

ACHA 2022 Research Grant Award

Tracey Thompson, MD
Salil Ginde, MD
Medical College of Wisconsin



Project Title: *Impact of a Home-Based Healthy Lifestyle Program on Body Composition and Exercise Capacity in Adult Congenital Heart Disease Patients with Heart Failure*

Due to increased survival of individuals with congenital heart disease, there has been a shift in complexity of congenital heart lesions present in adulthood, with more patients with complex CHD and additional comorbidities living longer. Heart failure due to ventricular dysfunction is the most common cause of premature death in adults with congenital heart disease (ACHD). ACHD patients with heart failure are also known to have reduced muscle mass and reduced exercise capacity, both of which contribute to an increased risk of morbidity and mortality. Bioelectrical impedance analysis (BIA) is emerging as a precise and reliable method of measuring body composition and is being increasingly utilized in both acquired and congenital heart disease to track body composition over time. It does not require radiation exposure, is low-cost, and presents little to no risk to patients.

Since 2019, our ACHD program has implemented a 12-week nurse-led home-based Healthy Lifestyle program with weekly telehealth visits promoting dietary modification and physical activity. Of the 26 ACHD patients that completed the program, physical activity increased by an average of 1,371 daily steps on pedometer, and patients achieved an average weight loss of 10.6 ± 6.4 pounds. However, it is unclear how this diet and exercise intervention improved body composition, specifically with regards to muscle mass and fat distribution. Furthermore, it is unclear if these changes would result in improvements in exercise capacity, in particular in the higher risk ACHD patients with heart failure. We hypothesize that a 12-week Healthy Lifestyle program will increase lean muscle mass measured by BIA and improve exercise capacity in ACHD patients with heart failure.

To test this hypothesis, we will perform a prospective, randomized, controlled study with 20 ACHD patients 18 years of age or older with reduced ventricular function. They will be randomized to either our 12-week home-based Healthy Lifestyle program or no intervention as a control. We will compare changes in body composition (measured with BIA) and exercise capacity (measured with cardiopulmonary exercise testing) between those that completed the Healthy Lifestyle program and those in the control groups before and after the 12-week study period. With the knowledge that directed home-based exercise and diet guidance can improve body composition and exercise capacity we can apply this to future care of these vulnerable patients and improve their outcomes.