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Verification of Nasogastric Tube Placement in Inpatient Populations: A Review of Current Literature

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What We Learned

This literature review was completed as part of a BSN degree required research course. We were able to critique, analyze, and synthesize nursing and medical research articles to create a reasonable conclusion on how the information on nasogastric tube placement verification should be interpreted into clinical practice

Background

Correct NG tube placement is essential to minimize risk of aspiration. Various methods of verification are used, however cost and nursing experience may dictate which is used more than the factor of reliability

Purpose & Aims

Determine the accuracy and usage of various types of placement verification, including:
- X-rays
- Ultrasound
- pH
- Auscultation

Also determine the role of nurse preference and experience in choosing a verification method

Sample

Sample consisted of four peer-reviewed articles on NG tube verification

- Boeykens, K., Steeman, E., & Duysburgh, I. (2014). Reliability of pH measurement and the auscultatory method to confirm the position of a nasogastric tube. *International Journal of Nursing Studies*, 51(1), 1427-1433.
- Chan, E., Ng, I., Tan, S., Jabin, K., Lee, L., & Ang, C. (2012). Nasogastric feeding practices: A survey using clinical scenarios. International Journal of Nursing Studies, 49(3), 310-319.
- Ellett, M., Cohen, M., Croffie, J., Lane, K., Austin, J., & Perkins, S. (2014). Comparing bedside methods of determining placement of gastric tubes in children. *Journal for Specialists in Pediatric Nursing*, 19(1), 68-69.
- Gok, F., Kilicaslan, A., & Yosunkaya, A. (2015). Ultrasound-guided nasogastric feeding tube placement in critical care patients. *Nutrition in Clinical Practice,* 20(2), 257-260.

Methods

- West Chester University of Pennsylvania Francis Greene Library OneSearch database used
- Limited to results from 2009-2015
- Search term: nasogastric tube placement verification
- Three nurse authored
- One physician authored

Results

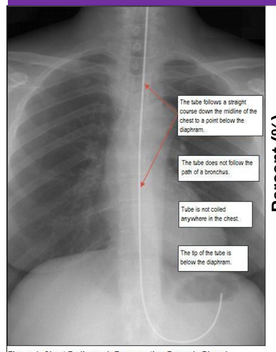

Figure 1. Chest Radiograph Representing Properly Placed Nasogastric Feeding Tube with Tip Visible

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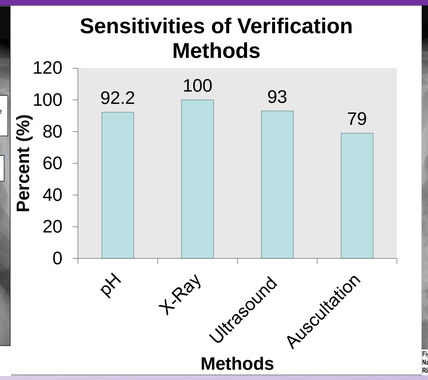

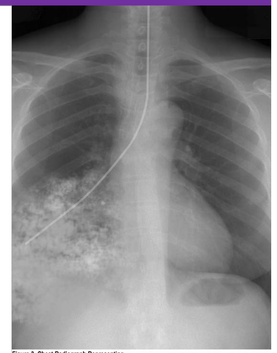

Figure 3. Chest Radiograph Representing Nasogastric Feeding Tube in Lower Lobe of Right Lung with Infiltrate

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X-Rays
- Radiography was found to be the most reliable measure of placement
- 100% specificity
- Used to confirm all other researched methods
- Costly
- Least commonly used by nurses

Ultrasound
- Ultrasound-guided placement was found to be reliable during the insertion of NG tubes
- 93% sensitivity
- Able to reposition tubing while still in the process of inserting

pH
- pH was evaluated as a bedside method of placement verification
- 92.2% sensitivity
- Less disruptive to client, cost-effective
- Used most often by nurses

Auscultation
- Auscultation was used by nurses to confirm placement frequently in the past
- 79% sensitivity
- Should not be used alone to verify placement, may be used to verify other methods
- Used second most commonly by nurses

Discussion

- The findings of the four articles supported that x-rays are the most reliable method of placement verification
- Also supported by the findings of three articles were pH and ultrasound-guided placements, with high sensitivities
- Auscultation is not recommended to be used alone to verify placement, as show by
- Nurses may need more education on the most effective methods of confirming placement

Next Steps

- More research
  - Follow-up on nursing survey, present findings of this study, and evaluate if the practices would change
  - Conduct a study to determine how patient preference effects which method is used
- At this time, hospital policy should still be followed; policies may be altered due to findings

Limitations

- Studies were conducted on different age groups
- Lack of current research
- One study was a pilot, had no supplemental studies to support

Acknowledgments

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