Post-NICU Feeding and Nutrition 2020

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No Disclosures**

**I've had 2 kids, 1 with colic and reflux and know/lived mega sleep deprivation

Objectives

- Discuss background of Home Enteral Feeding Transitions (HEFT) clinic
- Show results of our HEFT post-NICU clinic
- Present “what’s new” for area feeding clinics
- Field questions on infant feeding.

Background 2015/2016

- PCH's hospital NICU population had ~ 1 in 3 patients discharged home on NG, GT, NJ feeds
- O2 need at discharge & tracheostomy were both associated with increased tube use
- LOS was greater in GT patients
- Adverse events were low: 2% of tube patients were re-admitted for a tube event
- GT morbidity was higher: 63% of tube-related ED visits and 82% of tube-related readmissions

White BR, Zhang, C, Presson AP, Friddle K, DiGeronimo R. Prevalence and outcomes for assisted ho me feeding in medically complex neonates. *J Pediatr Surg*. 2018; 54(3): 465- 470

Home Enteral Feeding Transitions (HEFT) Clinic – 2015/2016

1. Neonates have complex needs and comorbidities surrounding feeds[1-4]
2. Earlier discharge NICU programs are becoming more common[5, 6]
3. GT placement is becoming less common [6,7]

HEFT Clinic Creation - 2016

MISSION

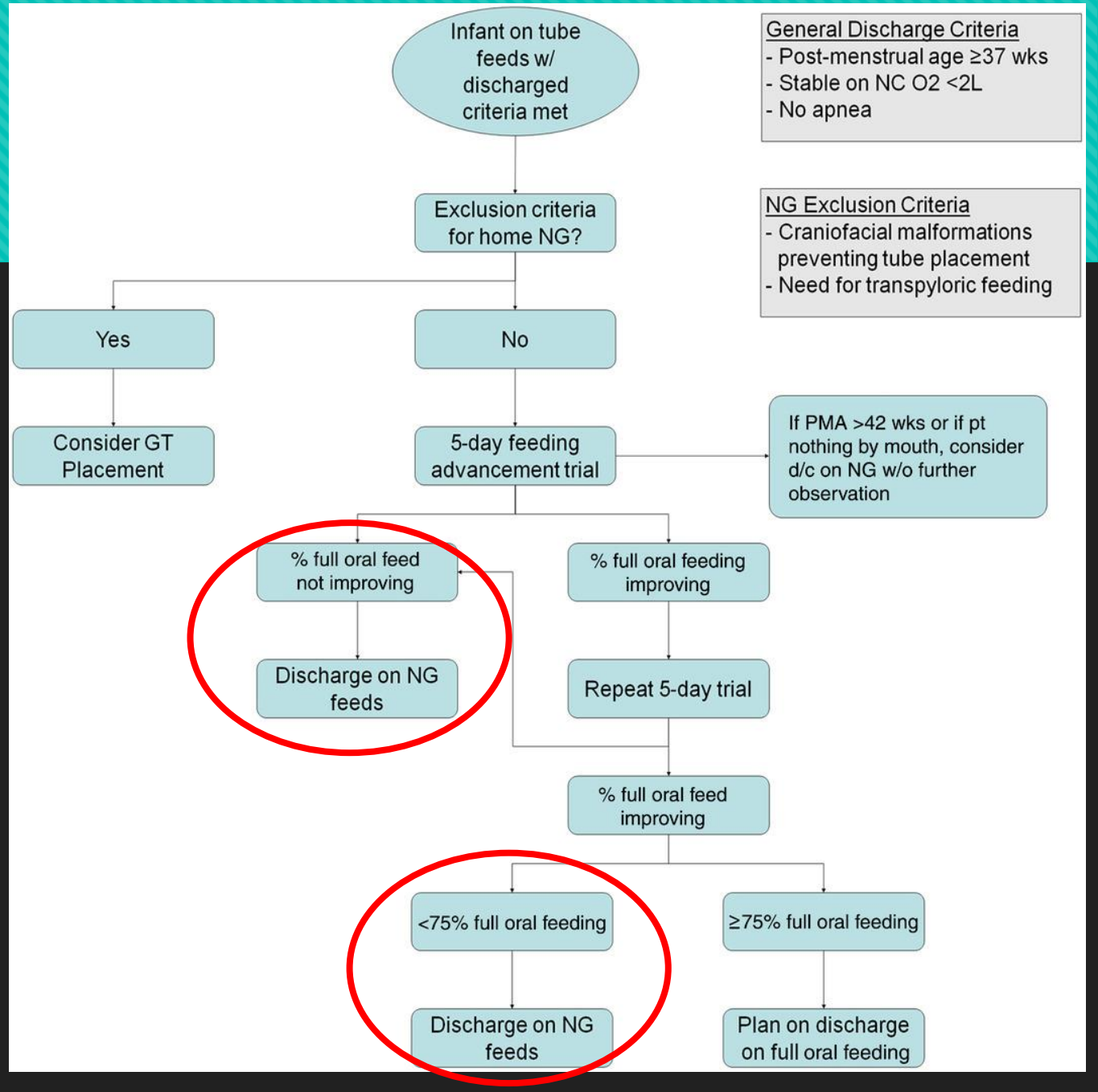
1. Provide streamlined outpatient support for patients/families for infants with fragile feeding needs
   - Provide “one-stop shop” for feeding oversight
   - “Tube Weaning” efforts
2. Reduce LOS and associated-costs and comorbidities in the NICU
3. New Program development based on patients’ needs

