
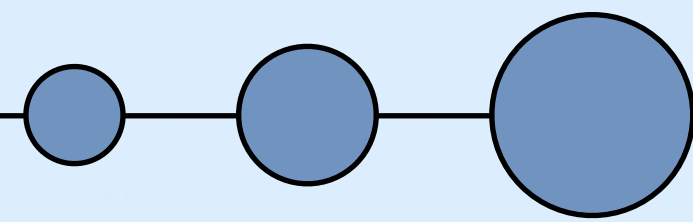




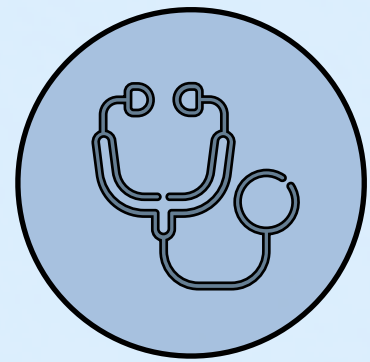
Mal-positioned NG feeding Tubes: Are medical students safe to identify them?

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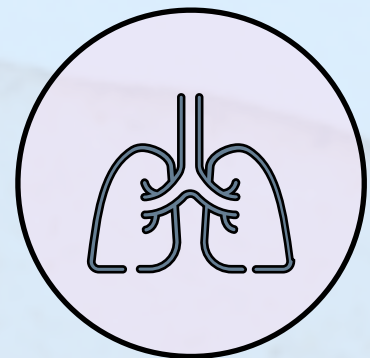
Introduction



Misplacement of NG tubes into the lungs leads to avoidable complications and deaths despite more than a decade of it being classified as a “Never Event”^{1, 2}.



There have been multiple NHS Alerts since 2005, with latest reports suggesting a rising incidence^{1, 3}.

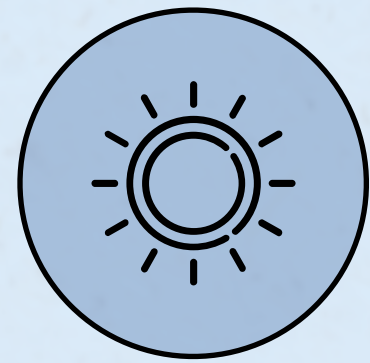


While most NG tubes are inserted and used without event, check chest x-rays to ensure correct placement are common. These show that approximately 1 in 50 are in the lungs while over 25% are unsafe for feeding⁴.



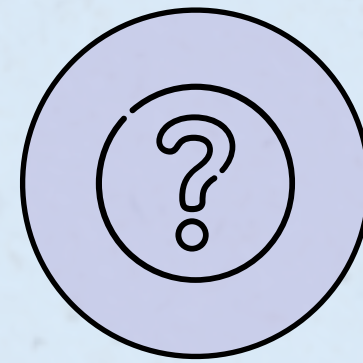
Case courtesy of Henry Knipe, Radiopaedia.org, rID: 29298

Why Relevant to Medical Students?



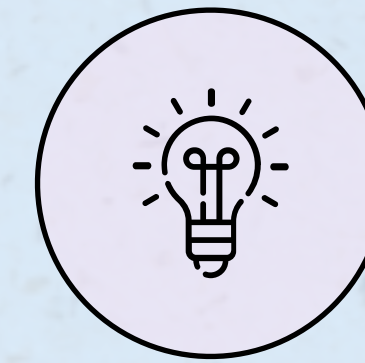
Expected core knowledge

NGT placement is listed against Clinical Imaging in the upcoming Medical Licensing Assessment – compulsory for every graduating UK medical student from 2025⁵



How is this taught currently?

Research has shown Radiology has a very small footprint in the medical school curriculum. Many medical schools do not have Radiologists on staff⁶.

