Introduction of a Trauma Trolley to a Trauma Unit

Joseph Swani, James Harrison, Laura Kocierz

Worcestershire Royal Hospital

Introduction

- Seriously injured patients are usually managed in a Major Trauma Centre.
- Trauma Units only occasionally receive major trauma.
- Due to the rarity of these events, it is challenging for staff to be familiar with the location of equipment needed for major trauma.
- A trauma trolley was introduced in our Trauma Unit to help staff find equipment they may need in major trauma.

Survey

- A survey of A&E Resus staff was conducted before and after the introduction of the trolley, asking them if they could locate specific equipment.
- 51 staff completed the survey which questioned seventeen pieces of equipment.
- On average the trolley resulted in an increase from 46% to 83% of staff stating they knew where to find specified equipment from memory.
- Although this demonstrated improvement, it also showed how we can't expect staff to always remember where to find equipment they rarely need.
- Having the trolley meant staff should be able to find the trauma equipment they want, with the equipment either being in the trolley itself or the equipment location being stated on the trolley.

Human Factors

- The hierarchy of intervention effectiveness describes how education and retraining of staff are relatively weak interventions in comparison to system-based interventions.
- Having equipment for a rare event located in one place in a dedicated trolley represents a systems-based intervention that doesn't depend on staff remembering where to find the equipment.
- Layout was kept simple and intuitive, using concepts familiar to the user.
- To minimise memory load on staff, information on equipment location was visible using an ordered list on the trolley.
- To aid visibility, the trolley was red in colour and situated clearly visible in the most likely location of need - A&E Resus.

Jakob Nielsen's 10 usability heuristics provide principles on how to improve the usability of interfaces. The trolley design incorporated:

Recognition rather than recall

Consistency and standards

Match between the system and real world

Aesthetic and minimalist design

The Trauma Trolley

Conclusions

- A dedicated trauma trolley, which is visible in A&E, may mitigate the unfamiliarity with locating trauma equipment for hospitals where major trauma rarely presents.
- This intervention could impact on the management and outcome of trauma patients by allowing appropriate care to be initiated without delay, improving patient safety.
- Focusing on usability in the design of the trolley and applying human factors principles can improve user experience.
- Making system-based changes with less reliance on education and training can be a more effective method of establishing change.

References

- Nielsen Norman Group. 10 Usability Heuristics for User Interface Design. [https://www.nngroup.com/articles/ten-usability-heuristics/] Accessed August 2024
- Macallan J, Sutcliffe J, Lomax S. Human factors in anaesthetic practice part I: facts and fallacies. Br J Anaesth. 2023; 23:298-405

THE RED TAPE BEHIND THE RED TAPE

Authors
A L Walker, S Y P Yue and B Young

INTRODUCTION

An emergency call system should be immediately accessible in all locations where anaesthesia is administered, as per recommendations from the 7th National Audit Project (NAP7) of the Royal College of Anaesthetists [1]. The system often consists of an emergency alarm button on the wall of operating theatres. For patient safety, it is vital that all members of the theatre team can quickly identify and activate the system if needed in an emergency. However, the appearance and location of the button is not standardised.

METHODOLOGY

A survey consisting of 5 questions printed on A4 paper was distributed across all theatre locations at Maidstone & Tunbridge Wells Trust in March 2023. All members of the theatre team including student operating department practitioners (ODPs) were eligible to participate.

After the initial survey, vertical strips of red tape (3M vinyl tape 471F) with a total width of 100mm were applied to the walls of all theatres and anaesthetic rooms, from the ceiling down to the respective emergency buttons. The same survey was repeated in July 2024 after the tape was installed. This study was funded internally by the trust with no external funding received.

OBJECTIVE

We hypothesised that a strip of red tape from the ceiling down to the emergency button makes the system more easily identifiable in emergencies.

Figure 1. Red Tape implemented in theatres at both hospitals.

RESULTS

The initial survey received 87 responses, of which participants' duration of service at the trust ranged from less than a year to 30 years. 91% participants (n=79) knew where the emergency button was, but 8 participants (9%) did not. The latter group included anaesthetists, scrub nurses and theatre support workers. 12 participants rated the emergency button as hard to very hard to locate.

The repeat survey received 103 responses. 95% participants (n=98) knew where the emergency button was, and fewer (n=5, 4.8%) did not. Fewer participants (n=7) rated the emergency button as hard to very hard to locate.

