Association Between Remote Monitoring and Interstage Morbidity and Mortality in Single Ventricle Patients Across Socioeconomic Groups

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IRB Number: STUDY00002016

Describe role of Submitting/Presenting Trainee in this project (limit 150 words): Primary investigator and author of this study which is my scholarly work product for fellowship.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background: Despite improvements in outcomes over time, morbidity and mortality for infants with single ventricle (SV) heart disease remains high. Among other risk factors for mortality, infants of low socioeconomic status (SES) are known to be particularly vulnerable following stage 1 palliation.

Objectives/Goal: We sought to determine whether use of a novel remote monitoring program, CHAMP (Cardiac High Acuity Monitoring Program), mitigates differences in outcomes by SES for infants with SV during the interstage period.

Methods/Design: Using the CHAMP database, we identified 610 infants across 11 institutions enrolled in the program between 2014–2021. All enrolled patients’ families were provided with a Windows-based tablet with built in cellular capability, at no cost to them, and video capability allowing for instantaneous transfer of patient information to the care team. Patients were divided into SES tertiles based upon six unique variables relating to SES status. Hierarchical logistic regression, adjusted for potential confounding characteristics, was used to determine the association between SES and mortality or transplant during the time between the first and second palliative procedures (interstage period).

Results: Of 610 infants in the study cohort, 39 (6.4%) died or were listed for transplant during the interstage period. In univariate analysis, non-hispanic/non-latino patients, patients not exclusively
orally feeding at discharge, patients with ventricular dysfunction prior to discharge, and patients with AV-valve regurgitation prior to discharge were at higher risk for mortality or need for transplant during the interstage period. The rate of mortality or need for transplant between SES tertiles was not statistically significant (p=0.24). Even after multivariable adjustment, the odds of mortality or transplant were no different for those in the middle [odds ratio (OR) 1.7, 95% confidence interval (CI) 0.734, 3.938, p=0.421] or highest (OR 0.997, 95% CI 0.296, 3.359, p=0.421) SES tertile compared to patients in the lowest SES tertile.

**Conclusions:** In a large cohort of infants with SV heart disease enrolled in a digital remote monitoring program during the interstage period, we found no difference in outcomes based upon SES. The findings of this study are in contrast to findings from prior studies showing worse outcomes for SV patients of low SES. Our study suggests this novel technology could help mitigate differences in outcomes for this fragile population of patients.