

# An Audit of Nasogastric Tube Check Chest Radiographs to Assess Safe and Timely Reporting

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A Jha, S Patel, L Chang, L Ratnam, N Patel

# Introduction

- The National Patient Safety Agency/NHS improvement has included feeding, flushing or medication administration through a misplaced nasogastric tube (NGT) in the tracheobronchial tree as a “Never Event”
- The COVID-19 pandemic has resulted in high numbers of critically unwell patient admissions, resulting in a greater number of chest radiographs (CXR) for NGT position check.
- Recommendations following a significant untoward incident were to consider standardised reports for confirmation of NGT position. This would ensure maximum clarity and provide a definitive assessment on NGT position. The purpose of this study, at a London teaching hospital (UK), was to assess the implementation of a standardised NGT check reporting template, amongst other interventions to ensure safe and timely reporting of these studies.

# Methods

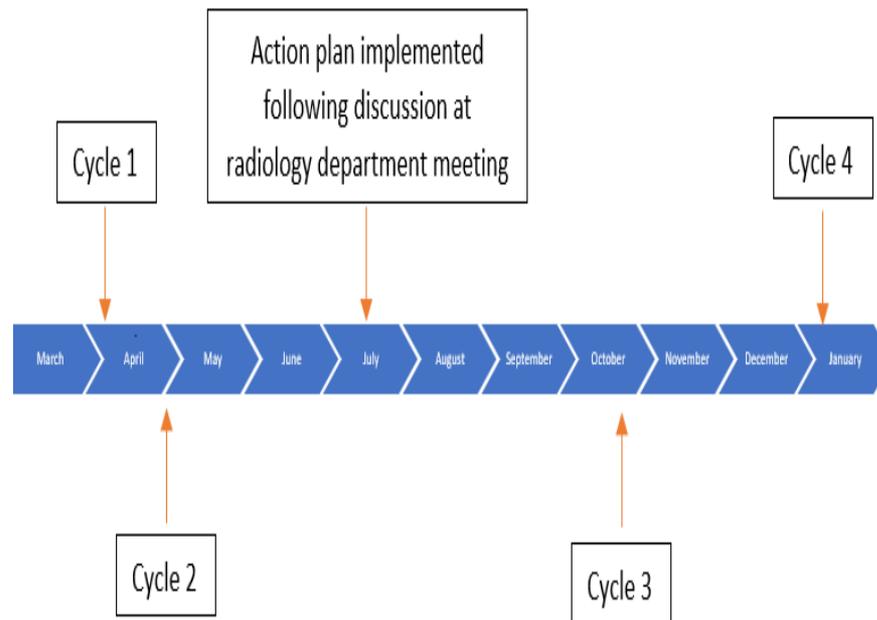
- Audit Standards
  - all CXRs for NGT tube check should be flagged on Soliton Radiology Information System (RIS) to be prioritised for urgent reporting.
  - 90% of NGT check CXRs should be reported within 3 hours.
  - All reports should give a definitive statement on the position of the NGT.
- Retrospective data analysis of chest radiographs (excluding paediatrics/neonates) was carried out, using RIS.
- Data collected
  - NG tube template used
  - NG tube correctly sited
  - Time taken to report study

The screenshot displays a software interface for a Radiology Information System (RIS). At the top, there is a navigation bar with buttons for 'Patient', 'Visit', 'Vetting', 'Schedule', 'Complete', 'Authorised report', and 'New report'. Below this is a toolbar with icons for Bold (B), Italic (I), Underline (U), and other functions. A 'Speech Recognition' window is open, showing a text input field with 'OCS InPatient', a 'Ready' status, and playback controls (stop, play, previous, next). There are 'Park' and 'Cancel' buttons. The main content area shows a report template for a chest X-ray review of a nasogastric tube. The text reads: 'This chest X-ray has been reviewed for the position of the nasogastric tube: There is a NG tube in situ which' followed by a bulleted list: '- Follows the path of the oesophagus', '- Bisects the carina', '- Crosses the diaphragm in the midline', '- Has it's tip clearly visible below the left hemi-diaphragm'. The final sentence states: 'The position of the NG tube is satisfactory and is safe to use for feeding.'