CHALLENGES OF IMPLEMENTATION

Red tape installation is an effective intervention to increase staff knowledge of the emergency button location in theatre. The simplicity of the idea contrasted sharply with the challenges we faced. Despite departmental support, the process of buying and installing the red tape uncovered surprising amounts of systematic "red tape" to cut through. It required more than 100 emails over 10 months. The lack of communication between stakeholders (e.g. infection control, theatre manager) and between the 2 hospitals of the trust were significant barriers to change.

To make future quality improvements for patient safety at the trust more efficient and more accessible, these systematic issues were highlighted at trust meetings. In September 2024, the Trust opened its new theatre complex, the Kent and Medway Orthopaedic Centre. The red tape installed there efficiently and without further paperwork is proof that systematic change is possible.

REFERENCES

1. Kursumovic E, Cook TM, Lucas DN, et al. The 7th National Audit Project (NAP7) baseline survey of individual anaesthetists: preparedness for and experiences of peri-operative cardiac arrest. Anaesthesia 2023; 78: 1453–64

Audit of Local Anaesthetic Cupboards at Lancashire Teaching Hospitals NHS Foundation Trust: Compliance with Anaesthesia Clinical Services Accreditation (ACSA) Standards.

R Murphy, A Kirk, P Shorrock. Lancashire Teaching Hospitals NHS Foundation Trust.

Introduction

Lancashire Teaching Hospitals NHS Foundation Trust is accredited by the Anaesthesia Clinical Services Accreditation (ACSA). Following an update to ACSA's standards in 2023, an audit was undertaken after poor compliance with the standards for the storage of local anaesthetic (LA) cupboards was identified. ACSA Standard 2.2.1.2 [1] specifies that 'Local anaesthetic agents (ampoules and bags) must be stored separately from other drugs and intravenous fluids.' This standard, like all ACSA standards, is derived from the College's Guidelines for the Provision of Anaesthetic Services (GPAS) [2]. Specifically, GPAS references the National Audit Project (NAP) 3 [3] and the Royal Pharmaceutical Society's Professional Guidance on the Safe and Secure Handling of Medicines [4], both of which emphasise that separating LA agents from other drugs and IV fluids is essential for improving patient safety and reducing risk.

Image 1: Poster attached to all local anaesthetic cupboards after cycle 1.

RCOA Royal College of Anaesthetists | ACSA Anaesthesia Clinical Services Accreditation

STANDARD

2.2.1.2 **Local anaesthetic agents (ampoules and bags) must be stored separately from other drugs and intravenous fluids.**

EVIDENCE REQUIRED

Separate areas should be seen in any part of the hospital where local anaesthetic agents are kept for use by anaesthetic staff. See helpnote for further detail.

Image 2: ACSA standards regarding local anaesthetics

Methods & Results

Across both hospitals in the trust, 34 of 35 LA cupboards were reviewed during the first audit cycle in April 2023. The key findings revealed that only 4 theatres were fully compliant with the standards. Ethyl chloride was identified in 18 theatres, and chlorhexidine was found in 10 theatres. Additionally, a variety of miscellaneous items, both medication and non-medication, were discovered in the LA cupboards. These included McGrath Video Laryngoscopes, bleeps, intramuscular adrenaline, intravenous magnesium, and eye drops.

Implemented changes

Based on these findings, several changes were implemented to improve compliance. A poster outlining what is and isn't permitted in the LA cupboards was created and placed on each cupboard in the anaesthetic rooms (Image 1). Storage boxes for non-medication items were procured and are now used to store miscellaneous non-medication items in the anaesthetic rooms. Additionally, lockable boxes were sourced for the secure storage of local anaesthetics requiring refrigeration.

Re-Audit

The audit loop was closed in September 2024 with improvements observed. The number of compliant theatres increased to 10 and the presence of ethyl chloride and chlorhexidine was reduced to a total of 8 theatres. However, further improvements are still needed and additional implemented changes include designated storage locations for non-LA medications and delivering targeted teaching sessions in areas where non-compliance remains most prevalent.

	Cycle 1	Cycle 2
No. of compliant theatres	4	10
Ethyl chloride	18 theatres	8 theatres
Chlorhexidine	10 theatres	8 theatres
Miscellaneous	8 theatres	13 theatres

Table 1: Results in Cycle 1 compared to Cycle 2

Conclusion

Accidental IV administration of local anaesthetic remains a critical patient safety concern, underscoring the importance of ongoing vigilance. While this audit has demonstrated progress, achieving full ACSA compliance requires sustained efforts. Key next steps include implementing targeted education programmes, refining storage solutions, and addressing areas of persistent non-compliance. Further audit cycles will be essential to monitor progress, reinforce improvements, and ensure that patient safety remains at the forefront of practice.

