

AIDE-MEMOIRE

Nasogastric tube (NGT) placement checks before first use in critical care settings during the COVID-19 response

This resource includes:

- information for organisations using the aide-memoire
- an aide-memoire intended to be separated from the cover page and used for easy reference in training sessions and displayed in areas where it can be seen and used by frontline staff.

This is version 2 of the aide memoire, which includes additional advice on situations where providers can continue to safely use more complex local polices. Other changes were minor refinements of language and use of capital letters to emphasise application to checks before FIRST use.

Why this aide-memoire is needed

If a nasogastric tube (NGT) has been misplaced into the respiratory tract and this is not detected before fluids, feed or medication are given, death or severe harm can be caused. The consequences are even more likely to be fatal for patients who are already critically ill.¹ Most nasogastric 'Never Events'² of feeding into the respiratory tract through a misplaced tube continue to arise from misinterpretation of x-rays by staff who had not been given training in the 'four criteria' technique and were unaware that relying on the position of the tube tip alone on a radiograph can be a fatal error.³

This easy reference guide has been produced because:

- Some aspects of COVID-19 presentation and treatment present special challenges for safely confirming nasogastric tube position. The dense ground-glass x-ray images can make x-ray interpretation more difficult, and the increasing use of proning manoeuvres in conscious patients increases the risk of regurgitation of gastric contents into the oesophagus and aspiration into the lungs which will render pH checks less reliable..
- This aide-memoire is not designed to replace existing, established, NHSI compliant practice of NG confirmation. If a critical care provider is in the fortunate situation of having nursing and medical staff who have all completed local competency-based training in nasogastric tube placement confirmation aligned to local policy, they would be able to continue more complex local policies. Such policies might include specific advice indicating which critical care patients could have pH checks for initial placement confirmation, and which require x-ray confirmation, and how second-line checks should be used if first-line checks are inconclusive.

However, staff returning to practice, or redeployed to critical care environments, including in Nightingale hospitals, will be helped by reminders of established safety steps in a form that can be used for all critical care patients, rather than requiring different processes for different patients.

Context of this advice

All advice given in this aide-memoire is consistent with established safety advice.^{4,5,6} It is assumed that organisations already have in place other key aspects of established guidance, including:

- the PPE that is required for critical care environments.⁷
- established procedures, protocols or guidelines for nasogastric tube insertion.
- provision of competency-based training for their staff that includes: (i) contraindications to NGT insertion; (ii) safe insertion techniques; (iii) techniques for confirmation of NGT placement.
- procurement of NGTs that are radiopaque throughout their entire length, and have external markers.
- radiographers empowered to remove NGTs that appear to be in the respiratory tract.
- radiologists providing unambiguous report conclusions of 'proceed to use' OR 'do not use' or similar clear conclusion, rather than any terms that require interpretation.

¹https://improvement.nhs.uk/documents/193/Resource_set_-_Initial_placement_checks_for_NG_tubes_1.pdf

²https://improvement.nhs.uk/documents/2265/Revised_Never_Events_policy_and_framework_FINAL.pdf

³<https://improvement.nhs.uk/resources/never-events-data>

⁴<https://www.bapen.org.uk/pdfs/covid-19/covid-19-and-enteral-tube-feeding-safety.pdf>

⁵<http://www.nnng.org.uk/download-guidelines/>

⁶https://improvement.nhs.uk/documents/194/Patient_Safety_Alert_Stage_2_-_NG_tube_resource_set.pdf

⁷<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe>

AIDE-MEMOIRE

Nasogastric tube placement checks before FIRST use in critical care settings during the COVID-19 response

IF PATIENT ARRIVES WITH NGT DO NOT ASSUME PLACEMENT HAS ALREADY BEEN CHECKED

Use only x-ray confirmation before FIRST use

DO NOT use pH testing to confirm placement before first use, in view of the increased risks of prior unrecognised oesophageal regurgitation or respiratory aspiration. Once initial tube position has been confirmed radiologically, then external tube markers and pH testing can be used in subsequent tube position checks. NEVER use the 'whoosh test' (air auscultation) – this is very inaccurate as well as aerosol generating.

Special considerations for x-ray confirmation

- MUST be specifically ordered 'to confirm NGT placement' to ensure adequate penetration in view of the dense, ground-glass appearances seen on chest radiographs of COVID-19 pneumonia.
- If using NGT tube with a guidewire or introducer, leave guidewire in place until x-ray taken to improve tube visibility but remove and dispose of after correct position confirmed and documented.
- Put NOTHING down the tube before x-ray interpreted (not even water to release the guidewire).
- X-ray should be interpreted by person competent in the 'four criteria.'¹

To confirm gastric position of the nasogastric tube, ask:

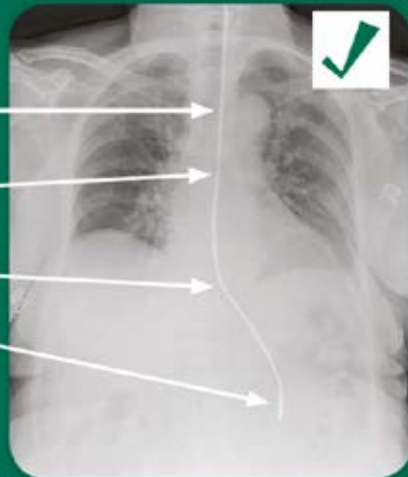
Does the tube path follow the oesophagus/avoid the contours of the bronchi?

Does the tube clearly bisect the carina or the bronchi?

Does it cross the diaphragm in the midline?

Is the tip clearly visible below the left hemi-diaphragm?

Proceed to feed only if all criteria are met. If in any doubt repeat x-ray or call for senior help.



Document that x-ray viewed postdates most recent NGT insertion and how the 'four criteria' were applied, eg

'NG tube follows path of oesophagus, bisecting bronchi, remains midline to level of diaphragm and deviates to left thereafter. Tip is seen about 7cm below diaphragm' and clear conclusion eg 'NGT can be used for feeding.'

- If the x-ray is not clear enough to view the 'four criteria', seek radiology advice. Be aware that 'tip below diaphragm' is not enough – misinterpretation using this technique is the cause of most fatalities from feeding through misplaced tubes.
- Only use NGT if right patient, right x-ray, four criteria and clear conclusion are recorded; do not accept verbal instructions or incomplete documentation.
- Record final length of tube inserted for future checks that it has not been moved.

If in doubt DO NOT flush or give medication or feed – seek senior advice

¹https://improvement.nhs.uk/documents/193/Resource_set_-_Initial_placement_checks_for_NG_tubes_1.pdf