SickKids	Document Scope: Hospital-wide Patient Care	
	Document Type: Policy,Guideline Approved on 2022-10-13 Next Review Date: 2023-10-13	
	Connected Care Guidelines for Transition to Home and Community Care: Nasogastric (NG) tubes at home	Version: 1

1.0 Introduction

Supports and services for safe and seamless transitions to home and community care vary according to technology type, child's health condition, family caregiver preferences, and geography, among other variables. This guideline outlines specific information to guide discharge preparation and support safe transition home of a child and family with a new or ongoing need for a Nasogastric (NG) tube for nutrition support, fluids or medication/treatment.

2.0 Policy

2.1. The following teams are responsible to collaborate to support safe transitions to home and community for patients with a Nasogastric (NG) tube:

Table 1: Accountabilities of Teams

Team	Specific Accountabilities

Patient's primary clinical team	• Assessment and documentation of family readiness for safe discharges to home including confirmation of education and demonstration of relevant competencies at the bedside.
	• Financial support has been explored with family (see section 3.2.2)
	• A clear follow-up plan is documented in the electronic health record (i.e. Epic) that includes:
	  ○ an individualized NG tube enteral feeding/medication/treatment plan
	  ○ information regarding NG tube use and safety considerations, including a plan for troubleshooting equipment challenges (e.g. dislodgements)
	  ○ referral to Connected Care and/or Home and Community Care Support Services (HCCSS) to support tube management after discharge
	  ○ who will follow for medical complications, nutritional support and decision-making around tube weaning or permanent tube placement

Connected Care	• Capacity building for transitions to home and community via delivery of Education, Virtual Visits, Connected Care Live and Connected Care Clinic. • Receiving and managing electronic health record (E-HR) referrals for Connected Care services • Receiving and managing E-HR referrals for Transitional Care Coordination for select equipment/supplies (e.g. enteral pump), transportation and alternate levels of care

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Home and Community Care Support Services (HCCSS)	• Assessment, approval and the delivery of homecare services • Receiving and managing E-HR referrals for nursing visits and homecare orders (NOTE: a referral does not guarantee homecare will be provided)

3.0 Clinical Considerations in Preparation for Discharge

3.1. Child's Medical Readiness

- Patient is medically stable, with no required changes to their medical plan of care for the last 24-48 hours.
- Patient is nutritionally stable, with an established enteral nutrition plan that can be sustained in the home and community. For example-
    - Patient is tolerating nutrition support schedule.
    - A concurrent oral feeding plan is recommended if medically indicated.
- Patient is tolerating the selected mode, method, volume, rate and timing of feeds, fluids and/or medication prior to discharge.

3.2 Modes of administration acceptable for discharge

- **Bolus:** enteral feeds administered via gravity or syringe over approximately 15 minutes
- **Intermittent Bolus**: enteral feeds administered at slower rate than bolus feeds but faster than continuous feeds; usually over 30 to 45 minutes via gravity or enteral feeding pump
- **Continuous:** enteral feeds administered over 8 to 24 hours per day via enteral feeding pump
- **Methods of administration:** syringe, gravity and an enteral pump can be used to safely administer feeds, fluids and/or medications in the home and community. In choosing the method, consider the safety of the child, access and costs of equipment, ease of use/portability, and family caregiver preferences.
- **Volume, rate, and timing of administration**
    - Volumes of enteral feeds is established based on nutritional/fluid needs
    - When using **gravity**, the rate of administration is controlled by the roller clamp, height of feeding set, viscosity of feed/fluid and the size of the NG tube
    - When using **syringe**, the rate of administration is manually controlled and may be impacted by the viscosity of the fluid (e.g. formula, medication)
    - When using an enteral feeding **pump**, the rate of administration is programmed to be tolerated by the patient.
    - Timing of administration promotes optimal nutrition and safety (e.g. times during the day, patient awake versus asleep, family caregivers available to observe, if needed)

3.3 Family Caregiver Readiness

- Family caregivers/patient have received education of patient's individualized NG tube enteral plan including formula type, preparation of formula if applicable, fluids and flushes, medications, mode and method of administration, and rate and timing of administration
- Family caregivers/patient have received standardized NG tube training from Connected Care to include1) Maintenance and Troubleshooting and 2) Insertion (when indicated)
- Family caregivers/patient have been assessed by the clinical team and demonstrated competence in caring for the NG tube and is documented in the E-HR:
    - to verify placement, deliver feeds, fluids, and/or medications
    - to insert the NG tube, when indicated
- Contraindications to family caregiver **reinserting** the child's NG tube may include:
    - Specific patient populations as outlined by clinical team (e.g. Haem/Onc/BMT patient due to risk of infection and/or bleeding)
    - Clinical team or learner assessment may determine that it is not safe for family caregivers to insert NG independently at home (e.g. complex craniofacial anatomy, family caregivers challenged with demonstrating competence)
- Family caregivers/patient have participated in development of an action plan for when, where, and how they will manage routine and unexpected NG tube care challenges (e.g. routine timing for tube changes, unplanned tube dislodgements)

