

Reducing short-term tube feeding in infants following cardiac surgery: A quality improvement study

Courtney Hardy, MD¹; Louise Bannister, MSc, RD¹; Nadina Villacis, MHS, RD¹; Alison Schwartz, MScOT, OT Reg. (Ont.)¹; Jennifer Kilburn, MN, RN¹; Jennifer L. Russell, MD, FRCPC¹

¹Division of Cardiology, Labatt Family Heart Centre, The Hospital for Sick Children, University of Toronto

Background & Context for Change

- Short-term tube feeding (NG/NJ) is common in infants after cardiac surgery. Across North America, 34.9% of infants are discharged home on tube feeds, compared to 21.3% in the top 10th percentile of PAC3 centers
- At SickKids, rates are higher: 40.6% of infants at discharge and 18.0% at the 2-month postoperative follow-up visit
- Unnecessarily prolonged tube feeding, and failure to re-establish oral feeding, is associated with oral aversion, delayed development, readmission, aspiration, and caregiver burden
- Aim:** Decrease the percentage of infants discharged on short-term tube feeds following cardiac surgery from **40.6%** to **21.3%** by July 1, 2026 (7 months)

Family of Measures



Outcome measure: Percentage of infants discharged with a short-term feeding tube following cardiac surgery



Process measures:
1) Percentage of infants with completed SmartPhrase
2) Percentage of feeds taken orally at time of tube removal

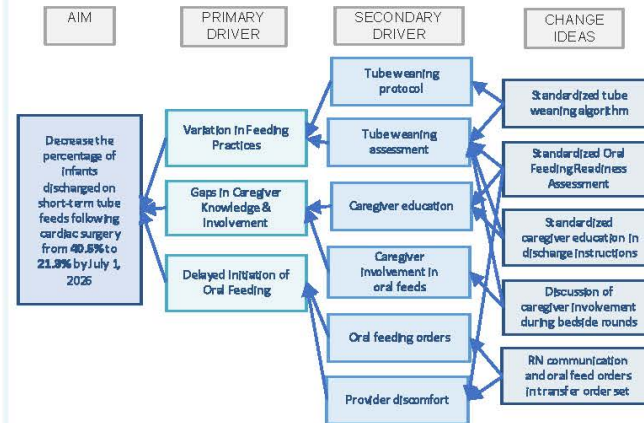


Balancing measures: LOS, change in weight, tube reinsertion

Problem Characterization

- Improvement team consisted of inpatient cardiologist, dietitians, occupational therapist, Heart Centre Quality Lead, and resident
- Key root causes were identified using a Fishbone diagram informed by stakeholder engagement and a Pareto chart derived from retrospective chart review
- A Driver Diagram identified targeted change ideas (Figure 1)

Figure 1. Key Driver Diagram



Interventions

Change Idea 1: Oral Feeding Readiness Assessment SmartPhrase, integrated into the EMR & completed daily by bedside RNs

- Pre-op feeding history: **Pre-op feeding**
- Feeding route: **Feeding route**
- Feed volume (mL/day at midnight): **Feed volume**
 - Percentage of feeds taken orally = ***** %**
- Tube feed method: **Feed method**
- Signs of unsafe oral feeding: **Signs of unsafe feeding**
- Readiness for oral feeding: **Oral feeding readiness**
- Caregiver involvement in oral feeding (over past 24h): **Caregiver involvement**
- Is oral feeding a caregiver-identified goal? **yes/no/unsure/other**



Change Idea 2: Short-term tube weaning algorithm



Results

- 95 infants enrolled between December 1, 2025 – March 31, 2026 (study ongoing)

Figure 2. SPC Chart of Outcome Measure (P-Chart)

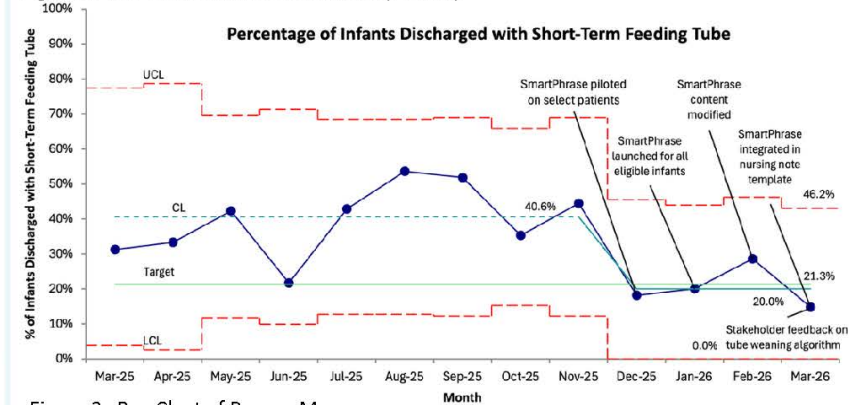
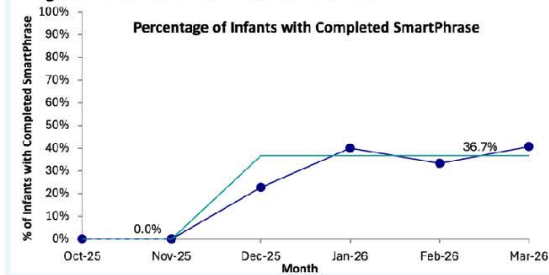


Figure 3. Run Chart of Process Measure



Balancing Measures:

- Hospital LOS decreased from 20.8 to 11.2 days
- Median post-discharge weight gain: 20.9 g/day
- No reinsertion of short-term feeding tubes
- Mean outpatient follow-up: 30.2 days (n=33)

Conclusion

- Early change ideas have been successfully adopted and are undergoing iterative refinement, with observed reduction in the percentage of infants discharged with short-term feeding tubes from **40.6%** to **20.0%** in 4 months
- Future directions include implementation of additional change ideas and ongoing PDSA cycles to ensure successful adoption and sustainability