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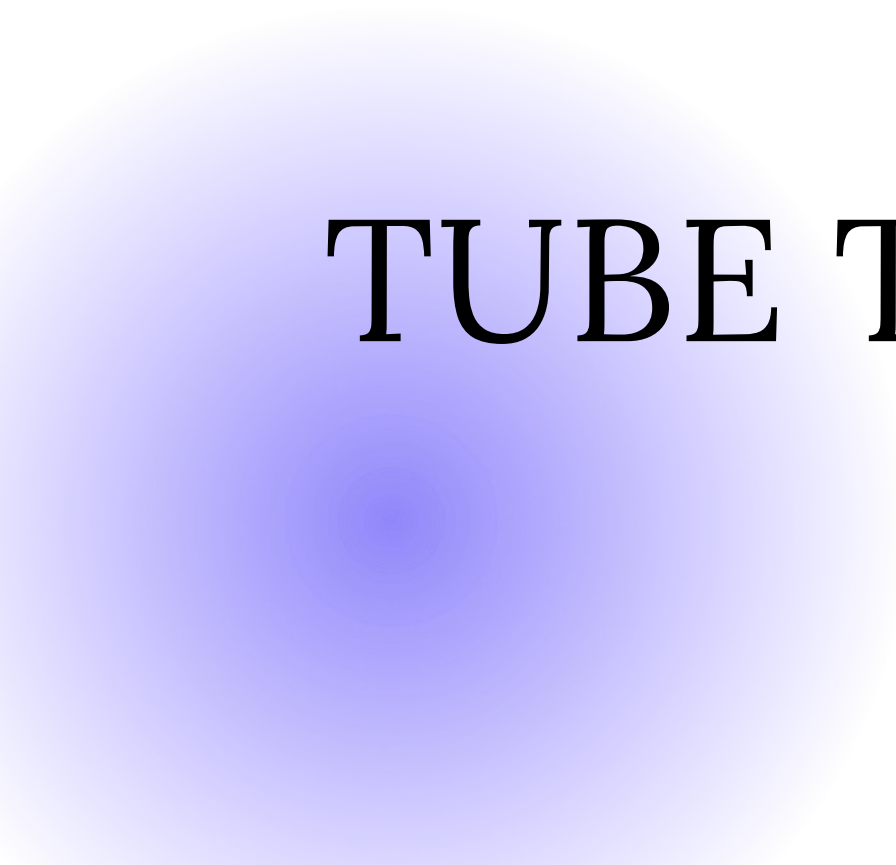
DISCHARGING INFANTS HOME  
WITH FEEDING TUBES:  
NASOGASTRIC TUBE VS.  
GASTROSTOMY TUBE

# HISTORY OF GASTROSTOMY TUBES

# A VERY BRIEF HISTORY..

- 1800s – First surgical gastrostomies performed for esophageal obstruction/cancer
- Mid 20<sup>th</sup> Century – Expanded use in neurological impairment, congenital anomalies, FTT
- 1980s – Development of percutaneous endoscopic gastrostomy (PEG)
- 1990s-Present – Increased use in neonatal population due to survival of ELBW/VLBW infants and feeding disorders
  - Dysphagia/aversions, Genetics, Neuro, feeding immaturity etc.





# TUBE TYPES

## G-TUBE AND GJ-TUBE TYPES AND BRANDS IDENTIFICATION JOB AID

### GASTROSTOMY TUBE

#### AMT MiniOne



- Sits on skin
- Requires extension tubing
- Has Balloon Port

#### MIC-KEY



- Sits on skin
- Requires extension tubing
- Has Balloon Port

#### High-profile Balloon



- External bolster sits on skin
- Long tubing
- Has balloon port

#### High-profile Non-balloon



- External bolster sits on skin
- Long tubing
- No balloon port

#### Low-profile Non-balloon



- Sits on skin
- Requires extension tubing
- No Balloon Port

### GASTRO-JEJUNOSTOMY TUBE

#### MIC-KEY



- Sits on skin
- G & J port use same extension tubing

#### AMT GJet



- Sits on skin
- G & J require different extension tubing

#### AMT Micro GJet



- Sits on skin
- Micro written on device
- Narrows from 14 Fr to 8 Fr
- G & J require different extension tubing