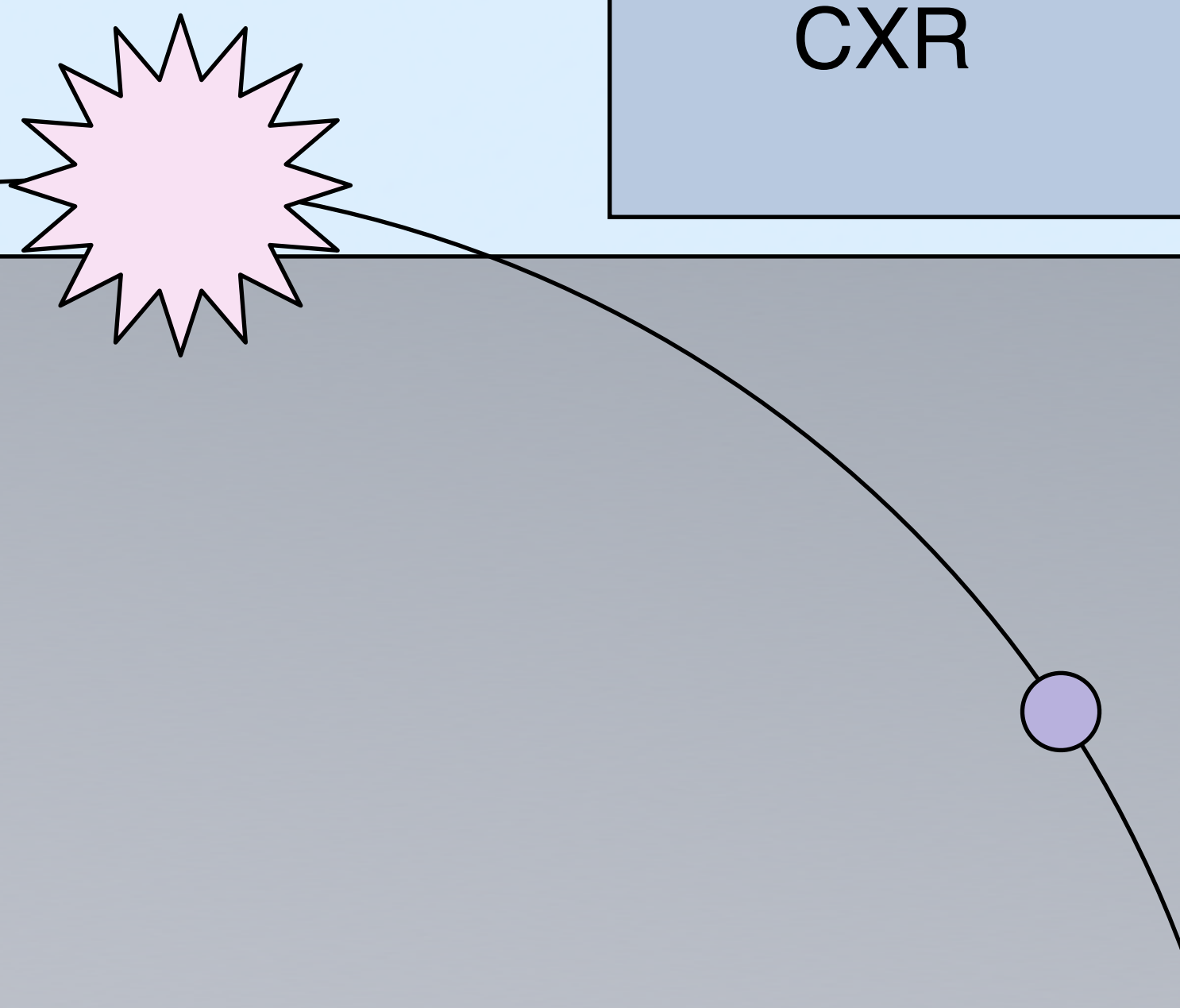


Urgent need to address knowledge gap

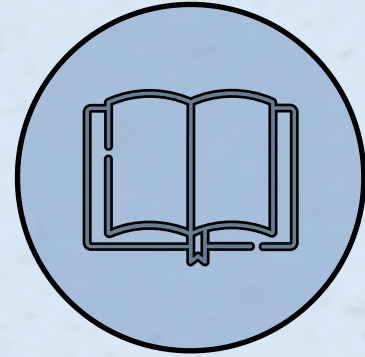
It is unclear if medical students are routinely and systematically taught how to interpret NGT positions on CXRs; who is responsible for teaching this or if their competence in this important skill is assessed before they graduate.



