Pediatric Nasogastric Tubes in the Home

RECOMMENDATIONS FOR PRACTICE


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One of the dilemmas facing home healthcare nurses is the placement of a nasogastric tube (NGT) in the home setting coupled with being assured and confident that the NGT tip is in the correct position, that is, the stomach. There are very limited data to address the issue of management of an NGT in the home care setting with even less guidance for the pediatric population. Therefore, home healthcare nurses must use agency policy and procedures coupled with their own education, knowledge, experience, and skills when performing this procedure. These may vary from agency to agency, thus providing inconsistencies in teaching and techniques.

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One of the dilemmas facing home healthcare nurses is the placement of nasogastric tubes (NGTs) in the home setting coupled with being confident that the NGT tip is correctly placed in the stomach. There are very limited data to address the issue of management of an NGT in the home care setting with even less guidance for the pediatric population. NGTs may be needed for continuous or intermittent administration of feedings, medications, or both. Children may need an NGT placed daily, or at a scheduled interval (i.e., every week). If a child accidentally removes the NGT in a home setting, the replacement would most likely be done by a family member. Most often, this family member was trained by a nurse, or nurses in an acute care facility, especially if the child had been hospitalized. Unlike their counterparts in the acute care setting where an x-ray can be easily obtained, home healthcare nurses must use agency policy and procedures coupled with their own education, knowledge, experience, and skills when performing this procedure.

An x-ray is the gold standard for confirming placement of an NGT in acute care settings, according to the 2012 Patient Safety Alert and by the American Society for Parenteral Nutrition (Metheny, 2016; National Association Childrens Hospitals, 2012). Because this is not feasible in the home care setting, the purpose of this article is to discuss the role of the home healthcare nurse in promoting best practices for NGT placement, verification, and complication prevention outside the acute care setting.

Background

If an NGT is required for a child in the home, the teaching generally begins during the hospital stay. Prior to being discharged from an acute care setting, nurses generally work with one or two primary family members who will assume this responsibility. Nurses teach the family members about the need for the NGT, how to insert the tube, how to verify placement, how to administer feedings/medications, actions to take in case of a misplaced tube, who to notify, and what to do in case of an emergency (such as signs of respiratory and/or gastrointestinal distress). These caregivers must demonstrate the skills of measurement, insertion, and placement check of the NGT. Prior to discharge from the hospital, they must also demonstrate administration of feedings and medications, along with the care of the NGT. When teaching families, nurses follow institution policies and procedures. Guidelines for these types of procedures may come from specialty organization position statements, textbooks, or may be generated in house using some combination of various resources. To date, there is not one set of guidelines to follow with specific information on teaching parents about NGT care. As a result, nurses rely on institutional policies, procedures, and guidelines to develop their own strategies for teaching families/parents. Parents can feel confused and frustrated if the teaching in the hospital setting is different from what the home care nurse teaches. This can also raise mistrust toward the healthcare team on the part of the parents.

Included in the educational instruction for family members is what to do if the tube is misplaced or pulled out, which is not an uncommon occurrence in the pediatric population. The information related to NGT placement, verification, administration of feeding/medication, care of the tube, observation for complications, and actions to take if they occur can be overwhelming for families. Fear of placing and/or replacing the tube could be an obstacle to parents becoming comfortable with this procedure. In order to decrease the fear, there must be a trusting relationship between the nurse and parent. Providing support and encouragement to the parent, as well as contact information for backup (on-call nurse phone number, emergency number access, etc.) are measures the nurse can take to assist the parent as they develop confidence in this procedure.

Once the team is comfortable with the family members' ability to provide the care and intervene appropriately, coupled with medical stability, the patient is discharged home. In the pediatric population, the age of the child and size of the tube can be additional stress factors. Also the fear, anxiety, and skill levels combined with educational levels may also impact learning and comprehension of the family member. It is one thing to perform a skill under the watchful eye of a nurse, but quite another to perform alone in the home setting.