NGT VS GT



# NG VS GT – GOING HOME WITH A FEEDING TUBE

## NASOGASTRIC TUBE

- Infants with feeding immaturity as the sole barrier to discharge
- Requires standardized caregiver education
- Criteria should include
  - Medical stability
  - Absence of severe aspiration risk
  - Expectation that the only remaining barrier is oral feeding immaturity

## GASTROSTOMY TUBE

- Severe neurological impairment, BPD, SGA, congenital anomalies that prevent successful oral feedings
- Requires standardized caregiver education
- Criteria should be highly individualized and made in collaboration with the family



# NG VS GT – GOING HOME WITH A FEEDING TUBE

## NASOGASTRIC TUBE

- American Society for Parenteral and Enteral Nutrition (ASPEN) and North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) both recommend NGT for infants expected to achieve full oral feedings within 2-3mo
- HEFT Program
- Passport Home Program

## GASTROSTOMY TUBE

- Ideally is reserved for those who will require long-term feeding needs > 3mo

# NG VS. GT - SHORT TERM COMPLICATIONS

## NASOGASTRIC TUBE

- 38% NG tube dislodgement rate in preterm infants
  - MUCH higher for OG tube 83%
- Nasal/pharyngeal irritation
- Epistaxis
- Sinusitis
- Otitis media
- Aspiration events are similar between NG and GT

## GASTROSTOMY TUBE

- Procedural risks (perforation, peritonitis, stomach separation from abdominal wall)
- Minor complications 22-67%
  - Infection, granulation tissue, accidental dislodgement
- Major complications 2-17%
- Most common early surgical complications
  - Infection and peristomal leakage (5-10%)
  - Peristomal infections decrease with pre-op antibiotics



# NG VS. GT - LONG TERM COMPLICATIONS

## NASOGASTRIC TUBE

- Chronic nasal and pharyngeal irritation
- Sinusitis and otitis media
- Rarely esophageal or intestinal perforation (related to tube stiffening)
- Prolonged NG use (> 3mo) associated with high rates of food refusal
- Poor anthropometric outcomes

## GASTROSTOMY TUBE

- Granulation tissue
- Peristomal leakage
- Buried bumper syndrome
- Tube occlusion
- Infection

# NG VS. GT: LONG TERM COMPLICATIONS

## NGT MORE DISLODGEEMENT

- Accidental removal
- Misplacement
- Reinsertions
- Caregiver burden
- Generally minor

## GT MORE MEDICAL COMPLICATIONS

- Site infections
- Granulation tissue
- Leakage
- Skin irritation
- Procedural revision
- Medically significant, but remained manageable
- Placed in sicker patients

# IBRAHIM ET AL. (2025) VS. KHALIL ET AL. (2017)

Aspect	Ibrahim et al. (2025)	Khalil et al. (2017)
Study Design	Literature review + Implementation report	Retrospective chart review
Sample Size	25 patients (Dec 2020 onward)	322 patients (NG=84, GT=238)
Primary Focus	Program development and feasibility	Compared NG vs. GT outcomes
Key Outcomes	GT conversation rate 4%	Full oral feedings by 6mo: NG 71% and GT 19%
Safety Data	Showed safety and feasibility	NG 9.5% and GT 33% ED visits for complications
Unique Contribution	Provided discharge algorithm, workflow, and telehealth integration	Quantified complication rates and feeding progression differences
Population	Feeding was only barrier to discharge	All infants discharged with NG regardless of indication (broader)
Clinical Impact	NG discharge programs are implementable with proper structure	NG tubes have fewer complications and better oral feeding outcomes

# EVIDENCE SUPPORTS HOME NG FEEDINGS WITH STRICT CRITERIA...

Many studies suggest NGT discharge programs are associated with

- Earlier achievement of oral feedings
- Fewer serious complications when compared to GT
- Avoidance of GT placement in many infants
- 60-70% of infants discharged with NG avoid GT completely





# HEFT STUDY

- Lack of standard discharge process
- Historically, discharge decisions are heavily provider dependent and inconsistent
- HEFT Study – University of Utah (White et al., 2019)
  - 232 and 98 sent home with NG
  - 10% increase in NG discharges after algorithm implemented
  - Decreased LOS by **10 days**
  - No increase in ER visits or rates of re-hospitalizations
  - High parent satisfaction, 98% would choose NG again
  - Median **13.5 days to full PO** after discharge
  - Estimated a savings of \$2163 per NICU day (approximately **2.7 million** for all 98 babies)

