

# Report to the Meeting of the

**BOD 65/2017**

(Agenda item: 10)

# Oxford Health NHS Foundation Trust

# Board of Directors

**24 May 2017**

**Patient Safety Alert; *Nasogastric tube misplacement:***

***Continuing risk of death and severe harm***

**For: Information and Approval**

**Executive Summary**

In July 2016 NHS improvement issued a patient Safety alert, which identified the ongoing safety critical risks associated with nasogastric tubes; ‘*Nasogastric tube misplacement: continuing risk of death and severe harm’.*

A number of previous alerts have been issued (2005, 2011 and 2013), however patient safety incidents continue to occur in the NHS organisations, fortunately none in OHFT. This Patient Safety Alert is intended for Trust Board (rather than front line staff) and Boards are required to take a number of actions identified within the alert and require that all actions are completed by April 2017. This paper outlines the work completed to date on behalf of the Trust Board, identified actions and planned completion dates.

**Governance Route/Approval Process**

This is a new report in line with the requirements laid out within the Patient Safety Alert.

**Recommendation**

The Board is asked to note the report.

**Author and Title:** Susan Haynes, Deputy Director of Nursing and Clinical Standards.

**Lead Executive Director:** Ros Alstead,Deputy Director of Nursing and Clinical Standards.

This report relates to or provides assurance and evidence against the following Strategic Objective(s) of the Trust:

1) Driving Quality Improvement

2) Delivering Operational Excellence

1. **Introduction**

In July 2016 NHS improvement issued a patient Safety alert; ‘*Nasogastric tube misplacement: continuing risk of death and severe harm’,* which identified the ongoing risks associated with nasogastric tubes. Three previous alerts had been issued, however patient safety incidents continue to occur. This alert was therefore aimed at Trust Boards who are asked to ensure that all safety critical requirements are in place.

The alert required that Trust boards take a number of actions which are identified within the associated resources and that all actions are completed by April 2017. The key steps identified within the alert are as follows:

* To appoint an Executive Director to take responsibility from the delivery of actions in the safety alert
* To undertake a gap analysis against the recommended standards
* Where required complete an action plan in order to ensure that all safety-critical requirements are met
* To share the findings in the form of a public board paper

The Board is asked to note the, findings of the gap analysis, actions taken to date and agree the suggested recommendations.

1. **Background**

The use of misplaced nasogastric[[1]](#footnote-1) and orogastric[[2]](#footnote-2) tubes was first recognised as a patient safety issue by the National Patient Safety Agency (NPSA) in 2005. Following this a further three alerts were issued by the NPSA and NHS England between 2011 and 2013.

Introducing fluids or medication into the respiratory tract or pleura via a misplaced nasogastric or orogastric tube is classed as a ‘Never Event’. These ‘Never Events’ are viewed as ‘wholly preventable’ where guidance or safety recommendations that provide strong systemic protective barrier are available at a national level, and should have been implemented by all healthcare providers.’

Between September 2011 and March 2016, a total of 95 incidents were reported to the National Reporting and Learning System (NRLS) and/or the Strategic Executive Information System (StEIS) where fluids or medication were introduced into the respiratory tract or pleura via a misplaced nasogastric or orogastric tube.

Checking tube placement before use via pH testing of aspirate and, when necessary, x-ray imaging, is essential in preventing harm. Other error types involve nursing staff and pH tests, unapproved tube placement checking methods, and communication failures resulting in tubes not being checked. The reports cited in the alert included 32 incidents where the patient subsequently died, although given many patients were critically ill before the tube was introduced, so it is not always clear whether the death was directly related to the misplaced tube.

Serious Incident Review Investigations (SIRIs) into these incidents suggested problems with organisational processes for implementing previous alerts. This Patient Safety Alert was therefore directed **at Trust Boards** and the processes that support clinical governance rather than being directed at frontline staff.

1. **Progress**

In response to receipt of the alert the Deputy Director of Nursing was appointed to undertake a gap analysis, agree required actions and write an update for the board.

