

Tracheal Tube Length & Tip Position in Ventilated ICU Patients: A Re-Audit

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BACKGROUND

According to a study¹, oncological patients account for 15% of all the admissions to the Intensive Care Unit (ICU). In ICU patients, endotracheal tubes (ETTs) may not always be inserted to the correct depth. Proper positioning of ETT is crucial, as a misplaced tube can potentially cause serious complications.

AIM

To assess compliance with RCoA standards after targeted teaching and a change in hospital practice, and compare findings with the initial audit.

METHODS

Design: Prospective clinical re-audit; 30 patients per audit, each audit over 3 months.

Setting: Adult ICU, Shaukat Khanum, Lahore.

Inclusion: All adult ICU patients requiring ETT placement and mechanical ventilation; no exclusion criteria.

Assessment: Each patient assessed against six RCoA standards²: ETT depth (23 cm males, 21 cm females, upper front teeth), chest movement, auscultation, capnography, 45° head-up CXR (tip midway between vocal cords and carina), ETT-length handover (depth recorded every nursing shift). Target: 100% each.

Approval: QPSD, Shaukat Khanum, Lahore.

QUALITY IMPROVEMENT

INITIAL AUDIT · 30 PATIENTS · 3 MONTHS

Poor adherence to recommended ETT depth and 45° head-up positioning for chest radiography.

INTERVENTION

Targeted oral teaching for ICU nursing staff, respiratory therapists and radiology technicians.
45° head-up CXR now standard hospital practice.

RE-AUDIT · 30 PATIENTS · 3 MONTHS

RESULTS

- 30 patients: 19 (63.3%) male and 11 (36.7%) female.
- ETT depth at the upper front teeth: 21 cm in males and 19 cm in females (RCoA standard: 23 cm and 21 cm).
- Correct ETT depth: 1/30 (3.3%) → 0/30 (0%).

45° HEAD-UP CXR COMPLIANCE

0% → 100%

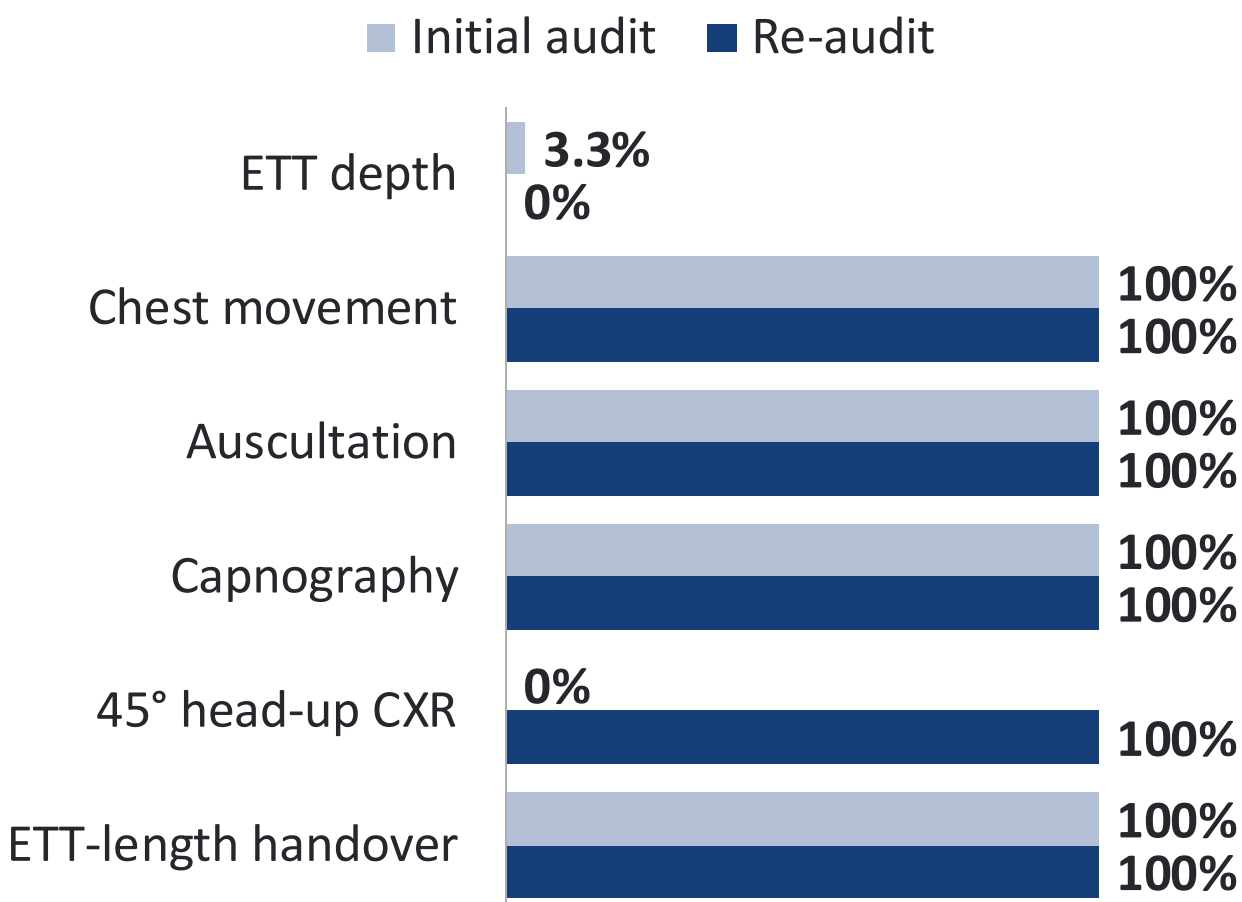


Figure 1. Compliance (%), n = 30 per audit.

CONCLUSION

- 45° head-up CXR compliance improved from 0% to 100% following the intervention.
- Other ETT confirmation practices remained fully compliant; however, recommended ETT depth remained suboptimal.
- Differences in anthropometric characteristics between Asian and European populations, along with malnutrition and cachexia commonly seen in oncological patients, may limit the generalisability of fixed European ETT-depth recommendations to our population. Anthropometric data were not recorded.

References

- Critically ill patients with cancer: A clinical perspective. PMC7643188.
- Royal College of Anaesthetists (RCoA). Audit Recipe Book. 3rd ed. 2012; section 10.10, p. 276.