References

[1] The Royal College of Anaesthetists. Anaesthesia Clinical Services Accreditation, Accreditation Standards 2023 [Internet]; 2023 [cited 2024 Dec 30]. Available from: https://www.rcoa.ac.uk/sites/default/files/documents/2024-03/ACSA%20standards%202023_1.pdf
[2] The Royal College of Anaesthetists. Guidelines for the provision of Anaesthetic Services. [Internet].[cited 2024 Dec 30]. Available from: https://www.rcoa.ac.uk/safety-standards-quality/guidance-resources/guidelines-provision-anaesthetic-services
[3] The Royal College of Anaesthetists. Major complications of Central Neuraxial Block in the United Kingdom; The 3rd National Audit Project of The Royal College of Anaesthetists [Internet]; 2009. [cited 2024 Dec 30]. Available from: https://www.rcoa.ac.uk/sites/default/files/documents/2019-09/NAP3%20report.pdf
[4] Royal Pharmaceutical Society. Professional guidance on the safe and secure handling of medicines [Internet]; 2018. [cited 2024 Dec 30]. Available from: https://www.rpharms.com/recognition/setting-professional-standards/safe-and-secure-handling-of-medicines/professional-guidance-on-the-safe-and-secure-handling-of-medicines

AN INSIGHT INTO THEATRE TIMES

Dr V Chauhan, Dr H Livingstone
Alder Hey Children's NHS Foundation Trust

Alder Hey Children's NHS Foundation Trust

INTRODUCTION

Prolonged non-surgical theatre time (NST) affects operating room efficiency and patient flow. This analysis quantifies NST and highlights specialty-specific differences.

METHODS

- Data Source: 33,446 elective cases from Oct 2021 to Apr 2024
- 2,856 records were removed due to incomplete data.

Definitions

- Pre-Surgical Time: Arrival to surgical start
- Post-Surgical Time: Surgical end to leaving theatre
- Non-Surgical Time (NST): Pre + Post

Analysis

- Calculated mean, median, mode, plus specialty/location breakdown

RESULTS

Parameter	Mean (min)	Median (min)
Surgical Time	56.87	31.00
Non-surgical Time (NST)	37.77	26.00
Pre-surgical	30.19	21.00
Post-surgical	7.84	4.00

- Non-Surgical time was highest in Cardiac and Spinal surgery (64%)
- NST lowest in Gynaecology and Haematology (35%)
- In absolute terms Dental/laser had the lowest NST (12 minutes)

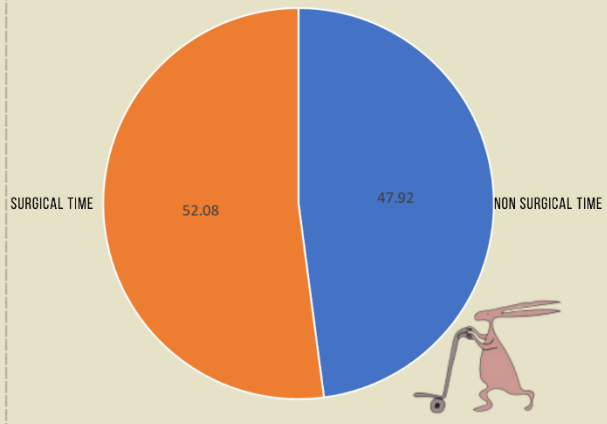


FIG 1: SURGIGAL VS NON SURGICAL TIME (%)

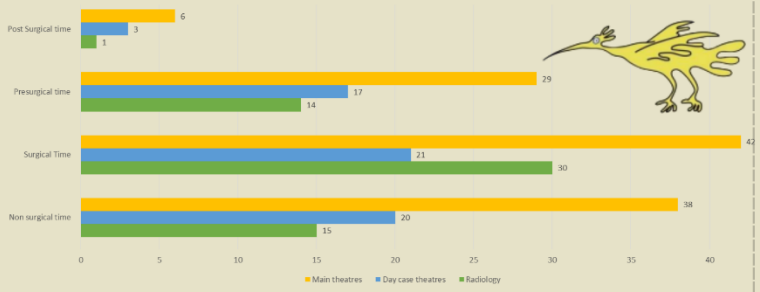


FIG 2:MEDIAN TIME DISTRIBUTION IN MINUTES

IMPACT OF THEATRE COMPLEXITY

Main Theatres: NST ~38% (of total theatre time)
Day Case: NST ~20%
Radiology/Dental/Laser: NST ~15%
Differences likely stem from varying procedure complexity and setup requirements.