Role of the Home Healthcare Nurse

Often when a child needs an NGT in the home, a home healthcare nursing agency referral is made for in-home support. The home healthcare

Table 1. NGT Placement Procedure

Steps	Comments
Make sure you have all supplies available before starting	Nasogastric tube (NGT), pectin wafer, scissors, tape, syringe, water for flushing
If appropriate, tell the child what is going to happen	Use age-appropriate language and assure the child the process will go better if he/she does not move.
Perform hand hygiene	
If available, apply a pectin-based skin protectant cut to size for the child and place on the cheek	Gently press in place as body heat helps with adherence. The tape will be placed over the pectin wafer to protect the skin.
Flush the tube with water if a stylet is used. This will make it easier to remove	The stylet will be very difficult to remove if this is not done and that is painful to the child.
Measure using the NEMU method	Nose→earlobe→xiphoid process to midpoint of xiphoid and umbilicus
Make sure the child is swaddled or immobilized to prevent trauma during insertion	This protects both the child and inserter
Lubricate the end of the NGT with water	Use of water-soluble lubricant can cause a burning sensation in the nare.
Gently advance the tube toward the back of the nare	Although the inclination is to rush this, it is best to go slowly as it is better tolerated by the child.
Blow into the face of the child once in the pharnyx to elicit a startle reflex that causes the younger child/infant to swallow	This works best for children under the age of 3 years
Advance the tube to the premeasured cm mark and remove the stylet if present	
Tape the NGT in place being sure to put the tape over the pectin wafer	Make sure the cm mark is visible
Aspirate the fill volume of the NGT (usually 2–5 mL) and discard	The pH of water is often ≥6 and that will skew the assessment of pH
Aspirate gastric contents and check pH. If ≤5, begin feeds	If unable to obtain an aspirate, turn the left side to promote pooling of gastric contents and recheck. If still unable to obtain an aspirate, remove the tube and reinsert as it may be coiled in the esophagus.

nurse may or may not have had the benefit of participating in the teaching process for the family member. Whenever this partnership can occur, the outcome for all parties is enhanced. However, if there is not a relationship, and the home care nurse is not involved in the initial teaching, this can cause the home care nurse to face a myriad of challenges. The nurse must validate that the family member has the skills and abilities to insert the tube, check placement, administer feedings or medications, problem solve, and seek help. Time of day, location of the family home (rural vs. urban), family transportation, and backup caregivers may also be influencing factors. Psychological factors can also influence learning. Therefore, the home healthcare nurse has to establish a baseline of the family members' knowledge, skills, and abilities related to NGT care. The home care nurse will then have to integrate this information previously taught to the family into their own teaching strategies. See Table 1 for NGT placement procedure steps and Table 2 for Do's and Don'ts of NGT placement in children

Literature Review

Although research clearly advocates that x-ray verification for initial NGT placement is the gold standard for best practice, the unanswered question is still "What is the best practice standard for checking NGT placement for a re-insertion in the home care setting?" There are studies that document concerns such as cost, resources, availability, and radiation exposure with the use of repeated x-rays to check tube placement (Farrington et al., 2009). Additionally, there is no consistency in hospital policies related to x-ray verification (Halloran et al., 2011; Sorokin & Gottlieb, 2006). Several studies have suggested checking pH paper as a second best alternative to x-ray, but not have stated this procedure as an absolute best practice (Farrington et al.; Gilbertson et al., 2011; Roberts et al., 2007). To date, there has not been one study that has conclusively stated the best practice for NGT reinsertion verification.

The NOVEL (New Opportunities for Verification of Enteral Tube Location) project, sponsored by the American Society for Parental and Enteral Nutrition, is an interorganizational, multiprofessional undertaking with representatives from the American Association of Critical-Care Nurses; the Society of Pediatric Nurses; the North American

Society for Pediatric Gastroenterology, Hepatology and Nutrition; Child Health PSO; and the American Association for Medical Instrumentation. It is known that the issue of NGT placement and ongoing location verification crosses the continuum of care. Recognizing this, the goal of the NOVEL project is to work toward effective, practical solutions to the challenge of safe initial placement of NGTs and ongoing placement verification. Its mission is to "identify and promote best practices with the potential of technology development that will allow for accurate determination of NG tube placement for both the inpatient and outpatient pediatric populations." Because of the lack of evidence in the literature, a study was conducted by a NOVEL subgroup on inpatient practices related to checking tube placement after the initial verification within children's hospitals across the United States. The study results indicated a wide variation in practices. Some of the practices included: pH testing, auscultation, using the previous markings, and repeated x-ray (Lyman et al., 2016). Although the use of auscultation as a method to check tube placement is still occurring, there have been at least two safety alerts issued against this practice (Metheny, 2016; National Association Childrens Hospitals, 2012). The literature suggests that the potential for error when using this method makes it unreliable for practice (Cohen et al., 2011; Ellett, 2004).

