



Review

Methods to determine the internal length of nasogastric feeding tubes: An integrative review



Sandra Cristina Veiga de Oliveira Santos^{a,*}, Wendy Woith^{b,1},
 Maria Isabel Pedreira de Freitas^{a,2}, Eliete Boaventura Bargas Zeferino^a

^a School of Nursing (Fenf) – State University of Campinas (Unicamp), Thessaly Vieira de Camargo, 126 – Campus Box: 13083-970, Campinas, SP, Brazil³

^b Illinois State University – Mennonite College of Nursing, Edwards Hall, Room 205, Campus Box 5815, Normal, IL 61790-5815, United States

ARTICLE INFO

Article history:

Received 14 January 2016

Received in revised form 8 June 2016

Accepted 10 June 2016

Keywords:

Adult

Complications

Enteral nutrition

Evidence-based practice

Gastric feeding tubes

Methods

Review

Tube feeding

ABSTRACT

Objectives: Improper placement of nasogastric tube used for feeding may lead to serious complications, including death of the patient. There are several different methods used to determine the appropriate length of nasogastric tube for optimal placement in adults. This integrative review of the literature was designed to identify the most accurate method to determine the internal length of nasogastric feeding tube in adults.

Design: An integrative review of the research literature (1979–2015) using the population–intervention–comparison–outcomes strategy.

Data sources: The literature search included the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Library, Joanna Briggs, PubMed (MEDLINE), SCOPUS, and Web of Science electronic databases.

Review methods: Two researchers evaluated the literature to determine if an article met inclusion and exclusion criteria. The quality of the evidence was assessed using the Johns Hopkins Strength of the Evidence critical appraisal tool.

Results: Twenty studies, published between 1979 and 2014, met inclusion criteria. Of these, nine articles were expert opinion, seven were original research, three were review articles, and one was a guideline. Despite seven original research papers being found, only five reports were about the methods to determine the internal length of nasogastric feeding tube in adults. The literature suggests that four different methods for measuring the tube length are likely to result in proper placement of the tip of the tube in the stomach and all side ports inside it: [nose-to-ear-to-xiphisternum – 50] cm/2 + 50 cm]; [gender-weight and nose-umbilicus-flat]; [xiphisternum-to-ear-to-nose + 10 cm]; [earlobe to xiphisternum to umbilicus – tip of the nose to earlobe]. Four studies found nose-to-ear-to-xiphisternum was most likely to result in a tube that is positioned incorrectly, either ending in the esophagus, in the stomach but too close to the esophagus, or too far into the stomach or duodenum.

* Corresponding author at: Mennonite College of Nursing (MCN) at Illinois State University (ISU), Campus Box 5810, Normal, IL 61790-5810, United States. Tel.: +1 309 438 7400/+55 19 996026587.

E-mail addresses: sanveiga@unicamp.br, sancrisvos@gmail.com, sveigad@ilstu.edu (S.C.V.O.Santos), wlwoith@ilstu.edu, wlwoith@illinoisstate.edu (W. Woith), beloca4@yahoo.com.br, bellp@unicamp.br (M.I.O.Freitas), elietebbz@gmail.com (E.B.B. Zeferino).

¹ Tel.: +1 309 438 2213; fax: +1 309 438 2620.

² Tel.: +55 19 3521 8821.

³ Present address.

Conclusions: The nose-to-ear-to-xiphisternum and Hanson method should no longer be taught in nursing programs or used in practice by the nurse. The [gender-weight and nose-umbilicus-flat] method has been shown to be safer.

© 2016 Elsevier Ltd. All rights reserved.

What is already known about the topic?

- There are several different methods described in the literature to determine the appropriate length of the nasogastric tube (NGT) for optimal placement.
- The method most frequently used to measure correct length of the NGT prior to insertion is the distance from nose to ear to xiphisternum (NEX).
- Improper placement of NGT for feeding in adults can cause serious consequences for the patient.

What this paper adds

- The NEX and Hanson's method should no longer be used for introduction of NGT in adults.
- Current literature supports the method using gender, weight and nose to the umbilicus with the adult's head flat on the bed (GWNUF) as the best available method for measuring NGT length prior to insertion in adults.
- This study provides methodological and theoretical considerations for researchers to conduct experimental research.