HEFT Discharge PCH NICU

Babies appropriate for HEFT clinic:

1. Must have partial oral ability
2. NG/GT use or
3. Thickener use for feeds

- Parents agree to home tube



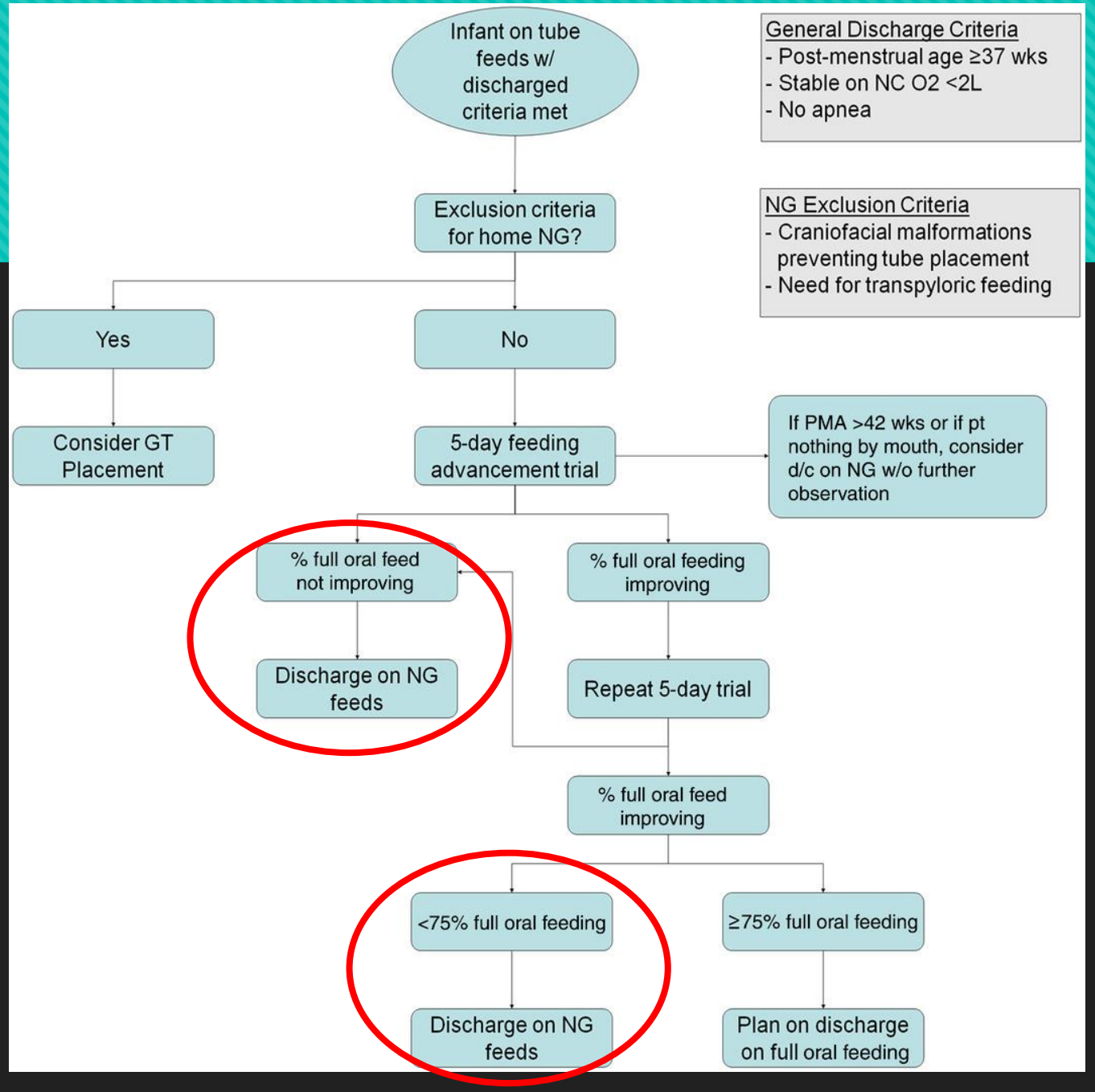
HEFT Discharge PCH NICU

- Sept 2016 – Pilot program started
- May 2017 – 232 Infants enrolled in NICU;
  - 98 infants discharge on HEFT protocol
- May 2018 – 182 patients enrolled

- LOS improved in pilot group
  - **56.2** days in historical patients
  - **53.6** days in HEFT cohort

- Safety After Discharge
  - No differences in the pre-pilot cohort and post-intervention cohort

