 (7.4%)
Preeclampsia (n=27)	3 (11.1%)
Major bleed while on an anticoagulant medication, requiring blood transfusion (n=27)	0 (0%)
Fatality (n=27)	0 (0%)
Stillbirth (n=27)	2 (7.4%)
Miscarriage (n=27)	1 (3.7%)
Heart failure (n=27)	18 (66.7%)
Pulmonary hypertension (n=27)	17 (63%)

Postpartum outcomes

Characteristic	Mean (SD); n (%)
Completed postpartum follow-up appointments with an obstetrician within 2 months (n=26)	17 (65.3%)
Completed postpartum follow-up appointments with a cardiologist within 2 months (n=26)	18 (69.2%)
Postpartum ICU stay > 24 hours (n=26)	7 (26.9%)
Valve replacement surgery within 2 months postpartum (n=26)	5 (19.2%)
Pulmonary edema within 2 months postpartum (n=26)	8 (30.7%)
Thromboembolism within 2 months postpartum (n=26)	3 (11.5%)
Major bleed while on an anticoagulant medication, requiring blood transfusion within 2 months postpartum (n=26)	1 (3.8%)
Postpartum heart failure within 1 year of delivery (n=26)	19 (70.3%)
Postpartum pulmonary hypertension within 1 year of delivery (n=26)	18 (66.7%)
Fatality while postpartum within 1 year of delivery (n=26)	1 (3.8%)

Methods

- Retrospective case series
- Identified patients with RHD during pregnancy who delivered and had prenatal care at QMC
- Data obtained from electronic medical records on Epic/CareLink
- Non-identifying patient data recorded on RedCap; data analyzed with Microsoft Excel

Conclusion:

- Identifying common complications of RHD in pregnancy in a predominantly NHPI population can inform optimization of care
- Recommend delivery at a level 4 maternal care facility for RHD patients in pregnancy, given risk of postpartum morbidities
- Many patients had delayed prenatal care and low rates of OB and cardiology follow-up care after delivery, which may have contributed to these morbidities
- Further research: larger sample size for definitive evaluation of RHD impact on maternal and fetal morbidity

References:

1. Peters, F., Karthikeyan, G., Abrams, J., Muhwava, L., & Zühlke, L. (2020). Rheumatic heart disease: current status of diagnosis and therapy. Cardiovascular diagnosis and therapy, 10(2), 305–315. <https://doi.org/10.21037/cdt.2019.10.07>

2. 1. Carapetis, J. R., Steer, A. C., Mulholland, E. K., & Weber, M. (2005). The global burden of group A streptococcal diseases. The Lancet. Infectious diseases, 5(11), 685–694. [https://doi.org/10.1016/S1473-3099\(05\)70267-X](https://doi.org/10.1016/S1473-3099(05)70267-X)

3. Baghel, J., Keepanasseril, A., Pillai, A. A., Mondal, N., Jeganathan, Y., & Kundra, P. (2020). Prediction of adverse cardiac events in pregnant women with valvular rheumatic heart disease. Heart (British Cardiac Society), 106(18), 1400–1406. <https://doi.org/10.1136/heartjnl-2020-316648>