The resource which accompanied the alert provided a range of support in order to assess whether previous nasogastric tube guidance has been implemented and embedded within the organisation. This resource can be accessed via the following link:

<https://improvement.nhs.uk/uploads/documents/Resource_set_-_Initial_placement_checks_for_NG_tubes_1.pdf>

A number of implementation issues are identified within the patient safety alert; however the following identify some of the major safety critical steps required:

• Problems with systems to ensure staff who were checking tube placement had received competency-based training

• Problems with ensuring bedside documentation formats include all safety critical checks

• Problems maintaining safe supplies of equipment, particularly radio-opaque tubes and CE-marked pH test strips.

The overarching actions required by NHS Improvement, together with current status and actions undertaken are as follows

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| Action Required | Action taken | RAG Status |
| To identify a named executive director who will take responsibility for the delivery of the actions in the alert. | Ros Alstead identified as lead Executive Director |  |
| Using the resources supplied with the alert, to undertake a centrally coordinated assessment of whether the Trust has robust systems for supporting staff to deliver safety-critical requirements for initial nasogastric and orogastric tube placement checks | Thorough gap analysis undertaken (appendix 1) |  |
| If the assessment identified any concerns, use the resources supplied with this alert to develop and implement an action plan to ensure all safety-critical requirements are met. | Action plan completed (appendix 2) |  |
| To share the outcome of is assessment and agree any related action plan within relevant commissioner assurance meetings. | Paper to be shared at the next Quality review meeting with CCG. |  |
| To share the key findings of this assessment and the main actions that has been taken in the form of a public board paper. | Board paper completed |  |

**Table 1 – Overarching Actions**

Following receipt of the CAS alert, a ‘task and finish’ group was set up in order to obtain a baseline of the current situation within the Trust, identify any remedial action and update the Trust policy in light of the guidance. This group has been attended by representatives from all directorates and has now met on three occasions.

Further to the first meeting, it was identified that nasogastric tube feeding takes place within the following areas within the Trust:

1. Community Hospitals
2. Children Services
3. Eating Disorders

It has been confirmed that The Minor Injuries Unit (MIU), Emergency Medical Unit (EMU), Out of hours services (OOH) and other Mental Health wards do not use nasogastric tubes.

As part of the process to the completion of the gap analysis checks have been by the directorate leads to ensure that both the correct NG tubes and PH paper is in use and that no stocks of unapproved stocks remain on the ward. It has been confirmed that this has been undertaken and that the correct safe equipment is in use. It has also has been confirmed that a number of changes have been made to the Trust policy, which is out for final approval and sign off to the Quality Sub- committee – Effectiveness.

Appendix 1 shows details of the safety critical requirements and the current status against these.

Appendix 1 shows the current status of the gap analysis undertaken by the group. The outcome of the gap analysis indicates that the Trust is green in all but one area which relates to the training of staff and is on-going. In the interim staff members who have not been trained will not be able to pass a nasogastric tube.

This action is identified in the action plan below together with completion dates and identified leads. The Deputy Director of Nursing has liaised with leads throughout February, March and April to ensure that all actions have been completed by the end of April 2017.

The only remaining area is highlighted and will be complete by July 2017.

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| Required Standard | Gap Analysis | Action Required | Lead | Completion date | Current Status |
| Competencies of staff | Competency checks for staff in place. No-one is able to insert a nasogastric tub unless assessed as competent to do so. | To be incorporated into local induction programme | Ward Manager | End July 2017 | In progress. Staff with not pass a naso-gastic tube until this is completed. |

1. **Recommendation**

The Trust Board is asked to note the actions taken to date and current plans to address the two identified actions.