More recently, Northington et al. (2017) conducted a study with parents of children with NGTs at home, as well as with medical equipment/home healthcare companies who had pediatric patients with NGTs in the home. A voluntary online questionnaire was distributed to parents and medical equipment/home healthcare companies that included questions related to who performed insertion of the NGT, how verification of placement occurred, what type of complications may have occurred, and actions taken for any complications. The results demonstrated that parents are the primary person responsible for replacing the NGT and they use whatever tube placement verification method was taught to them by the discharge nurse. These methods included auscultation, checking pH, and using the previous tube measurements. Some parents indicated they called the home healthcare nurse or returned to the acute care facility for replacement. This study revealed the inconsistent procedures taught to the families, therefore, highlighting the inconsistencies in practices within the home setting (Northington et al.).

Table 2. Do's and Don'ts of NGT Placement in Children

Do	Don't
Encourage the caregiver to insert the nasogastric tube (NGT) with your supervision to assess caregiver competence.	Fail to place the NGT because the parent expresses fear or anxiety as the best way for the parent to dispel fear is to gain expertise in tube placement.
Be empathetic with the caregiver and acknowledge how hard this procedure is to do for a loved one.	
Check the referring center's website for any instructions on NGT placement to make sure you follow their protocol.	Deviate from the protocol unless there is a clear reason to do so and then contact the ordering provider to discuss prior to the home visit.
Avoid using auscultation or aspiration as the sole methods to verify NGT placement.	
Instruct caregiver to store pH paper in an airtight, light-blocking container.	Use pH paper that has been left out open air and light.
Acknowledge to the caregiver that NGT placement is hard for them to do.	Act like NGT placement is easy and does not hurt.
Using the teach-back method, make sure the caregiver knows what to do in urgent and emergent situations.	Expect people to remember everything they have been taught without asking them to repeat what was presented.
Make sure the caregiver has phone numbers for whom to contact for problems.	Leave the home without giving your contact information.

The results of this most recent research study confirmed the need for consistency of practice in confirming placement of an NGT by healthcare professionals and the families they educate. Currently there are no published U.S. guidelines for home healthcare nurses to follow when confirming placement of an NGT in the home or for the education that is required for parents. However, in 2016, the Australian government published guidelines for NGT placement (Ministry of Health, 2016). A review of this document reveals these published guidelines follow the same procedures and warnings as are currently practiced in the United States. Home healthcare nurses are expected to follow the standards and practices of their employment institution, along with experience and knowledge. Therefore, these practices could vary from agency to agency, thus patient education will vary.

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The nurse must validate that the family member has the skills and abilities to insert the tube, check placement, administer feedings or medications, problem solve, and seek help.

Based on the concerns raised by the above-cited home care NGT study, some recommendations for the home healthcare nurse include:

a. Home healthcare nurses should evaluate their current practices pertaining to confirming placement of an NGT in the home.
b. Collaborate with home care administrators to establish contact with the discharge facility nurse and obtain copies of policies and procedures used for discharge teaching. Preferably, when a referral is made, attempt to visit the patient/nurse prior to discharge. This will allow for sharing of information and teaching points.
c. Reiterate and clarify any misunderstanding on the part of the family member. If this can be done prior to discharge, the nurse and family will be more at ease once the child is at home.
d. Document the baseline information that was taught so that everyone involved is knowledgeable. This will help clarify misconceptions and allow for correction of misconceptions (such as using auscultation to check placement).
e. Assess for needed support and resources once the child is home. This could include emergency numbers or a "back-up" trained person, for example.
f. Schedule a nursing visit during an NGT reinsertion by the caregiver with the clinician observing.
g. Perform a simulated emergency "event" so the caregiver can demonstrate what to do if the child is choking, turning blue, or needs cardiopulmonary resuscitation. Also ensure the caregiver knows how to access the emergency # 9-1-1.
h. Because of the safety alerts related to auscultation to confirm NGT placement, educate the parents on using pH paper for testing aspirate to verify tube placement. A pH of ≤5 is the standard in the United States for indication of correct NGT placement (Gilbertson et al., 2011). This may create some obstacles, including cost, provision of pH paper/strips, new education (if not previously taught), and comfort level of the family member.

Conclusion

One of the roles of a home healthcare nurse is to advocate for patient safety when procedures are done in the home setting. Because of the potential for complications, it is vital that safety is in the forefront when teaching about NGT placement verification. Nurses should use all their resources and communicate often with family members who are performing this task. An NGT that has been misplaced can have devastating and life-threatening effects. Based on the findings of research studies by the NOVEL Project, there is a need for evidence-based interventions for the home and acute settings (when x-ray is not an option). The identification and implementation of best practice standards and guidelines will provide a basis for home healthcare nurses, and will allow change to occur so that these will be incorporated into daily practice. ☗

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