

# STANDARDIZING MEASUREMENT FOR PLACEMENT AND VERIFICATION OF PLACEMENT OF ENTERAL FEEDING TUBES IN NEONATES

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## BACKGROUND AND SIGNIFICANCE



- We did not have a standard method for measuring enteral feeding tube placement for neonates or for verifying correct placement.
- Occasionally, an enteral tube was misplaced based on x-ray reading. Misplaced enteral tubes pose considerable morbidity for neonates.
- We sought to review the literature for evidence of best methods of placement and verification of enteral feeding tube placement in neonates.

[https://www.youtube.com/watch?v=04\\_JWq5YIGo](https://www.youtube.com/watch?v=04_JWq5YIGo)

## PURPOSE

- To standardize the methods for measuring insertion length and verifying proper placement of enteral feeding tubes in neonates.

## METHODS

### PICO questions:

- What is the best method of measuring length of enteral tube placement in neonates?
- What is the best indicator(s) for verification of enteral tube placement in neonates?
- The Johns Hopkins Nursing Evidence-Based Practice model and tools were used to evaluate the evidence.
- Ovid and CINAHL were searched. For placement, key words were: gastric tube insertion, feeding tube measurement. Three articles were utilized.
- For verification, key words were: neonate, enteral feeding tube, nasogastric tube. Thirty-six articles were retrieved. Four were utilized.

## RESULTS

- For placement, one article was rated a Level IA, one a Level III, and one IIIB.
- For verification, four studies were used – one each at Level IIB, IIIB, IVB, and VB.

## CONCLUSIONS

- For placement, the literature suggested increased accuracy with the Nose-Ear-Midumbilicus (NEMU) measurement, with confirmation using a weight based calculation. The Nose-Ear-Xiphoid measurement should not be used.
- The literature indicated the only accurate method of verification was x-ray, which is not practical. Auscultation with air is not a reliable indicator of correct placement. There was no consensus as to which other method of placement verification was superior. The recommendation was that two methods be used simultaneously to decrease risk of misplaced tubes. The two methods we chose for verification are:
  - Verification of centimeter marking at nare or lip, and
  - Visualization of gastric aspirates

### Weight-Based Feeding Tube Calculations

$$\text{Estimated OG length} = 3 \times \text{weight (kg)} + 12 \text{ cm}$$

$$\text{Estimated NG length} = 3 \times \text{weight (kg)} + 13 \text{ cm}$$

## IMPLICATIONS

This project resulted in a new neonatal guideline: Enteral Feeding Tube Placement and Verification

MASSACHUSETTS GENERAL HOSPITAL  
NICU/LEVEL 2 NURSERIES  
ENTERAL FEEDING TUBE PLACEMENT AND VERIFICATION

**LEVEL OF PERSONNEL:**

- RN

**DESIGNATED CLINICAL AREAS:**

- NICU
- Level 2 Nurseries

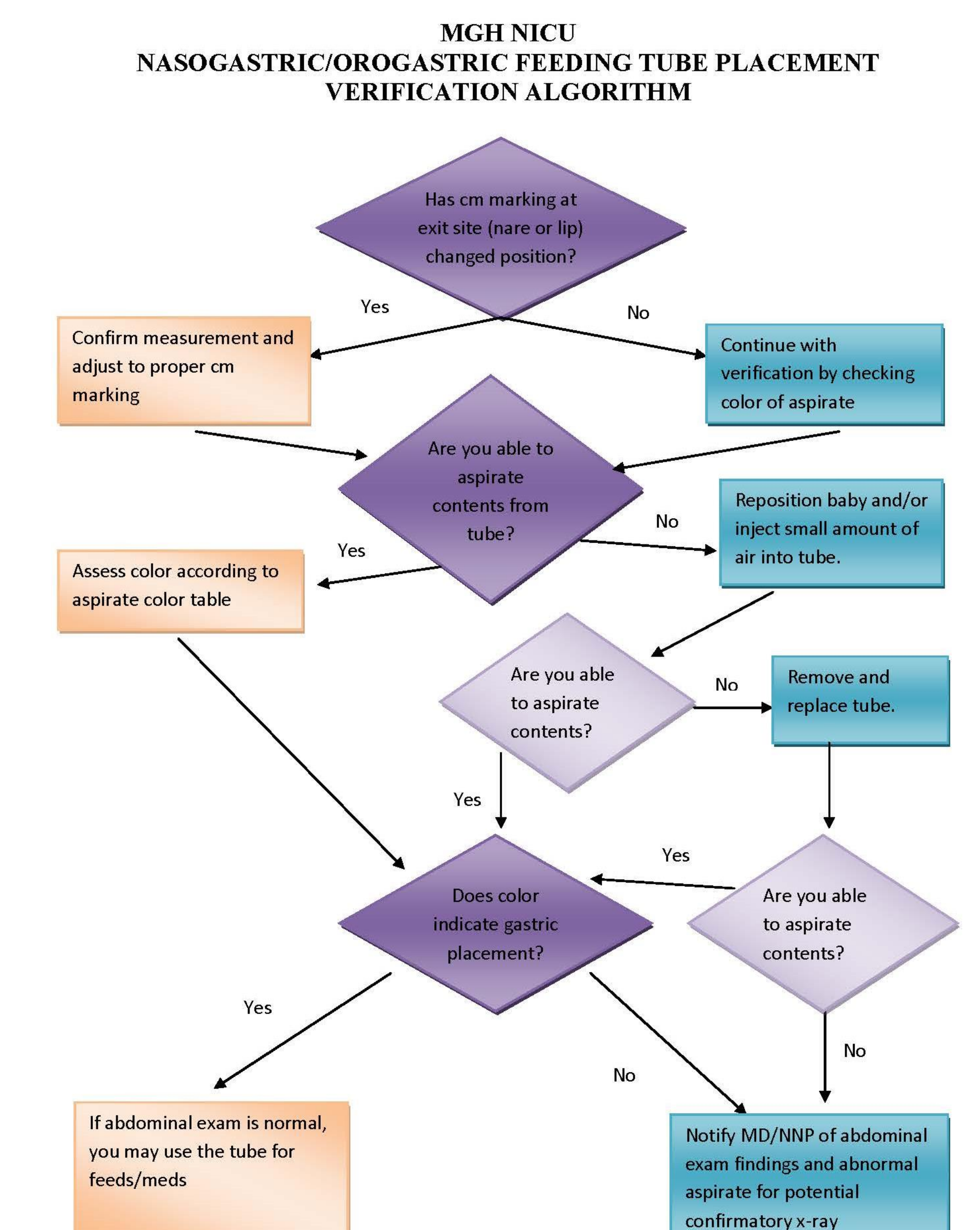
**APPLICABLE POLICY STATEMENT:**

Enteral feeding tubes are required to provide a means of enteral nutrition to infants who are premature or ill, therefore unable to receive nutrition orally. Enteral feeding tubes are also used to provide gastric decompression and medication administration when necessary.

**CRITICAL ELEMENTS:**

X-ray is the only method of accurately verifying placement of nasogastric (ngt)/orogastric (ogt) tubes (considered the "gold standard"). However, this is not practical for ensuring bedside verification prior to every feeding. Therefore, the following is a guideline for the insertion and verification of correct placement of ngt/ogt. Two or more methods should be used together to verify placement.

There is a small risk that the ngt or ogt may be misplaced upon insertion or may become displaced at some stage during treatment. The complications from this risk include pulmonary compromise, aspiration, and diarrhea.



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