Aims

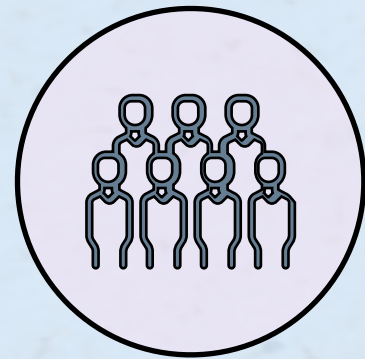
1. Establish the ability of Medical Students to correctly identify a mal-positioned NGT on chest X-ray (CXR).
 2. Evaluate the effectiveness of an online learning tool in improving medical students' ability to correctly identify a mal-positioned NGT on CXR
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Materials and Methods



Interactive learning tool

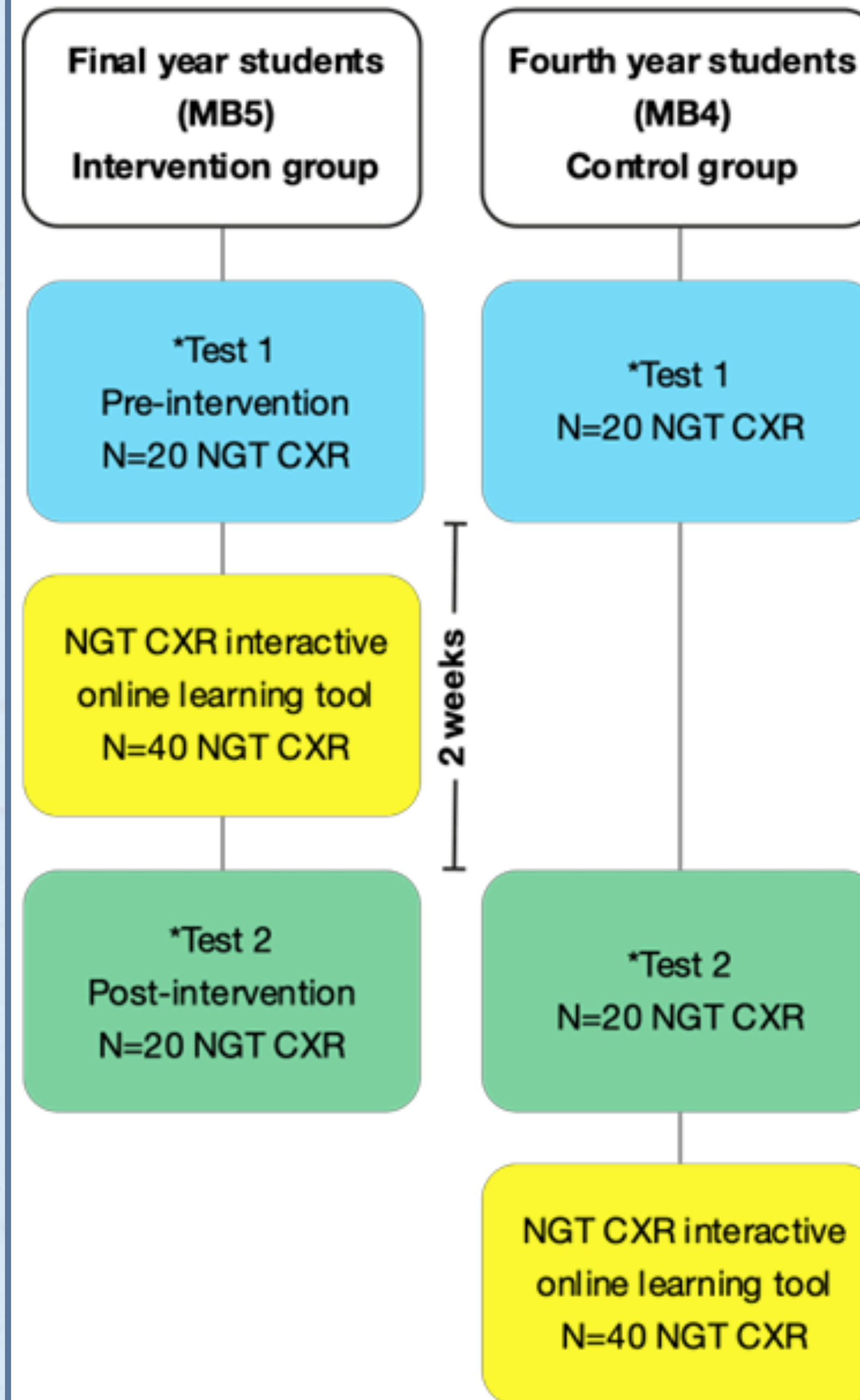
An interactive learning tool was developed which comprised of a teaching module and two sets of 20 CXRs.