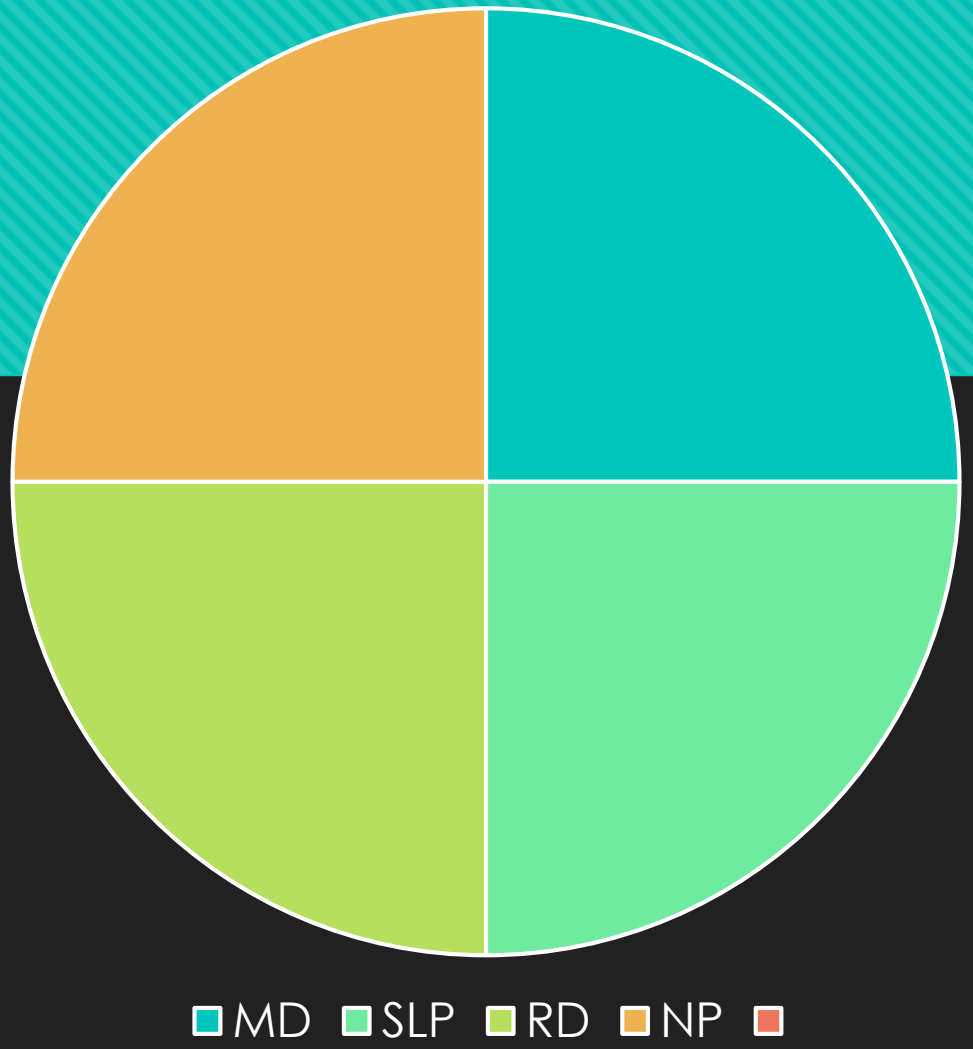
- Cost-Savings: $27,669/patient



White, B.R., Ermarth, A., Thomas, D., Arguinchona, O., et al (2019), Creation of a Standard Model for Tube Feeding at Neonatal Intensive Care Unit Discharge. *Journal of Parenteral and Enteral Nutrition.* doi:10.1002/jpen.1718