1. Background

Gastric feeding is the most preferred route of tube feeding (Gottrand and Sullivan, 2010). Feeding patients via NGT involves introducing a thin tube through the nostril, down the esophagus, and into the stomach. The process is usually quick and although somewhat unpleasant, is usually well tolerated (Medlin, 2012). NGT can be used for aspiration of gastric residues or for feeding. In the adult population, tubes for feeding are of small diameter (8–12 Fr) and are manufactured with polyurethane, silicone or a mixture of both and are soft and comfortable for the patient (Kozeniecki and Fritzshall, 2015). The tubes used for decompression are made of hard polyvinyl and have larger gauges, which facilitates the aspiration of gastric contents and reduces the risk of clogging (Miller et al., 2014).

Enteral tube feeding is a safe and cost-efficient intervention for depositing nutrients in liquid form directly into the stomach, duodenum, or jejunum, and is offered to patients with a gastrointestinal tract functioning who are unable to ingest orally proper nutrition (Majka et al., 2014). Gastric access for feeding is appropriate in most cases. It allows normal absorption of nutrients, more versatility in the diet (Kozeniecki and Fritzshall, 2015); stimulates the gastric phase of digestion and does not divert from the potential sites for the absorption of nutrients (Schlein, 2016). This method is less invasive than other methods of artificial feeding, and the tube is easy to insert and remove (Fletcher, 2011).

Despite the benefits and widespread use of tube feeding, some patients may experience complications

either due to the enteral access itself or to the enteral feeding (Toussaint et al., 2015). If the tube migrates from the stomach into the esophagus or lung, there can be serious consequences, such as esophageal perforation (Isik et al., 2014), esophageal stenosis (Ribeiro et al., 2011), pneumothorax (Lyske, 2011); (Agha and Siddiqui, 2011), aspiration pneumonia (Xu and Li, 2011) and bronchopulmonary complications (Schreiber et al., 2014). In rare cases incorrect insertion of NGT may result in perforation of the brain (Hanna et al., 2012).

Recognizing the fact that many critically ill patients have a decreased intestinal transit and a concern with aspiration, longer tubes were designed to be introduced through the pylorus into the duodenum or jejunum (O'Keefe et al., 2012). However, there are controversies regarding clinical outcomes. In a meta-analysis of 17 studies, the authors concluded that, in critically ill patients, independent of gastric or post-pyloric pathway, triggering of pneumonia can occur, sometimes leading to death (Zhang et al., 2013).

Inserting the tip of the tube in the correct location is a prerequisite to confirming its position safely in the stomach; tubes with short or excess length can have serious consequences for the patient. Excess length can cause kinking and blockage. If the tube is short, it may be positioned in the esophagus and feedings may empty into the lung (Taylor et al., 2014). Moreover, insufficient insertion length requires further advancement of the tube, exposes the patient to unnecessary risk and discomfort, subjects the patient to higher X-ray doses, and causes financial losses to the health institution with increased X-ray cost and the nurse's time (Taylor et al., 2014).

There are several insertion methods that use external anatomical landmarks to estimate the appropriate length. Given the importance of correct placement of the NGT, it is necessary to have evidence demonstrating which external anatomical landmarks provide the best measure for correct placement (Malta et al., 2013). The NEX method remains the method most widely taught in nursing programs and used by practicing nurses for tube insertion in adults (Ellett et al., 2005; Taylor et al., 2014), but it may not be the safest approach.

Prevention of complications is the major goal. The adherence to well-designed protocols by a multidisciplinary team is the best way for avoiding complications (Chen et al., 2014). The purpose of this review is to identify the best external anatomical landmarks for positioning NGT in adults.

2. Methods

We conducted an integrative review using the population, intervention of interest, comparison and outcomes (PICO) strategy (Santos et al., 2007). The PICO question for this review was: "In adults requiring enteral nutrition via

Download English Version:

<https://daneshyari.com/en/article/7515348>

Download Persian Version:

<https://daneshyari.com/article/7515348>

[Daneshyari.com](https://daneshyari.com)