Participants/Testing

Fourth (MB4) and Fifth-year (MB5) medical students were invited to view 20 CXRs with 14 correctly sited and 6 mal-positioned NGTs. MB5 students (Intervention) were exposed to an online interactive learning tool, with MB4 students kept as control. One week later, both groups of students were invited to view 20 more CXRs for NGT placement. (Figure 1)

Figure 1: Summary of study outline.



*Test 1 and 2: Same 20 NGT CXRs but sequence in order were changed.

Results

01

12 (4.8%) of 249 MB5 students and 5 (3.1%) of 161 MB4 students correctly identified all the NGTs on CXRs in Test 1.

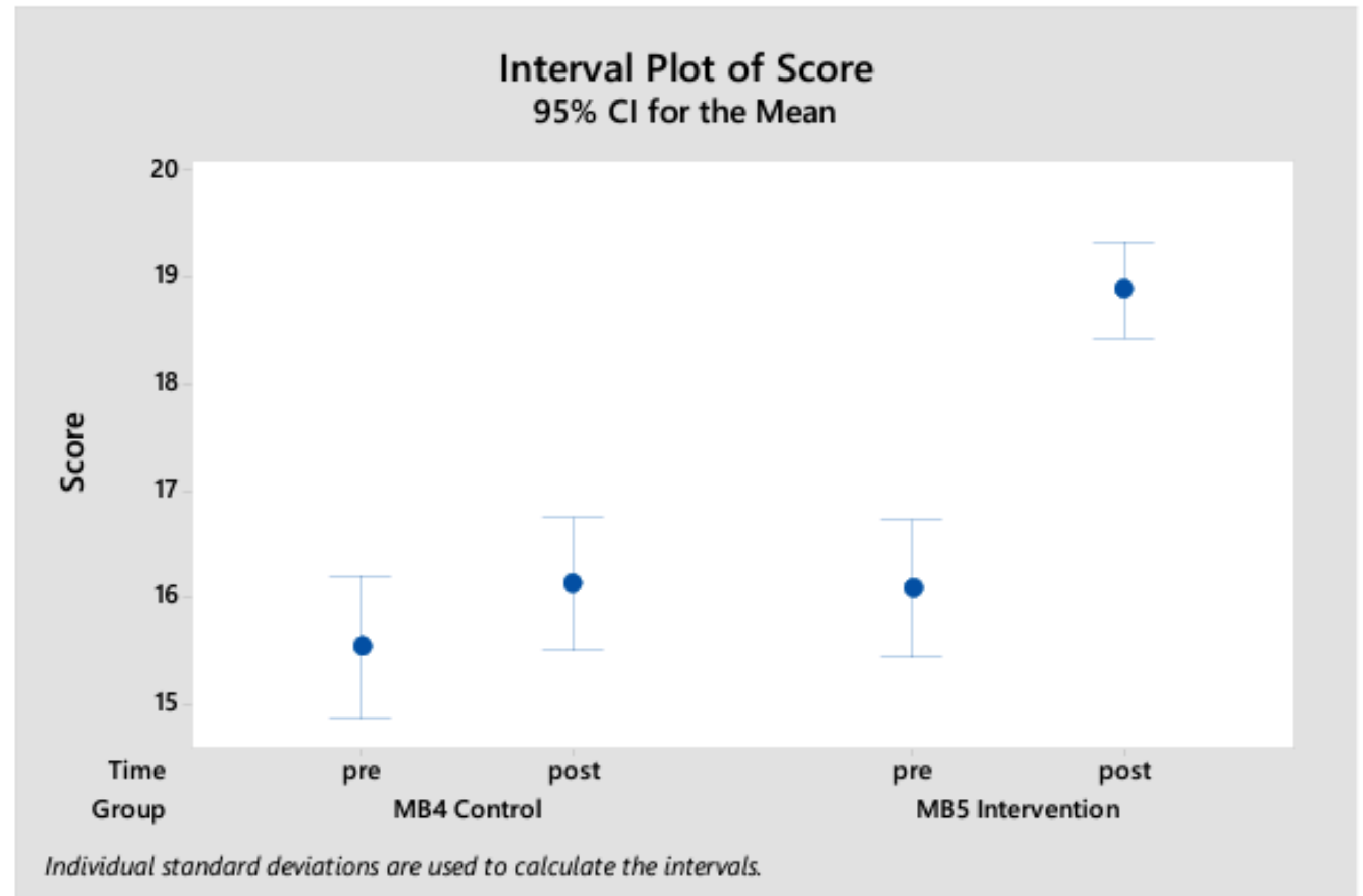
02

The number of students misidentifying 1 or more of the 6 mal-positioned NG tubes was 129 (51.8%) for MB5 and 76 (47.2%) for MB4 students.

03

MB5 students improved significantly ($p < 0.001$) following exposure to the learning tool with 58% scoring all CXRs correctly while 28% scored 1 or more mal-positioned NGT incorrectly.

Figure 2 : Total CXRs identified correctly for Test 1 and 2 for MB 4 and MB5 students