3.4 Child Safety Assessment

- Family caregivers are aware of the need for constant observation when administering NG feeds, fluids and/or medication for the following patient populations:
    - Neurodevelopmental age, delays, or impairment
        - Any child who lacks the ability to recognize and/or communicate to their caregivers if they experience issues with NG tube (e.g. entanglement, displacement) or NG feeds (e.g. vomiting, aspiration)
    - Absence of a gag reflex or other inability to protect airway
    - Concurrent use of Non-Invasive Positive Pressure (NPPV) Ventilation
- Patient position during feeds is assessed by clinical team and includes care planning with family prior to discharge.
    - Developmentally appropriate positions for mealtimes (e.g. in highchair with family at table) may be appropriate when NG tube feeds are running.
    - All attempts to facilitate safe sleep practices are recommended. Refer to Safe Sleep Policy (LINK).
    - A car seat may not be safe as it relates to positioning during NG tube delivery of feeds, fluids and/or medications (e.g. abdominal compression)

- Recommended practices at home to reduce the risk of dislodgement, entanglement, and strangulation:
    - Enteral pump is at the foot or bottom of the bed versus at the head, where it is routinely positioned during in-hospital admissions
    - Thread the NG tube through the length and out of the bottom of a onesie for infants and toddlers
    - Roll the NG tube and use medical tape to secure excess tubing from the feeding set or NG tube to the shirt of a patient

3.5 Accessible and Effective Plan for Ongoing Care Requirements

- Each patient discharged home with an NG tube has an action plan for who patients/families can contact for:
    - Medical complications
    - Tube-related issues
    - Nutritional supports as the patient grows
    - Ongoing clinical decision-making around tube weaning or permanent tube placement.

4.0 Home and Community Care Considerations and Practices

Practice standards often differ in home and community from the hospital environment due to differences in medical stability of patient, risk for nosocomial infections, cost, access to/types of equipment, family preferences, etc.

Table 2: Practices in Home and Community Care to Support NG Tube Care

	Home and Community Practices
Flushing	Type of water used to flush the tube depends on factors including: • Sterile water is recommended for patients less than 4 months of age • Tap, well, bottled, distilled, or sterile water can be used for patients greater than 4 months • Avoid vitamin-enhanced, sweetened, flavoured, or carbonated water when flushing enteral feeding tubes
Formula Hang Times	Criteria for formula hang times (time outside of fridge or opening of shelf stable product): • Spiked closed system up to 24 hours • Decanted ready-to-feed formula up to 8 hours • Reconstituted powdered formula up to 6 hours • Reconstituted liquid concentrate up to 6 hours

	• Human milk +/- fortifier or powdered formula up to 4 hours
Delivery of Feeds	Administration of feeds, fluids and/or medications via the NG tube include mode (bolus, intermittent bolus, continuous) and methods of administration: • Bolus feed via **gravity bag** and/or **syringe** (is preferred for NG tubes at home for ease of administration and cost, if tolerated by the patient) • Feeds, fluids and/or medications may be delivered via an **enteral feeding pump** if the child is unable to tolerate feeds by syringe and/or gravity

Cleaning	Frequency of cleaning the feeding set and/or syringes for the administration of enteral nutrition support is influenced by the type of feed (e.g. blenderized tube feeds, formula with added modules like fat) and need for cost containment in homecare:
	• Feeding sets and syringes are typically replaced 1-2 times per week
	• Cleaning solutions:
	  ○ Feeding sets and syringes are typically cleaned with warm, soapy water and rinsed after each use
	  ○ A mixture of one part vinegar and one part water may also be used

Routine NG Tube Changes and Troubleshooting	Support for NG tube care and reinsertions after discharge include care planning for routine care and unplanned challenges: • Connected Care Clinic for same-day or follow-up, delivered virtually or in-person • 4C (clinical team to arrange day visit) • ACE (clinical team to arrange day visit) • Visit to local Emergency Department for time-sensitive needs including when there is high risk of dehydration, hypoglycemia or other comorbidities that requires timely reinsertion of NG tube
Ongoing Support	Connected Care completes a virtual visit within 48h after discharge and remains accessible to family caregivers and homecare providers for ongoing support for tube related practice questions, equipment troubleshooting and education.

4.1 Equipment Supplies & Funding

- Enteral feeding supplies may be provided from various vendors in home and community (e.g. Specialty Food Shop, HCCSS)
  - Types of enteral feeding supplies and pumps in the community may differ from hospital
- Consider family's finances and availability of home and community care support

- Financial aid exists in Ontario to support patients and care providers that meet eligibility criteria.
    - Home and Community Care- may fund selected equipment and supplies Consult with Home and Community Care Coordinator.
    - ADP funding may be considered for patients that require long term support. Consult Transitional Care Coordinator.
- Consider other funding sources (e.g. private insurance, philanthropic) to support gaps in funding and refer to Social Work or the Navigation Resource Service.

4.2 Homecare Provider Readiness

- Consider if a referral to HCCSS may support a child and family's transition to 1) continue with NG tube teaching, or, 2) support re-insertion of NG tube, if indicated.
- Refer to Connected Care for education of homecare providers and to establish a plan for Connected Care virtual post-acute nursing visits.

4.3 Home Safety

- Consider if the home is accessible as needed by the child and family (e.g. ramp for stroller with medical equipment)
- Electrical safety has been discussed as needed (e.g. appropriate outlets, safe use of extension cords, grounded circuits, breakers, etc.)

5.0 Related Documents

Nasogastric Tube Insertion and Ongoing Maintenance
Enteral Feeding
Medication Administration via Feeding Tubes

6.0 References

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