***APPENDIX 1***

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| **Note: The requirements below are the key safety-critical requirements aimed at avoiding the introduction of medication, feed or fluids through a nasogastric tube misplaced in the respiratory tract. They must be considered alongside wider clinical guidance and local expertise that covers all aspects of clinically effective and person-centred care for patients who cannot meet their own nutritional needs.** |  |
| **Table 1: Ongoing safety-critical requirements for confirming initial orogastric or nasogastric tubeplacement** |  |
| **Ongoing safety-critical requirement** | **Rationale** | **Notes on interface with current and future local and national clinical guidance** |  |
| DO NOT use the ‘whooshtest’ 7 or ‘bubble test’8 | Clinicians’ hearing cannot precisely locate the origin of a sound in the patient’s physiology; the lungs and stomach are in very close proximity. Absence of bubbles could occur even if the internal end was in the lungs, and bubbles could occur from air in the stomach compressed during breathing cycles. | No local or national clinical guidance shouldamend this requirement. |   |
| DO NOT test aspirate usingblue litmus paper | Blue litmus paper is not sufficiently sensitive todistinguish between bronchial or gastricsecretions. | No local or national clinical guidance shouldamend this requirement. | Testing by aspiration included within current policy.  |
| DO NOT interpret absenceof respiratory distress or theappearance of aspirate asan indicator of correctpositioning | Observing for respiratory distress is ineffectivein detecting misplaced nasogastric tubes asnasogastric tubes can enter the respiratory tractwithout causing any symptoms.There is no absolute distinction that can bemade in the appearance of gastric, respiratoryand pleural secretions that can easily bedescribed and applied to normal variation inhealthy people and to patients with a wide rangeof gastric and respiratory conditions. | No local or national clinical guidance shouldamend this requirement. | Observing for respiratory distress include within revised policy. |
| pH in the ‘safe range’ of 1 to5.5 can be used as the firstline test to excludeplacement in the respiratorytract | The normal human stomach has a pH ofapproximately 1-3 in an empty stomach andapproximately 4-5 after food has been eaten.Patients on acid-reducing medication may havea stomach pH level of 6 or aboveThe pH in healthy lungs is between 7.38 and7.42. | No local or national clinical guidance shouldwiden the safe range.The ‘safe range’ for excluding respiratoryplacement may need to be integrated in localguidance with use of different pH ranges for other purposes (eg tighter pH ranges to distinguish oesophageal from gastric placement).Any local clinical guidance that narrows the ‘safe range’ of pH used to exclude placement in the respiratory tract should be preceded by robust assessment that the safe systems described in this alert for x-ray interpretation are fully implemented and sustained, and should risk assess the impact of this change of practice.Future evidence-based national clinical guidance (eg from NICE, Royal Colleges or otherprofessional bodies) would be expected torespond to new research. To narrow the current‘safe range’ of pH such clinical guidance would be expected to have followed NICE-accreditedprocesses of guidance development, includingrisk-assessment of the impact of this change ofpractice. Local organisations adopting any suchfuture accredited national clinical guidance should first ensure the safe systems described in this alert for x-ray interpretation are fully implemented and sustained. | Under 5 is identified within the current policy. Narrative has been added to highlight the fact that you would not be able to get a pH less than 5 with patients who are under PPIs |
| Nasogastric tubes are not flushed, nor are guidewires pre-lubricated, nor is anything introduced through the tube until initialplacement has been confirmed | Any flush could cause aspiration pneumonia if the tube is misplaced in the lungs. pH testing for gastric placement relies on collecting aspirate via the tube; anything introduced down the tube will contaminate this aspirate, potentially leading to false positive pHreadings.  | No local or national clinical guidance shouldamend this requirement. |  |