HEFT Clinic 2020

- Drs Ermarth & O'Gorman
- Kristin Brinker, SLP & Nicki Barrett, SLP
  - NICU feeding specialists
- Moira Kryger, RD, IBCLC
- Hillary Torres, NP



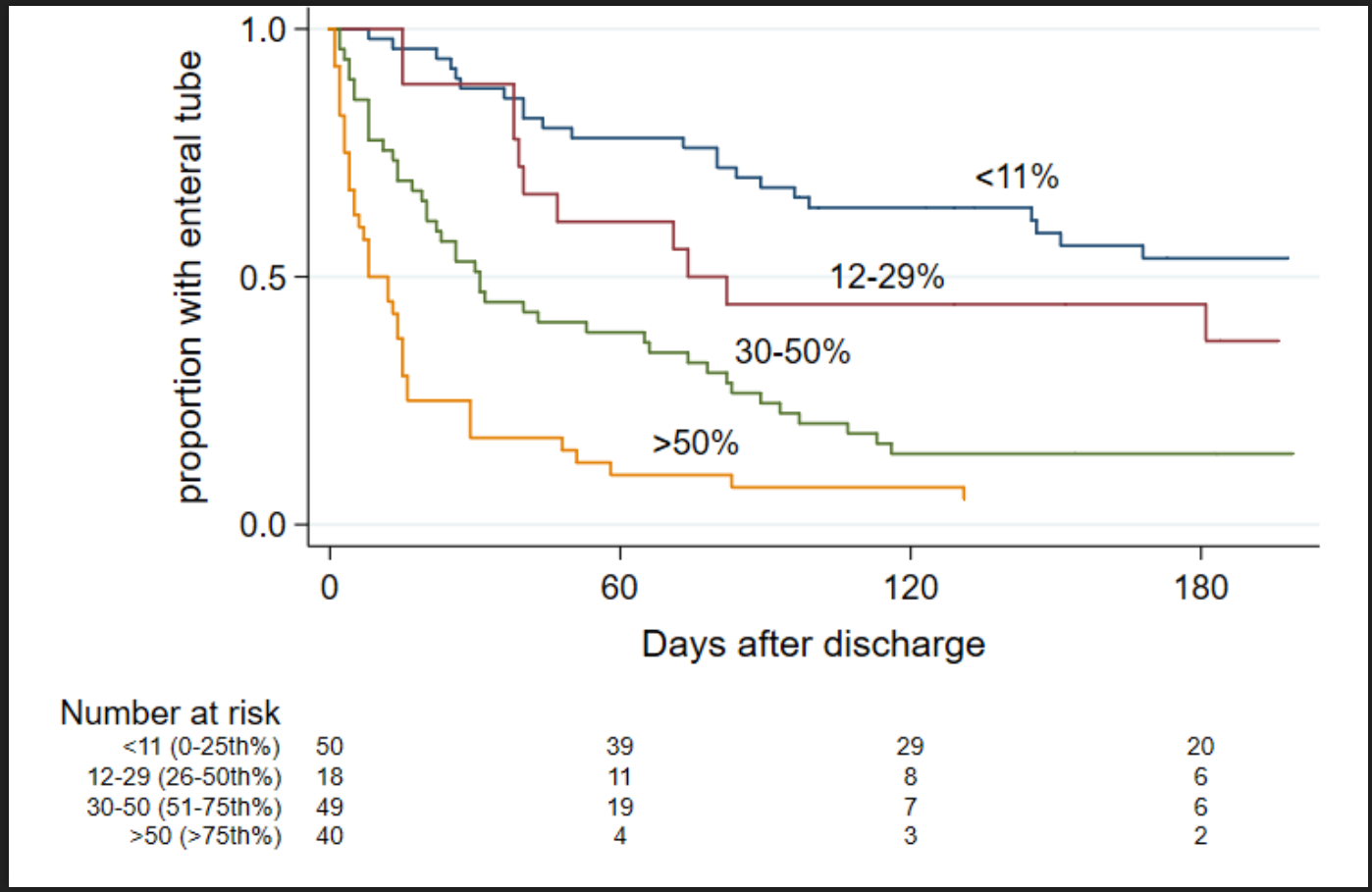
- Incorporates medical, environmental, social, developmental considerations for feeding neonates and babies

