

**In this article...**

- The importance of ensuring nasogastric tubes are positioned correctly
- Why pH testing is the recommended first approach for testing tube positioning

# Check for nasogastric tube position is cost effective and prevents deaths

**N**asogastric tubes are used to deliver liquids directly to the stomach. However, tubes can be misplaced, often into the lungs, which can have serious consequences. Death or lung damage from misplaced NG tubes is avoidable and considered a 'never event' in the NHS, so the final position of NG tubes must be checked.

NHS guidance states that pH testing should be the first choice to detect correct placement, followed by X-ray if necessary, and new research confirms this. A modelling study compared the two approaches with direct trade-offs between cost and effectiveness. It confirmed that, for adults who need an NG tube for a short time, pH testing was the best initial approach, followed by X-ray confirmation if pH testing was unsuccessful. pH testing was four times less expensive than X-ray confirmation and, when used in sequence, both were cost-effective uses of NHS resources.

A resource to support providers is available from NHS Improvement ([Bit.ly/NHSITubePlacement](http://Bit.ly/NHSITubePlacement)). This is important if the harm from these events is to be reduced to zero.

- To read the full Signal go to [Bit.ly/NIHRSignalNGTube](http://Bit.ly/NIHRSignalNGTube)

## Expert commentary

**Carolyn Best, nutrition nurse specialist, Royal Hampshire County Hospital, Winchester**

A nasogastric tube is passed through the nasal passage via the oesophagus into the stomach to empty the stomach contents or administer feed, medicines or fluid. It is one of the most common routes for enteral nutrition support in hospitals within the UK. However, insertion can be difficult, so checking the position of the tip of the tube is vital.

In the past we were taught the 'whoosh test', using air and a stethoscope to check the tube position but this method has been shown to be grossly inaccurate.

X-ray confirmation, while considered the gold standard, is expensive and relies on correct interpretation of the image by a doctor, which may result in a delay in feeding.

X-ray cannot be used as means of monitoring the tube position, and the use of pH indicator strips is – as this study highlights – a more cost-effective method as it can be used repeatedly at the bedside.

## Implications for practice

- Nasogastric tube position should be checked immediately after placement, before starting a feed, after vomiting/coughing and observing decreased oxygen saturation, if the tube is accidentally dislodged or if the patient complains of discomfort
- Misplaced NG tubes can lead to many complications including aspiration pneumonia, pneumothorax and death
- The old 'whoosh test' is inaccurate and has been replaced by pH testing (with strips suitable for testing human aspirate) and chest X-ray. pH testing is cheaper than X-ray and can be done at the bedside, but may be less accurate; however, X-rays only confirm tube position at the time taken, so pH testing is the best way to check tube placement on an ongoing basis
- pH tests must be undertaken by trained staff who know when to refer a patient for X-ray. X-rays must be interpreted by a competent professional trained to read them.
- pH test results can be affected by medicines such as proton pump inhibitors or H<sub>2</sub> receptor antagonists; intake of milk can neutralise the acid
- This study confirms current NHS guidance – pH testing as first-line intervention, with X-ray if needed

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