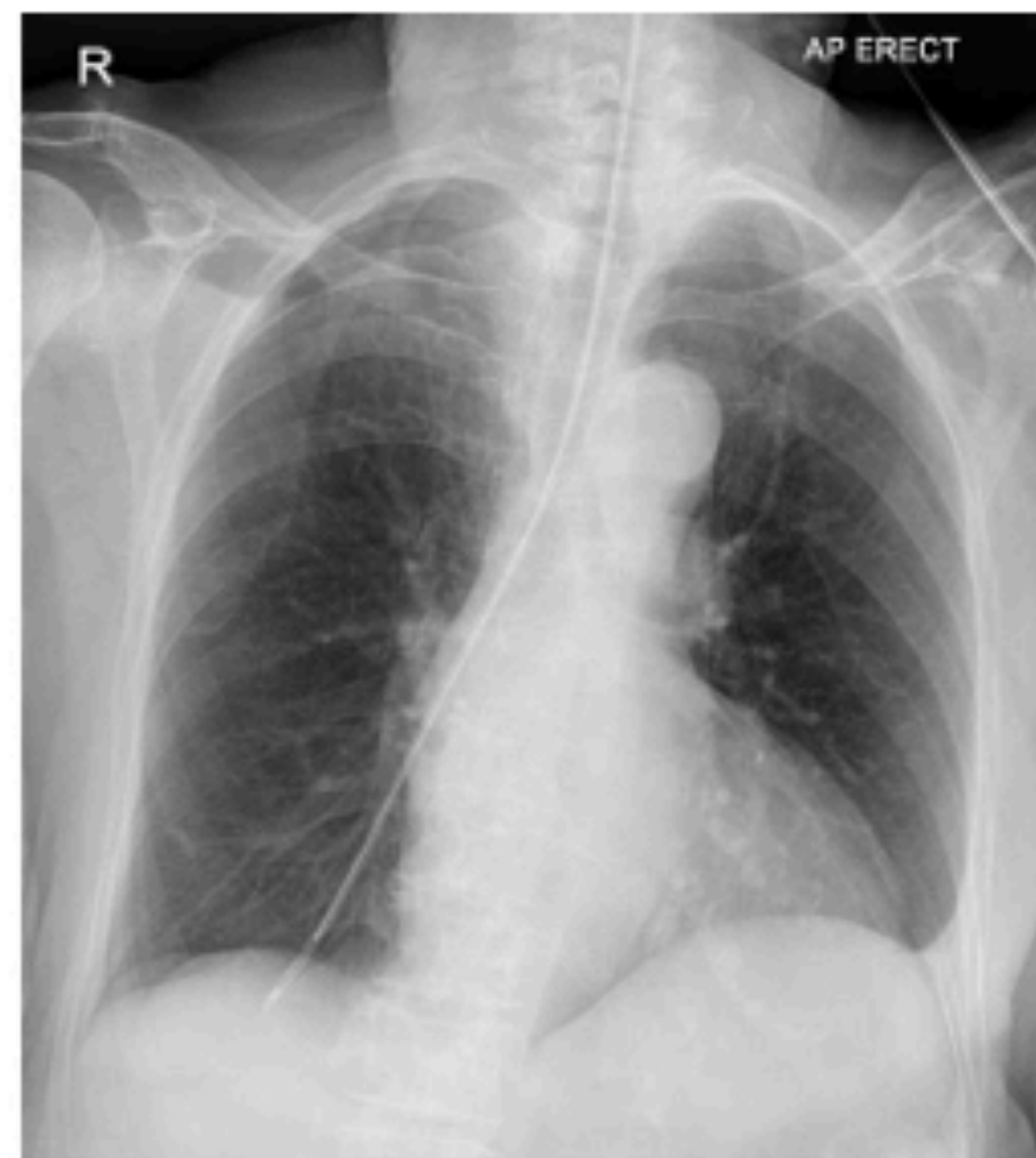
CI: Confidence interval

Identification of Never Events

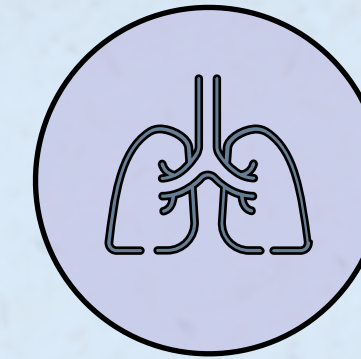
Figure 3: CXR which students struggled to recognise the NGT tip is not within the stomach (A); one of the CXR with NGT in the lung (B).



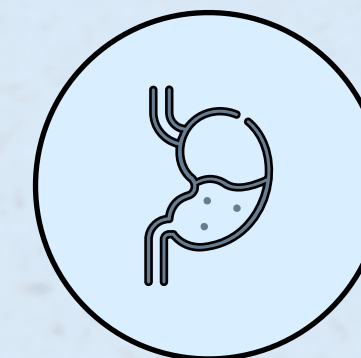
A



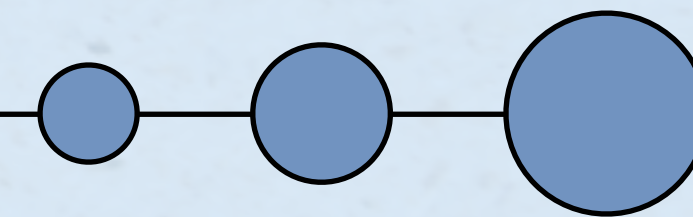
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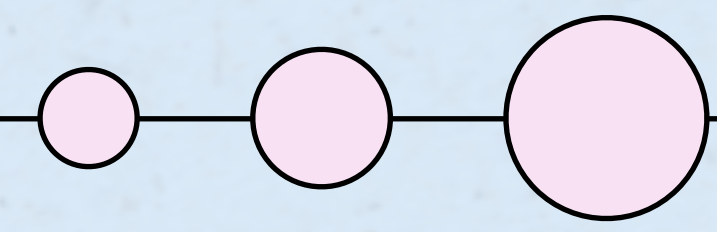


Students failed to identify an NG tube in the lung ('Never Event') in just one out of 1,108 opportunities (0.0009%).



The most commonly misidentified NGT position was on a CXR where the tip of the NGT was located within the distal oesophagus - Figure 3 (A). Identification of this NGT CXR did not improve after the learning tool, despite at least 5 similar practice examples with explanation and feedback.