A Visit to HEFT Clinic ~ 80 minutes

Clinical characteristics	HEFT cohort	Tube weaned group	Non-weaned group	p value
n (%)	182	121 (67)	61 (34)	-
NGT, n (%)	110 (60)	106 (88)	4 (6)	<0.001
Male sex, n (%)	108 (59)	74 (61)	34 (56)	0.482
Birthweight, g (IQR)	2428 (1380, 3185)	2510 (1550, 3385)	2270 (1130, 2930)	0.035
LOS, days (IQR)	38 (19, 87)	33 (17, 67)	55 (24, 124)	0.003
PMA at discharge, wks (IQR)	43.6 (41, 46.9)	42.9 (40.6, 45.3)	45.6 (42.4, 52.7)	<0.001
Gestational age at birth, wks (IQR)	36 (30, 38)	36 (31, 38)	36 (27, 38)	0.443
PO at discharge, % (IQR)	20 (0, 43)	29 (11, 50)	0 (0, 10)	<0.001
Weight at discharge, g	3765 (3160, 4540)	3700 (3180, 4355)	3975 (3085, 5315)	0.078
Follow-up weight-for-length*, z-score *n=168	-0.06 (-0.82, 0.88)	-0.28 (-0.88, 0.69)	0.16 (-0.63, 1.14)	0.082

Ermarth A., et al. (2019) Effective Tube Weaning and Predictive Clinical Characteristics of NICU Patients with Feeding Dysfunction. *Journal of Parenteral and Enteral Nutrition,* 1-8 doi:10.1002/jpen.1717

HEFT Babies' *Days to Feeding Tube Discharge by PO%*



N=121

Ermarth A., et al. (2019) Effective Tube Weaning and Predictive Clinical Characteristics of NICU Patients with Feeding Dysfunction. *Journal of Parenteral and*

Safety of Tube Weaning at Home (w/in 6 mo)

Emergency Room visits n=15 (13%)	Hospital Admissions n=9 (5%)
8 GT complications 4 NG/NJ complications 2 Poor growth 1 parent uncomfortable with feeding equipment	8 Poor growth* 1 Aspiration pneumonia *All admissions <72 hrs
1.6 ER visits per 500 tube days	0.8 admissions per 500 tube days

25,710 tube days for all patients (n=182)

Novel Results from HEFT clinic cohort

- First to show “Time to Tube Discharge” in this large of cohort
  - Prospective manner
- First to show tube exposure days : adverse events
- Gave clinical characteristics upon discharge to help NICU/post-NICU practitioners
  - “10%” rule
- Babies can keep an NGT longer than previous recommendations
- Afterthought: saves healthcare dollars

