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Adapting to Hospital Culture and Improving Patient Care: Development and Implementation of a Pediatric Gastrostomy Tube Medical Home Program

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Background

Pediatric gastrostomy tube (GT) placement is often required for improvement in nutritional status and development in medically complex pediatric patients with multiple comorbidities.¹ The GT medical home concept has been published as a program used to coordinate the multispecialty care of these patients.^{2,3} A GT medical home developed at Seattle Children's has improved their GT process.⁴ At LVHN, the GT process lacks a clear pathway for patients and families, contributing to more frequent emergency department visits, increased postoperative length of stay (LOS), higher 30-day readmissions, and more complications.

Problem Statement

Using a new GT process map and increased perioperative parental education, this study looks to determine the effectiveness in reducing postoperative length of stay, post-operative complications, 30-day readmission rates and emergency room visits with implementation of a GT medical home model.

Methods

- GT medical home resources from Seattle Children's reviewed/discussed with multispecialty work group at LVHN
- Key stakeholders provided input on workflow and culture
- New inpatient and outpatient GT process maps created with preoperative checklists, "living" medical plan documents and standardization of pre- and post-operative care
- Implementation began 09/2016
- IRB approval as non-human subjects research with subsequent retrospective chart review using LVHN Pediatric GT NSQIP data from 01/2015-07/2018
- Data gathered on focus areas of admission type (inpatient/outpatient), post-operative LOS, 30-day readmissions, 30-day emergency department visits, and process compliance
- Analyzed data with percentages as entire cohort and in two cohorts based on admission type for overall trends; reviewed total case number per month for trend

Results

Table 1. Combined Pediatric GT data from LVHN

	Pre-Implementation	Post-Implementation
Length of Stay	6.11 days (average)	3.83 days (average)
Post-operative complication	50.0% (13/26)	30.4% (14/46)
30-day readmission	19.2% (5/26)	13.0% (6/46)
30-day GT related ED Visit	26.9% (7/26)	23.9% (11/46)
Pre-operative pathway followed	N/A	60.9% (28/46)

Table 2. Outpatient vs. Inpatient Pediatric GT data from LVHN

Outpatient	Pre-Implementation	Post-Implementation
Length of Stay	2.26 days (average)	1.29 days (average)
Post-operative complication	47.4% (9/19)	26.5% (9/34)
30-day readmission	15.8% (3/19)	11.8% (4/34)
30-day GT related ED Visit	21.1% (4/19)	26.5% (9/34)
Pre-operative pathway followed	N/A	61.8% (21/34)
Inpatient	Pre-Implementation	Post-Implementation
Length of Stay	16.6 days (average)	11.0 days (average)
Post-operative complication	57.1% (4/7)	41.7% (5/12)
30-day readmission	28.6% (2/7)	16.7% (2/12)
30-day GT related ED Visit	42.9% (3/7)	16.7% (2/12)
Pre-operative pathway followed	N/A	58.3% (7/12)

- 77 total patients with GT placement with 72 included in analysis
- Surgical volume increased from 0.72 to 2.4 GTs/month

Discussion

- GT medical home implementation showed decreased LOS, 30-day readmissions, 30-day ED visits, complications over a 2 year period
- More procedures completed outpatient
 - Increase in 30-day ED visits noted – possible causes are increased patient volume, need for better parent/guardian education in outpatient cohort
- Compliance to pathway - 60.9%
 - noted areas for improvement: GI consult completion prior to surgery appointment & completion of NG feeding trial prior to GT placement
- Volume of GT placement increased with GT process as possible contributory cause (increased communication with NICU/Good Shepherd)
- GT process quality improvement project successfully conducted with SELECT focus on Health Systems and utilization of PDSA cycle

Conclusions

The GT medical home concept can be successfully adapted at any children's hospital after modifying for a hospital's culture and resources. At LVHN, we demonstrated effects of decreased LOS, re-admissions, complications and ED visits after implementation of modified clinical process maps for GT patients. Utilizing this information, further improvements to the GT process can be made at LVHN and similar pathways may be used for departmental/interdepartmental process improvements.

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