| Purchasing policies arerevised and old stocksystematically removed toensure all pH test strips areCE marked and intended bythe manufacturer to testhuman gastric aspirate | Some pH papers are designed specifically forlaboratory testing and so not appropriate fortesting human gastric aspirate. | No local or national clinical guidance shouldamend this requirement, although the reference torequirements of pH test strips may be extended toalternative technology that has met relevantregulatory requirements and is CE marked andintended by the manufacturer to test humangastric aspirate (eg pH meters). |  |
| Each pH test (including failure to obtain aspirate)and test result is documented | To allow for an ongoing record of a patient’snormal range.To assist in investigation in the event ofrespiratory feeding following initial placement. | No local or national clinical guidance shouldamend this requirement. | Recording sheets in place |
| Radiology (x-ray) can beused to confirm placementbut should not be usedroutinely for all patients | Minimising the number of x-rays reduces exposure to radiation, loss of feeding time and increased movement of seriously ill patients in hospital.These risks of radiation, loss of feeding time, and the effect of travel could be even greater for patients needing longer-term feeding via nasogastric tube in community settings.X-ray will be required if aspirate in the ‘safe range’ cannot be obtained, and for patients where not only exclusion of respiratory placement, but confirmation of optimum gastric placement is necessary. X-ray may be required in other specific scenarios and patient groups. | Local and national clinical guidance can define scenarios and patient groups where x-ray rather than pH would be required (eg patients where it is essential to exclude oesophageal placement)).Any local or national clinical guidance that extends the patient groups or scenarios where x-ray should be used instead of pH should be preceded by robust assessment that the safe systems described in this alert for x-ray interpretation are fully implemented and sustained, and should risk-assess the impact of this change of practice. | Embedded within revised policy |
| Purchasing policies are revised and old stock systematically removed to ensure all nasogastric tubes used for the purpose offeeding are radio-opaquethroughout their length and have externally visible length markings | Tubes that are clearly visible on x-ray through radio-opaque materials throughout their length (rather than solely at the tip) are critical to being able to carry out the ‘four criteria’ for x-ray interpretation.Externally visible length-markings enable accurate measurement for insertion and identification of any subsequent tube displacement.Purchasing policies and stock control are required to ensure no unintended reversion to unsafe supplies. | No local or national clinical guidance should amend this requirement. |   |
| X-ray request forms clearly state that the purpose of thex-ray is to establish theposition of the nasogastrictube for the purpose offeeding or theadministration of medica | To ensure the radiographer provides an x-ray that allows for the interpretation of the four criteria for gastric placement described below. To ensure the radiologist’s report gives a definitive view on the position of the nasogastric tube for this purpose. | No local or national clinical guidance should amend this requirement |  Staff have access to a validated report within the PACS system (the IT system which sits behind Radiography). There will be a validated report within the PACS system for sign off by medical staff. It is suggested that this could be audited in order to provide assurance.  |
| Any unused tubes identified in the lung are removed immediately, whether in the x-ray department or clinical area10 | To reduce the risk of the tube being used in error. | No local or national clinical guidance shouldamend this requirement. | In policy |
| pH in the ‘safe range’ or xrayare the only acceptablemethods of confirming initialplacement of a nasogastrictube | To date there is no evidence that alternative devices or techniques equal or exceed the accuracy of pH or x-ray for confirming initial placement of a nasogastric tube. | No local or national clinical guidance should amend this requirement. NHS Improvement would issue specific advice if a new method or new technology had robust evidence of equalling or exceeding the accuracy of pH and x-ray. | In policy |