HEFT Advantages

- Fully-integrated feeding & nutrition support
  - "NICU Potpourri"
- Customized and supported "Tube Weaning"
  - Alternatives: long-distance programs, expensive, controversial
  - Primary care collaboration
- Consistent and streamlined approach for therapies and interventions
  - Thickener management and standardization
  - Swallow study (MBS) management

HEFT Expansion 2016-2020

- Serves 3 NICUs
  - PCH, Univ Hospital, IMC
- Clinics
  - 1.5 days/week
- Typical wait time for 1st appointment 2-4 weeks post-discharge

NG-GT Tube Pearls

- "There are 1,000 ways to skin a feeding tube."
- Try to match the family's needs
  - E.g. Multiples → Try to match siblings' schedules
  - Parental or caregiver shift work
  - Babies with oxygen need
    - BPD/PHTN - some tolerate feeds better with increased oxygen flow
- Positioning matters
  - Side-lying, upright

NG-GT Tube Pearls

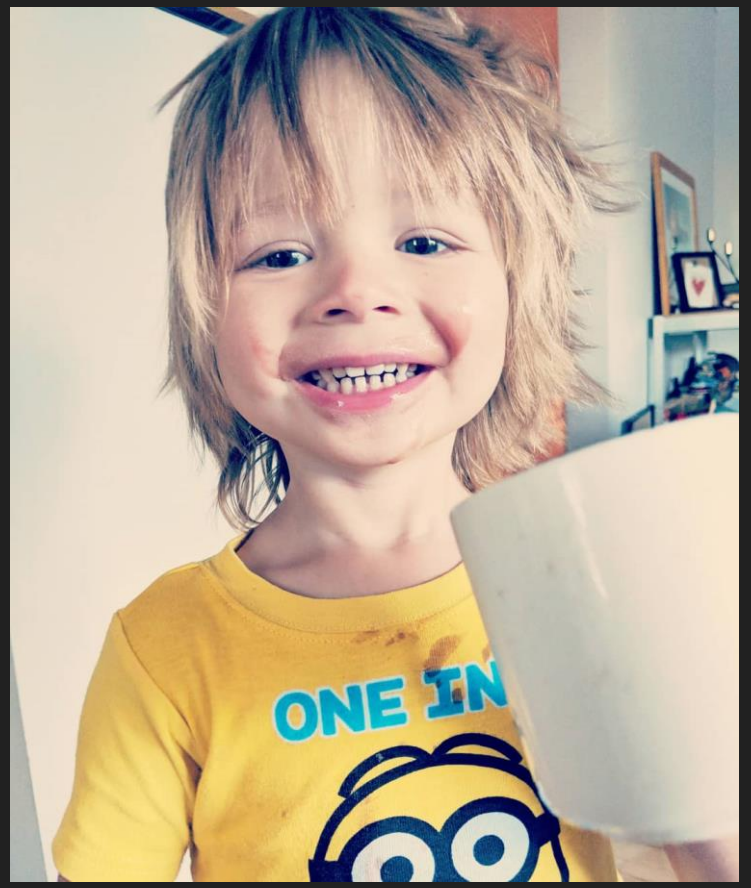
- Continuous overnight feeds are NOT a step backward
  - Useful for easy GER or vomiting babies
  - Useful for severe BPD or babies with post-NICU irritability
  - Helpful for parent sleep/recovery
  - No data to show increased risk of tube displacement or aspiration risk
- GT relative indications*
  - Worsening or stagnation of lung disease +/- aspiration;
  - poor growth;
  - poor social functioning;
  - Parental preference or discomfort w/ NGT
  - Dermatitis

* McSweeney, M, . et al. *Pediatrics 2020;145.*

Future Endeavors

- "Healthy Infant" Feeding clinic
  - For the term, non-NICU patient who has feeding dysfunction.
- Pediatric Nutrition Clinic
  - Still the spot for malnourished patients
- Expansion of HEFT
  - Currently only UofU, PCH, IMC
  - Difficult to clone providers
- Future Studies
  - The BPD patient, the Neurologic patient, GT vs. NGT, Thickener safety and utilization

Thank you! Questions?



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