NGT reporting template introduced following the first audit cycle

## Methods (continued)- Audit Cycles and Action Plan Implementation

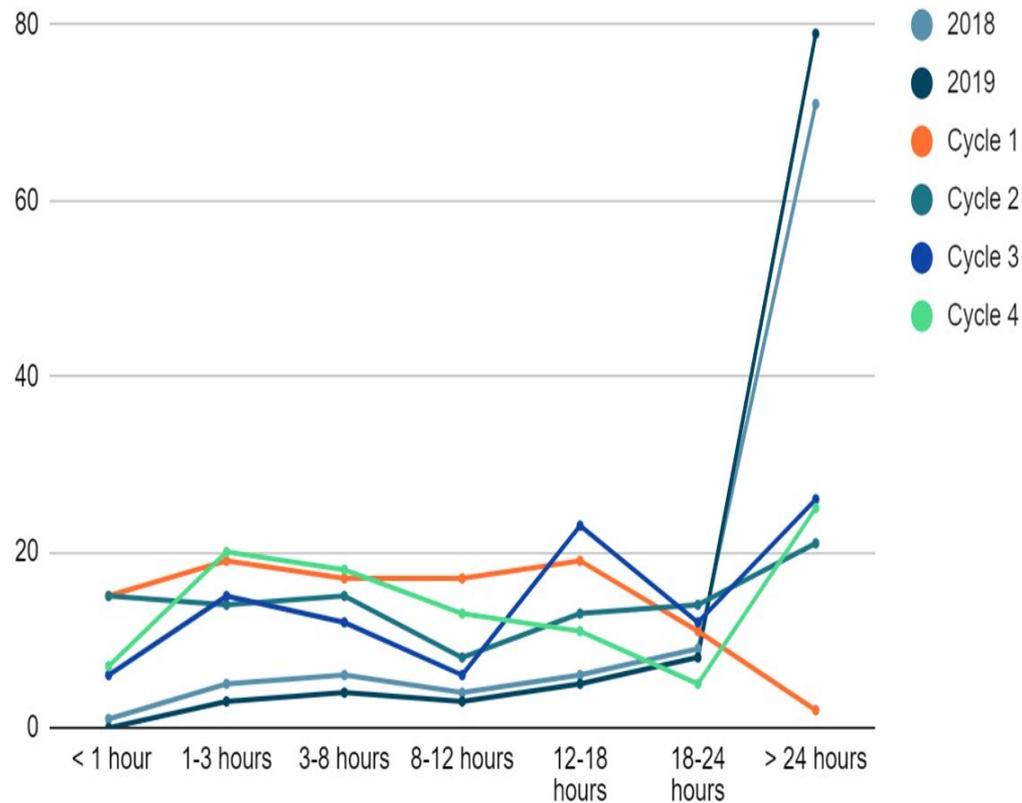
- 4 data sets collected over 8 day periods
- *Initial audit cycle (April 2020)* - radiographers encouraged to flag CXRs for NGT check on RIS at the time of image acquisition (manual process) following this cycle.
- *Second cycle (May 2020)*- departmental and trust wide interventions included: implementation of a standardised NGT check reporting template; inclusion of the entire NGT on the CXR if the study is flagged for NGT check; and mandatory NGT check tick box on the electronic request form for CXRs.
- *Third cycle (October 2020)*
- *Fourth cycle (January 2021)*
- Preceding audit conducted by medical team (in 2018 and 2019)
- First and fourth cycles conducted during COVID-19 peaks



# Results (1) Number of NGT check CXRs

	2018	2019	First Cycle (April 2020)	Second Cycle (April - May 2020)	Third Cycle (October 2020)	Fourth Cycle (January 2021)
Total Number	644	953	158	168	142	230
Average per day	4	5	19	21	18	29
No. requiring further action	17 (3%)	60 (6%)	21 (12%)	2 (1%)	12 (8%)	18 (8%)