| Staff training, competencyframeworks and supervisionare reviewed to ensure thatall healthcare professionalsinvolved with nasogastrictube position checks havebeen assessed as competent. Competencytraining should includetheoretical and practicallearning. | A National Patient Safety Agency audit of 166 junior doctors identified that only 31% had received training or formal guidance on the use of x-ray for checking nasogastric tube placements.The Review of incidents in this resource set suggests that x-ray checks or pH testing appear to have been carried out by staff who had not received competency-based training, and therefore did not follow the safety-critical requirements.Elearning is available for some aspects of confirming nasogastric tube placement, but uptake of this via NHS elearning platforms is very low.11This requirement can be linked to the structureddocumentation required above by including in that a requirement to note that competency has been assesse | No local or national clinical guidance should allow staff who have not been assessed as competent to confirm nasogastric tube placement. | In policy and competency checklist. Staff training is annual as a minimum.HCAs are trained in CCN teams to manage and check nasogastric tubes. |
| Nasogastric tubes shouldonly be placed when seniorsupport for placement andplacement confirmation isreadily available | Earlier NPSA advice referred to avoiding placement ‘out-of-hours’. The rationale for this was the greater risk of error by junior and less experienced staff confirming nasogastric tube placement in evenings and at night. The rationale of not placing tubes except where there is relevant senior and experienced support(nursing, medical and radiology) remains, but it is recognised availability of senior staff will vary between organisations and services and so cannot be defined as simply as within or outside ‘normal hours | No local or national clinical guidance should allow nasogastric tubes to be placed at times when staff cannot access relevant senior support for placement confirmation | Unless there are essential drugs required then nasogastric tubes should not be inserted out of normal working hours. Parents are advised to contact the OUH if they are unsure. Health staff would only do this between 8-8 when there would be senior staff around and to go to the local general hospital out of hours.  |
| Clinical policies, protocols and patient documentation (whether paper or electronic patient records) are designed to help staff comply with these safety critical requirements | Structured documentation reinforces training and protocols and helps staff carrying out nasogastric tube placement checks to remember and follow the appropriate steps.Structured documentation helps the rest of the clinical team identify key safety information. | No local or national clinical guidance should amend this requirement. | Forms are uploaded |
| Clinical policies, protocolsand patient documentation(whether paper or electronic patient records) aredesigned to help staff comply with these safetycritical requirements | Structured documentation reinforces training and protocols and helps staff carrying out nasogastric tube placement checks to remember and follow the appropriate steps.Structured documentation helps the rest of the clinical team identify key safety information. | No local or national clinical guidance should amend this requirement. | Revised policy |
| An ongoing audit programme is put in place to monitor compliance and act on any identified gap | Reliable implementation of safety-critical requirements can only be achieved if compliance is routinely monitor | No local or national clinical guidance should amend this requirement. | Audit to be completed in 6 months (by nominated lead in each service) - end July/August 2016 |
| 7 Injecting air into a nasogastric tube and listening with a stethoscope for the location of the sounds of air exiting the tube, under the mistaken assumption this could accurately distinguish the location of the internal end of the tube8 A mistaken assumption that the external end of the tube would produce bubbles if the internal end was in the lungs9 See Links to Clinical Guidance section but in brief: 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?10 While an unused nasogastric tube identified as in the respiratory tract should be immediately removed to eliminate the risk of it being used in error, a tube through which feeding into the respiratory tract has already occurred may need to be used to attempt to suction out the feed/fluid; senior advice should be sought before removing it.11 One e-learning resource for interpretation of x-rays available through a standard NHS platform had only 1352 individuals complete the training between late 2011 and early 2016. Note completion of e-learning would not in itself insure competency; the theoretical learning would need to be supplemented by practical learning and competency assessment. |  |

