

A SIMple solution: improving airway management on the intensive care unit

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Introduction and aims

Intubation in theatres occurs in controlled conditions with highly experienced staff and often relatively well patients. In contrast, intubation of the critically ill in ICU is much more challenging. NAP4 found that 20% of airway complications occurred on ICU, with a higher mortality risk due to patient instability, little time for adequate anaesthetic assessment, and insufficient responses to pre-oxygenation in a patient with high metabolic demand.

We identified a lack of staff confidence, training and anaesthetic experience. The aim of this project was to review ICU intubations at Kingston Hospital against RCOA standards and look to improve safety and quality.

Methodology

- ❖ Patient cohort: ICU intubations between August and November 2017
- ❖ Review of documentation
- ❖ Survey: junior doctors rated their confidence in theatre intubations versus ICU intubations
"I feel confident intubating in theatres" vs "I feel confident intubating in ICU"
- ❖ Data collection: staff present, time of intubation induction agents, equipment, difficulties and complications
- ❖ Data analysis and presentation locally
- ❖ Recommendations for safety and **quality improvement**
- ❖ **Re-audit**

Results

Number of intubations = 40
 No documentation = 5
 60% outside normal working hours (8am-5pm)
 12.5% patients grade 3-4
 25% "difficult airway"
 25% → complications (arrhythmias, hypoxia, arrest)

Figure 1: graph to show the most senior grade of doctor present at intubation

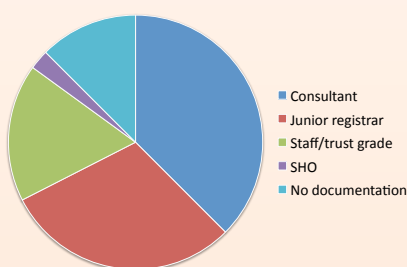
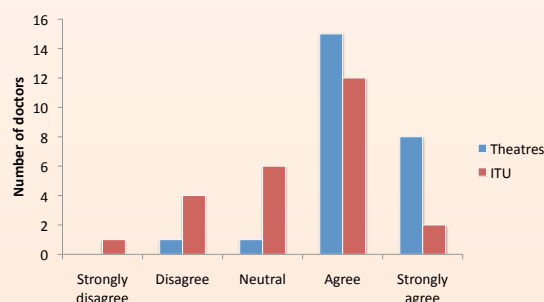


Figure 2: graph to demonstrate confidence of doctors intubating in ICU compared to theatres



Multi-disciplinary, in-situ simulation training designed and introduced for doctors and nurses working on ICU

Intubation checklist designed and introduced

KINGSTON HOSPITAL ICU INTUBATION CHECKLIST

INTUBATION

- Difficult airway trolley & Glisobcock
- Drugs - induction, muscle relaxants, vasopressors
- Optimal patient positioning
- Additional help - senior doctors/DOs
- Post intubation ventilation
- SpO₂, BP, ECG and ETCO₂
- Role allocation: Airway - Drugs - Circuit -

Steady prior to intubation

- Suction
- Aspirate NC tube if present
- Pre-oxygenation for 3mins

ICU INTUBATION

- Ensure ETCO₂ present
- Follow RAG guidelines if difficulty intubating (PFI)
- Secure airway
- Monitor observations and treat complications

POST INTUBATION

- Ensure ventilation
- Document intubation
- Order chest x-ray

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Electronic documentation proforma introduced

Quality improvement and continuous re-audit

"At risk" patients identified



Conclusion and evaluation

- ❖ Proforma: improved documentation
- ❖ In situ, MDT simulation training:
 - Smoother intubations, realistic practice
 - Better teamwork and communication
 - Increased confidence levels intubating on ICU (p<0.01)**
- ❖ Use of checklist led to increased co-ordination and efficiency

Intubation on ICU is a high-risk procedure in a high-risk environment; quality and safety can be improved by small group simulation sessions on ICU and instigating checklists.

References

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