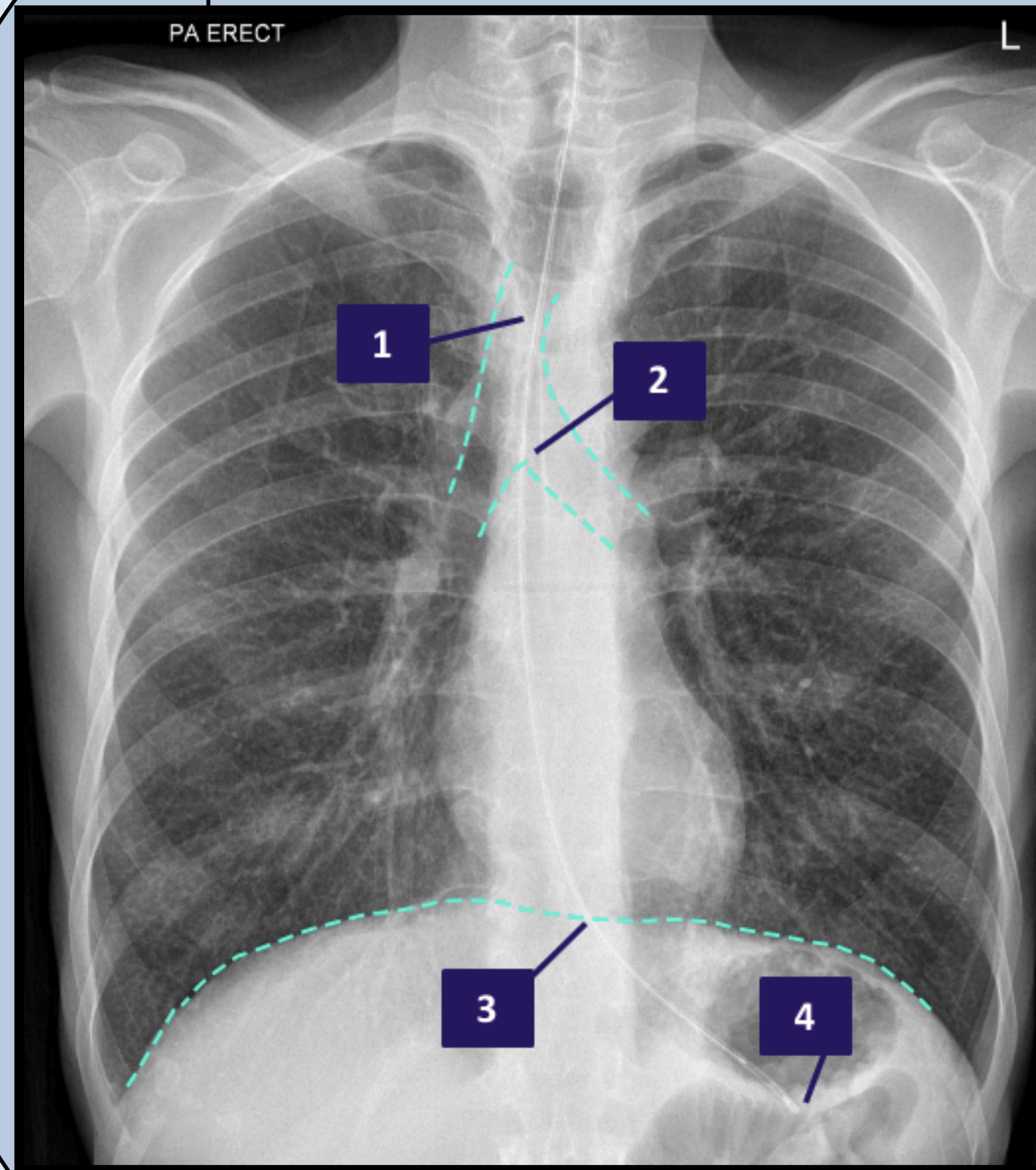




Conclusion

1) While our medical students were excellent at identifying misplaced NG feeding tubes in the lungs, their ability to determine if the tip had passed through the gastro-oesophageal junction into the stomach was suboptimal.

2) Our learning tool was effective in improving their performance but could not completely prevent mis-identification of all mal-positioned feeding tubes.



3) More robust systems-level solutions are required to improve patient safety and consideration should be given for all feeding NG tubes to be formally reported before commencing feed.



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