## Results (2)- Time taken to report



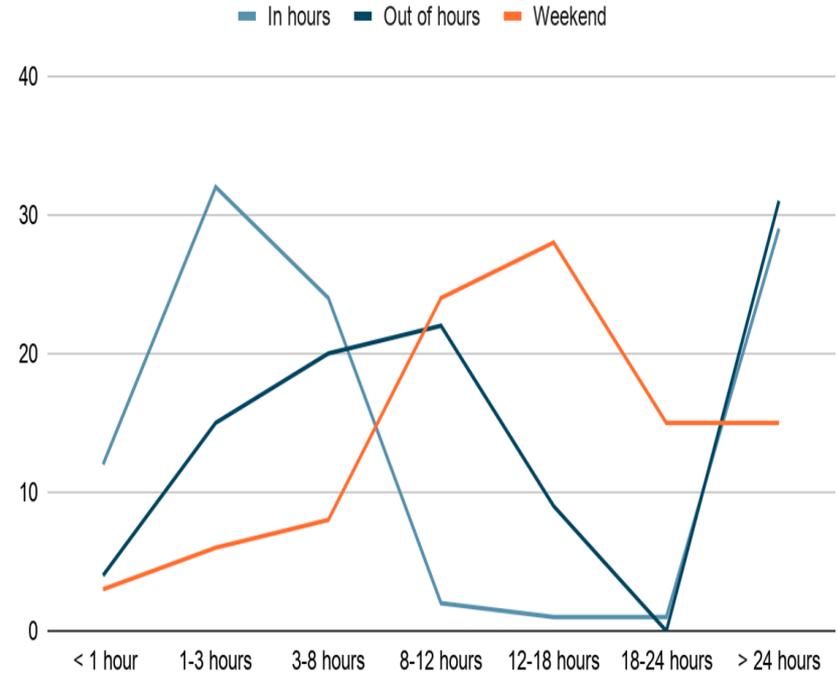
	Median	Range
2018	3 days	37 days
2019	3 days	32 days
Cycle 1	12 hours	22 hours
Cycle 2	12 hours	24 hours
Cycle 3	16 hours	12 days
Cycle 4	3 hours 34 mins	22 days

## Results (3)- Percentage reported within 3 hours

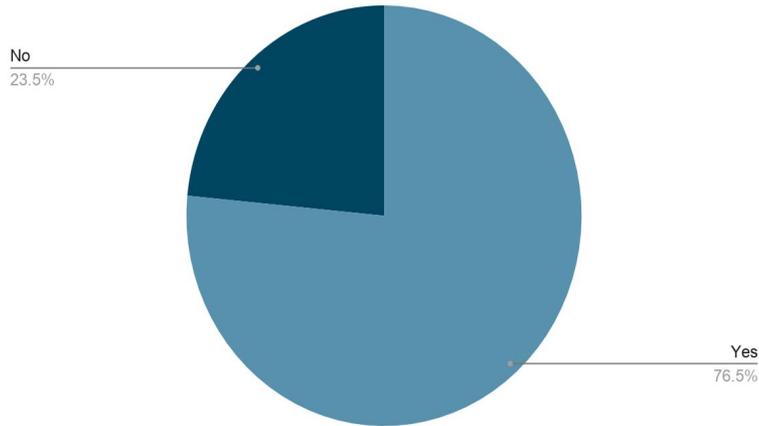
2018	2019	Cycle 1	Cycle 2	Cycle 3	Cycle 4
59 (9%)	38 (4%)	52 (35%)	48 (29%)	29 (20%)	61 (27%)

## Results (4)– Variability in reporting time in different shifts

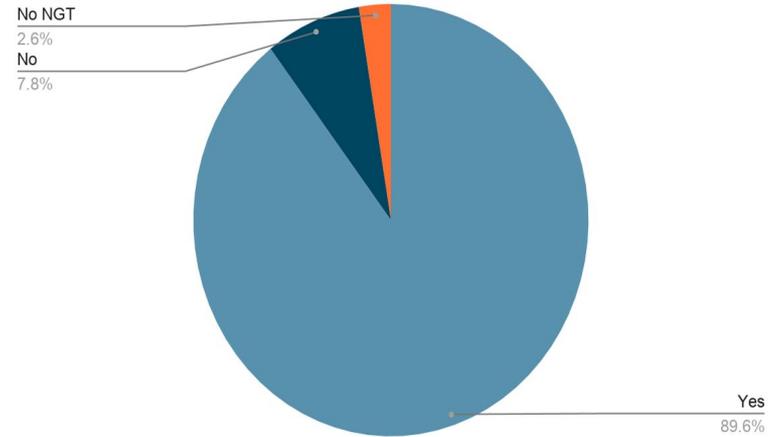
	Median	Range
In hours	4 hours	36 mins - 4 days 20 hours
Out of hours	11 hours	31 mins - 4 days 13 hours
Weekend	14 hours	25 mins – 22 days 5 hours



## Results (5)- Percentage of NGT check CXRs reported using the standardised template in cycle 4



## Results (6) - NGT correctly sited in cycle 4



# Discussion

- Usage of NG tube proforma has increased, giving a definitive statement on the position of the NGT
  - Awareness amongst reporters
  - Common situation in which the template was not used was during reporting a series of radiographs
- Time taken to report has increased, with the 90% reported at 3 hours target not met
  - Re-audit conducted during COVID-19 wave
  - Overall number of chest radiographs has increased from 2018 by 625%
  - Median time to report has reduced
- Variability in reporting times depending on in hours/out of hours/weekend
  - Workload of shifts
  - Reduced number of reporters available to report out of hours/weekends