

## NG Tube Placement Confirmation

Appraised by: Andrea Mazurek SN & Allison Weigel SN Sanford College of Nursing

### Clinical Question:

In patients with nasogastric feeding tubes are pH tests more effective than air bolus auscultation for confirming gastric tube placement?

### Articles:

Chan, E. Y., Hui-Ling Ng, I., Lee-Hong Tan, S., Jabin, K., Lee, L. N., & Ang, C. C. (2011). Nasogastric feeding practices: A survey using clinical scenarios. *International Journal of Nursing Studies*, 49, 310-319. Retrieved from PubMed with Full Text database.

Tho, P. C., Mordiffi, S., Ang, E., & Chen, H. (2011). Implementation of the evidence review on best practice for confirming the correct placement of nasogastric tube in patients in an acute care hospital. *International Journal of Evidence-Based Healthcare*, (9), 51-60. Retrieved from PubMed with Full Text database.

Turgay, A., & Khorshid, L. (2010). Effectiveness of the auscultatory and pH methods in predicting feeding tube placement. *Journal of Clinical Nursing*, 19 (11-12), 1553-9. doi: 10.1111/j.1365-2702.2010.03191.x.

### Synthesis of Conclusions:

The three studies identified that pH testing is the most effective in verifying NG tube placement. The study by Turgay and Khorshid (2010) is a methodological study, a level III where evidence was obtained from well designed controlled trials without randomization. The sample was a sufficient size that consisted of 44 critically ill patients (18 years or older) with newly inserted feeding tubes. The Cohen Kappa analysis was used to test the differences between auscultation and pH. When comparing correct placement due to x-ray method, the pH measurement agreed with the percentages of accurate placement. The auscultatory method, on the other hand, was not consistent when compared with x-ray. X-ray showed 88.6% for correct placement with pH also at 88.6%. Auscultatory method showed 90.9% correct placement showing a difference of 2.3% which therefore shows inconsistency. Turgay and Khorshid reported that the pH method is effective in determining the feeding tube position and x-ray confirmation is the gold standard for initial placement.

Chan, et al. (2011) is a cross-sectional study consisting of self-administered surveys using clinical scenarios. This study is a level VI where evidence is from a single descriptive study. The sample consisted of 1203 nurses who worked in the general wards of a tertiary hospital. Nurses were instructed to complete questionnaires that best reflected their practices in the hospital setting. Chan et al. (2011) reported that 88.5% of nurses use pH testing as the first method. Ten percent chose

auscultation as their first method. The findings showed that the majority of participants reported that they would exercise due caution by taking additional measures to check tube placement when in doubt.

The last study by Tho, Mordiffi, Ang, and Chen (2011) is a quasi-experimental study, a level III practice guideline where evidence was obtained from well-designed controlled trials without randomization. The sample included 900 nurses within 26 wards of a 935-bed acute care tertiary hospital. An audit tool was developed to monitor the nurses' adherence to the revised methods and work flow in confirming correct NG tube placement. Tho et. al. (2011) found that confirming NG tube placement using the pH test had a compliance rate of 76.9%. There was an 84.6% compliance rate using pH testing and radiology combined. The pH indicator can provide a defined range of values to show whether the aspirate is from the gastric or the respiratory tract. Auscultation alone is insufficient to differentiate whether the NG tube has been placed in the respiratory, gastric or intestinal tract. The best practice recommendations for confirming NG tube placement were to use pH indicator and chest x-ray as the gold standard. In conclusion, from the evidence review, pH level and radiology are recommended to use for confirming NG tube placement. The use of auscultation, bubbling and litmus paper are strongly discouraged in confirming NG tube placement. The implementation of change in the practice of confirming the correct placement of the NG tube in patients requires good coordination and a multidisciplinary team approach.

The overall evaluations of the studies were consistent in showing that pH testing is recommended over auscultation when checking NG tube placement. Sample sizes were sufficient in all three studies. X-ray is the gold standard in all studies to determine initial placement and pH testing is recommended for placement confirmation thereafter.

**Bottom Line:**

The evidence suggests that pH testing is more reliable than auscultation when confirming NG feeding tube placement.