# CMH HOME NG POLICY

- Consider home NG for  $\geq 37$  weeks PMA
- Normal discharge criteria including stable respiratory status, no A/B/D events, weight gain etc.
- **Exclusion criteria** > anatomic barriers, severe reflux with respiratory compromise, conditions preventing safe feeding at home, genetic conditions, neurological conditions, etc.
- Once starting PO observe for x5 days and assess progress, if <50% and no progress consider GT
- If PO is 50% or better observe x5 additional days, if no improvement proceed with home NG
  - Can bypass this if  $\geq 40$  weeks and taking  $\geq 50\%$  PO and has not improved in 5 days
- Complete caregiver education including placement, feeding assessment, social and environmental barriers
- Close outpatient follow up
  - Weekly weights, NICU follow up clinic within 2-4 weeks AND CMH OT, referral for home nursing, early childhood interventions

# GT PROCEDURE AND CARE

- Fairly quick approximately 15min to place and about 1hr start to finish (longer if complex anatomy like CDH)
  - Typically, can usually use GT immediately unless otherwise stated
- Internal sutures vs external sutures
  - Purpose is to hold stomach against abdominal wall and prevent detachment
  - Cutting sutures early is usually not recommended unless causing significant harm
- Safe to discharge when clinically ready regardless of suture type
  - CMH Surgery is agreeable to discharge when patient is ready, no longer required to wait 5 days for sutures
  - Anyone can cut/remove sutures
  - Feel free to touch base just in case!
- Managing sutures outpatient
  - Can provide family with suture removal kit (CMH surgery clinic does this)
  - Call PCP and ask if they are comfortable removing them
  - Last resort follow up in surgery clinic and will remove them there

# LONG TERM GT POPULATIONS

- ELBW/VLBW infants < 30 weeks who have BPD, severe IVH/PVL, and growth failure
- Neurologically impaired infants
- Congenital anomalies requiring surgical interventions
- Genetic conditions (Trisomy 13/18, less often 21)
- Demographic groups (Hispanic, public insurance, singleton gestations, Black mothers)



# TREATING GTS

- Silver nitrate
- GranuLotion
- Steroid Treatments (>6wks)
- Changing GT brands



# GASTROJEJUNAL

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Uncommon in CMH NICU but sometimes

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Primary 6–7kg or transition at 10kg (5–7kg special circumstances)

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Higher rate of complications

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Placed under IR guidance only

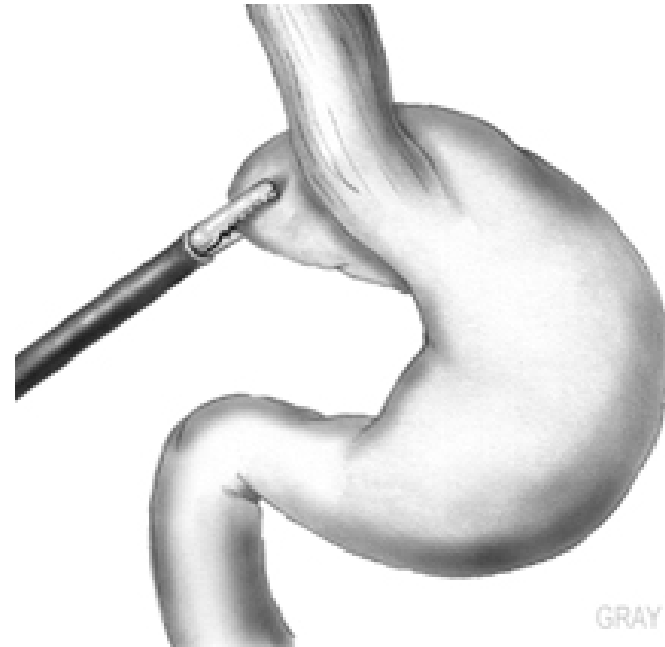
# TAKE-HOME POINTS

- Home NG programs are increasingly used in NICUs
- Many infants can avoid GT placement with NG at discharge
- GT remains appropriate for long-term feeding needs
- Strict guidelines, family education, and supportive follow up are essential

