

Heart Transplant Malnutrition Project

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Define: Background

Orthotopic heart transplantation (OHT) remains the only mainstay treatment for certain types of heart disease and failure. Strategies for caring for these pediatric and congenital cardiac patients undergoing OHT continues to evolve.

Malnutrition is common in pediatric heart failure due to many factors.¹ The importance of nutrition in both pediatric and adult heart failure cannot be overstated, as malnutrition has been associated with both poor wait list outcomes and reduced post-transplant survival.²

This project described the JHACH Heart Transplant Program's malnutrition status, and designed an intervention program with the goal of successfully decreasing our transplant patient's malnutrition state. This description categorized patients as Adequate/Normal, Mild Malnutrition, Moderate Malnutrition and Severe Malnutrition. Intervention through this project significantly reduced the percentage of patients with malnutrition status.

Objective/Goal

This Quality Improvement Project aimed to describe the current state of our population with regards to malnutrition while improving the nutritional status of these children. By 06/01/2022, our Goal was to decrease the overall number of patients with malnutrition by 20% in those awaiting cardiac transplant or who were post-transplant through intervention by the nutritional rehabilitation team.

Scope

The Scope of this project included all JHACH heart transplant patients that are currently followed by the Heart Transplant Program. All patients seen in the heart transplant clinic were screened at each visit. This project excluded patients that have transferred to other centers and adult heart transplant patients.

Measure

| This interim document contains Confidential and Privileged Information and as such is protected by Florida Statutes 395 and 766 and Federal Health Care Quality Improvement Act and the Patient Safety and Quality Information Act of 2005 | | | | | | Johns Hopkins All Children's Hospital | | | | | | | | | | | | |
|--|---------------------|--------------------|-----------------------------|-------------|-------------|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Confidential Peer Review Material | | | | | | Heart Transplant | | | | | | | | | | | | |
| | | | | | | Quality and Patient Safety Dashboard | | | | | | | | | | | | |
| Dashboard - by Fiscal Year | | | | | | LEGEND | | | | | | | | | | | | |
| Measures | Phase of Transplant | Process or Outcome | Source: Measure / Benchmark | Baseline | Goal | Jul-21 | Aug-21 | Sep-21 | Oct-21 | Nov-21 | Dec-21 | Jan-22 | Feb-22 | Mar-22 | Apr-22 | May-22 | Jun-22 | |
| Percent of pediatric post heart transplant patients who are diagnosed with malnutrition. | Post-Transplant | Outcome | EMR | new measure | new measure | Total # of Transplant Patients | 89 | 89 | 89 | 89 | 89 | 91 | 90 | 90 | 90 | 90 | 86 | |
| | | | | | | Total # of Patients with Malnutrition | 13 | 13 | 13 | 13 | 15 | 15 | 9 | 10 | 12 | 11 | 10 | 9 |
| | | | | | | % of Patients | 15% | 15% | 15% | 15% | 17% | 17% | 10% | 11% | 13% | 12% | 11% | 10% |
| Percent of pediatric transplant patients screened for malnutrition (measured monthly) in clinic. | Post-Transplant | Outcome | EMR | new measure | new measure | 41 | 36 | 44 | 27 | 31 | 44 | 41 | 35 | 43 | 40 | 48 | 51 | |
| | | | | | | 41 | 36 | 44 | 27 | 31 | 44 | 41 | 35 | 43 | 40 | 48 | 51 | |
| | | | | | | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |

Analyze

12 PDSA Cycles were performed over a one-year period to work towards the goal of reducing malnutrition in this population. Malnutrition was analyzed by the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition definitions. There was a 40% reduction in the number of patients with malnutrition as evidenced by a BMI or Weight for Length z-score 0 to -0.99 indicating no malnutrition with the acknowledgement of the limitation of our small sample size.

Improve

1. Developed and created a REDCap Database to track malnutrition and progress through data entry into a registry.
2. Obtained IRB approval for "Not Human Subjections Research (NHSR/Quality Improvement (QI))" titled: Johns Hopkins All Children's Hospital Heart Transplant Malnutrition Quality Improvement Project.
3. Malnutrition Screening. All heart transplant patients were screened in-patient, at least quarterly in clinic, or if they had new unplanned weight loss.
4. Dietitian Intervention. All patients with mild, moderate or severe Malnutrition had Dietitian Intervention including Out-Patient Nutrition Clinic visits and In-Patient consultation with subsequent follow-up.

Control (Sustainability Plan)

- Malnutrition screening and intervention compliance was reported to the Heart Transplant QAPI Committee. This compliance was tracked on the Heart Transplant Dashboard, and reported monthly.
- The Heart Transplant QAPI projects and activities, including the Heart Transplant Malnutrition Projection, are reported upward through the institution. The QAPI Dashboard is reported to the JHACH Heart Institute PS&Q Council twice a year and the JHACH hospital-wide PS&Q Council and the Board Quality and Patient Safety Committees on a yearly basis.
- All staff involved in Malnutrition Project were educated on the screening and intervention process with monthly review of these patients.

References

- Becker et al. **Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Indicators Recommended for the Identification and Documentation of Pediatric Malnutrition (Undernutrition).** *Journal of the Academy of Nutrition & Dietetics.* 2014 Dec.
- Hollander SA. **Malnutrition in Pediatric Heart Failure.** *American College of Cardiology.* 2019 Feb 04.
- Mehta NM et al. **Defining Pediatric Malnutrition: A Paradigm Shift Toward Etiology-Related Definitions.** *Journal of Enteral and Parenteral Nutrition.* 2013 March 25.