***APPENDIX 2***

**AREAS FOR SELF ASSESSMENT**

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| **Main subject Heading** | **Requirements/Standards** | **Gap analysis** | **RAG Rating** |
| **Policy** |  | Are you confident local policies and protocols accurately reflect all the safety-critical requirements summarised in this resource |   |
|  |  | Are you confident policies and protocols are clear and accessible to frontline staff? |   |
| **National safety guidance**This needs to be referred to in any incident investigation | In comparing what happened with ‘what should have happened’, investigation summaries almost never refer to NPSA alerts or actions required within them, and appear to rely on local policy or the investigators’ understanding of good practice.Some investigations showed an apparent lack of understanding by investigators of how nasogastric tube placement should be checked on x-ray, and one investigation report suggests the investigator thought it was acceptable to flush tubes before confirming placement if aspirate was difficult to obtain.  | Are you confident that investigators refer to formal sources of guidance, such as Patient Safety Alerts or NICE guidance to set the standard on ‘what should have happened’ as part of any investigation? |   |
| **Safe equipment**Nasogastric tubes used for feeding are radio-opaque throughout their length and have externally visible length markings. pH paper is CE marked for use on human aspirate | In most trusts safe equipment appears to have been introduced at the time of the NPSA 2011 alert (if it was not already in use). But there were isolated cases when a later decision to change suppliers for cost effectiveness meant that non-compliant nasogastric tubes were re-introduced, and this was not recognised until after a Never Event had occurred.Other incident investigations found a range of pH paper, not all CE marked, was in use in different clinical departments in an organisation. | Are you confident that procurement decisions always include clinical advice on patient safety considerations? |  |
| Are you confident clinical supply systems would ‘block’ any accidental ordering of noncompliant alternatives? |   |
| Are you confident nasogastric tubes or pH paper not meeting these safety-critical requirements have been removed from all areas? |   |
| **Competency-based training**Training needs to reflect all the safety-critical requirements summarised in this resource set. | Not all trusts appear to have created on-going training programmes, or levels of training completion had not been routinely monitored and had lapsed. Some incident investigations suggested that trusts had seen training as unnecessary for experienced or senior nursing staff, but the risks of them continuing to use incorrect techniques that predated the NPSA and NHS England alerts may be greater.In some trusts there seemed to be an assumption that consultants did not require training in x-ray interpretation, but investigations have demonstrated that errors are made by consultants and not just junior staff.Some trusts appeared to assume that newly registered nursing staff or junior doctors must already have had these competencies assessed in their training; this is not necessarily so.Some training programmes appeared theoretical rather than assessing competency. Organisations had not recognised that having an up-to-date register of staff who have the appropriate competencies is key to ensuring nursing staff avoid asking doctors not ‘on the list’ to confirm nasogastric tube placement.Investigation reports describe medical staff using the unsafe and outmoded ‘whoosh test’ or giving incorrect advice to nursing staff in relation to obtaining and testing the pH of aspirate; if training for medical staff is limited to x-ray interpretation this risk would not be eliminated.Are you confident the content of your local training programme accurately reflects all the safety critical requirements summarised in this resource?Are you confident that all clinical staff (regardless of profession or level of seniority) who confirm nasogastric tube placement by pH or x-ray have been assessed as competent through theoretical and practical learning? Are you confident there is a process to monitor and review competency?Can frontline staff easily identify staff who have (and who have not) been assessed as competent in the interpretation of x-rays for confirming nasogastric tube placement? Are you confident that locum, agency and newly recruited staff would know not to undertake nasogastric placement checks | Are you confident the content of your local training programme accurately reflects all the safety critical requirements summarised in this resource? |   |
| Are you confident that all clinical staff (regardless of profession or level of seniority) who confirm nasogastric tube placement by pH or x-ray have been assessed as competent through theoretical and practical learning? |   |
| Are you confident there is a process to monitor and review competency? |   |
| Can frontline staff easily identify staff who have (and who have not) been assessed as competent in the interpretation of x-rays for confirming nasogastric tube placement? | Only radiologist from acute hospital |
| Are you confident that locum, Agency and newly recruited staff would know not to undertake nasogastric placement checks? | Now included in local induction. |
| **Clinical documentation formats and checklists.**These need to reflect all the safety-critical requirements summarised in this resource  | From the investigations it was not clear if all trusts provided structured documentation or checklists to record nasogastric tube insertion and subsequent checking requirements.Investigations and learning were hampered by the lack of routine documentation on what checks were actually carried out.Of the incidents that involved x-ray misinterpretation or interpreting the wrong x-ray, none appeared to have followed a structured process for decision-making or documented each step of these checks. This included examples of nurses accepting a brief written or verbal ‘safe to feed’ confirmation before starting feeding  | Are you confident that bedside documentation helps staff to take and record all necessary checks? Are checklists, charts or pre-printed labels provided?Do staff find these helpful? |   |
| Are you confident thatnasogastric tube placement checks are documented in astructured way? |   |
| Are you confident that brief written or verbal ‘safe to feed’ instructions are not occurring? |  Reports available in PACS – no oral instructions now accepted. |
| **Ongoing audit of compliance** | Some investigations suggested that some policies written after the 2011 alert had had little impact on clinical areas, with past custom and practice continuing, or new documentation never brought into routine use.Some investigations suggested that initially good compliance had lapsed over time, but these lapses were only noticed after a Never Event occurred. | Are you confident the current focus on compliance with safety critical requirements will become ‘business as usual’? |   |
| Are you confident clinical audit and quality improvement teams have built this into their plans? |   |
| **Implementation of Patient Safety Alerts** | Following the review of nasogastric tube investigations, omissions in the implementation of safety critical guidance from previous nasogastric tube alerts has become apparent. If there were gaps in organisational systems for ensuring alerts were acted on, these could potentially apply to other alerts. | Are you confident that all Patient Safety Alerts have been implemented within your organisation? |   |
| What mechanisms are in place to ensure that alerts are only signed off by your organisation once the ‘actions required’ havebeen completed? |   |
| What mechanisms are in place to provide assurance that ‘actions required’ are taken and monitored on a regular basis? |   |

1. A **nasogastric tube** is a **tube** that is inserted into the stomach through the nose. [↑](#footnote-ref-1)
2. An **orogastric tube** is the same **tube** inserted into the mouth instead of the nose [↑](#footnote-ref-2)