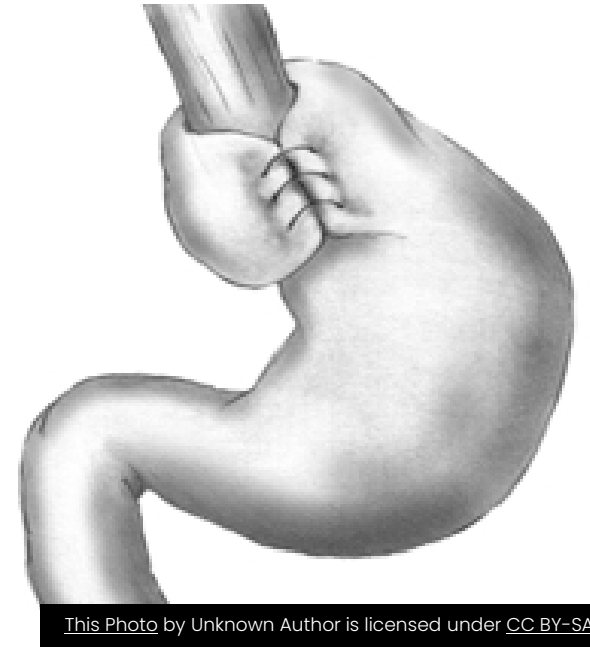
EMESIS,  
FUNDOPLICATION,  
CDH

# FUNDOPLICATION

- Preferred over GJ in infants < 4kg-5kg
- Decreases risk of perforation/injury
- Fairly safe but don't always work



GRAY 2007



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# CDH AND GTS

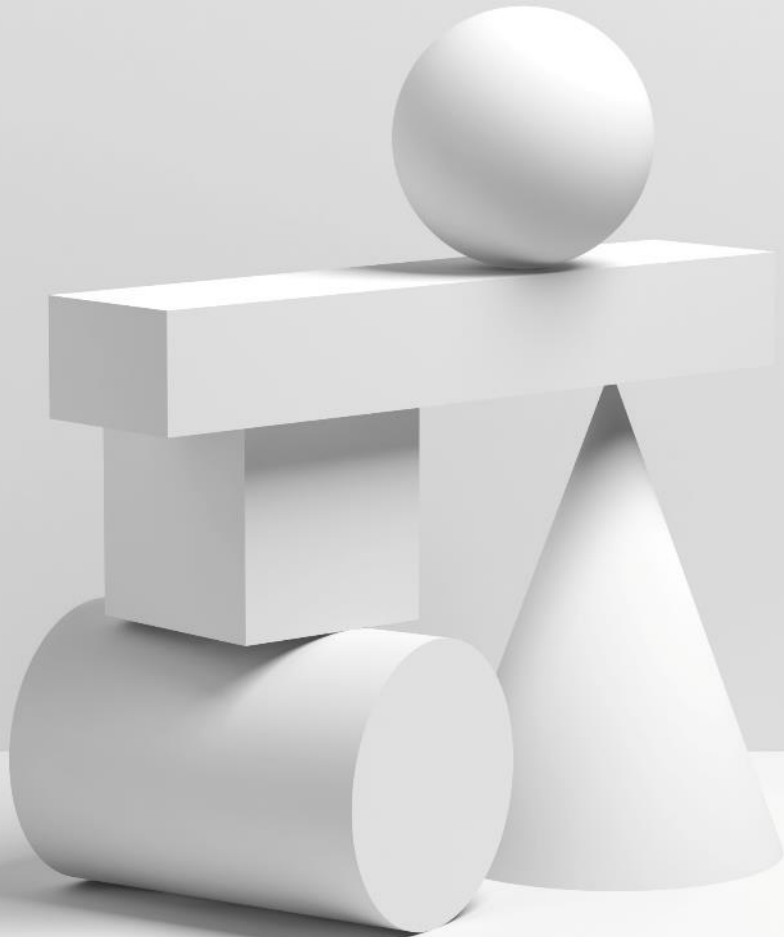
- Surgery WILL place GTs in CDH babies
- Delayed until 6-8 weeks post repair due to adhesions an surgical complexity





# 6 WEEKS

Follow up for GTs with surgery for initial change



# Q & A

You have the Qs I might have  
the As.

# RESOURCES

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- Berman, L., Baird, R., Sant'Anna, A., Rosen, R., Petrini, M., Cellucci, M., Fuchs, L., Costa, J., Lester, J., Stevens, J., Morrow, M., Jaszczyszyn, D., Amaral, J., & Goldin, A. (2022). Gastrostomy Tube Use in Pediatrics: A Systematic Review. *Pediatrics*, 149(6), e2021055213. <https://doi.org/10.1542/peds.2021-055213>
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