SPECIALTY DIFFERENCES

Higher NST in Cardiac and Spinal surgeries suggests more complex workflows and longer setup requirements.
Lower NST in Gynaecology and Haematology likely reflects simpler case coordination.

DISCUSSION

- Our data show an average NST of 56.87 minutes per case (47.92% of total theatre time).
- This aligns with studies identifying organizational inefficiencies, delays in patient transfer, and incomplete documentation as major contributors.
- Travis et al: Inaccurate predictions of surgical and anesthetic durations lead to overruns and idle periods.
- Saha et al: Up to 60 minutes can be wasted in a 4-hour list due to late patient arrivals, prolonged turnover, and inefficient team handovers.

POTENTIAL CHANGES

- Streamlined Patient Flow
- Using real-time data on non-surgical intervals to identify bottlenecks and refine scheduling.

CONCLUSION

Non-surgical theatre time (NST) contributes nearly half of total theatre time. Identifying modifiable pre- and post-surgical workflows may optimize efficiency, especially in specialties with a high NST proportion.

REFERENCES & FUNDING

1. Saha P, Pinjani A, Al-Shabibi N, et al. Why we are wasting time in the operating theatre? Int J Health Plann Mgmt 2009; 24: 225–32.
2. Travis E, Woodhouse S, Tan R, et al. Operating theatre time, where does it all go? A prospective observational study. BMJ 2014; 349: g7182

No funding was received for this study.

Decreasing unnecessary pre-operative blood investigations in elective surgical patients

The Royal Wolverhampton NHS Trust

Dr. M. Gudipati, Dr. J. Johnson, Sr. N. Bateman, Dr. R. Morse, Dr. M. Singh

INTRODUCTION

A departmental audit demonstrated that almost 70% of pre-operative blood tests performed on a regular basis were unnecessary according to NICE guidance (1)

AIM

Reduce unnecessary blood investigations in ASA I & II patients undergoing elective surgical procedures by 25% in a span of 12 months

METHODS

Urology, gynaecology and breast disciplines

Fortnightly sample reporting from Feb 2024

Pre-op nurses teaching in Jan/June: ASA grades and types of surgery

Charts provided to pre-op nurses with investigations required: depending on ASA grade and type of surgery

SPC charting done

RESULTS

Feb 24: unnecessary investigations was 70%

Sep and Oct 24: 40% and 50% respectively

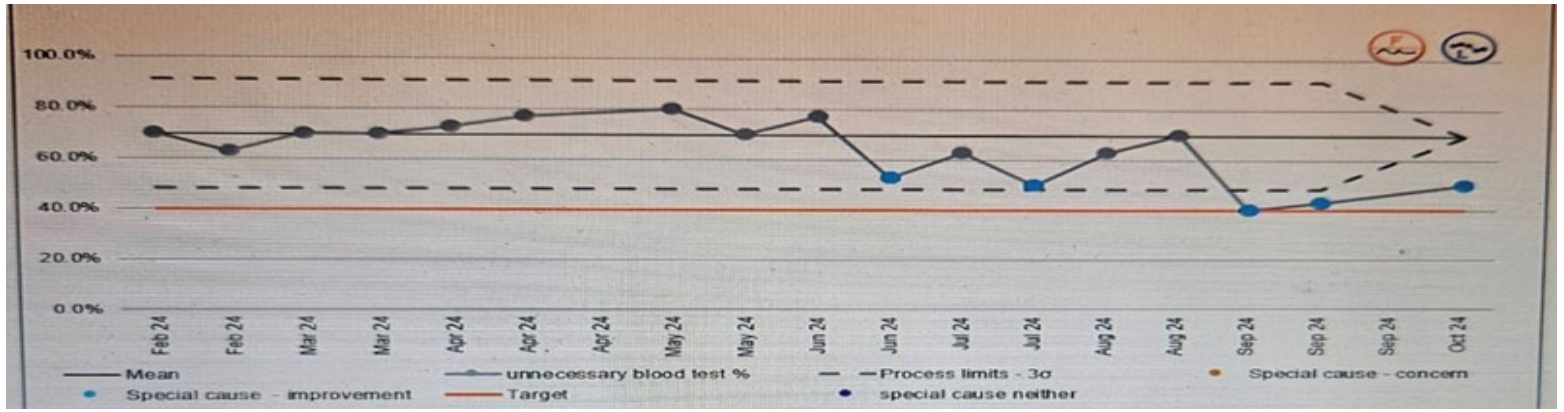
£845/pm savings; £16,000- 20,000/yr

1 tonne/year decrease in carbon footprint

DISCUSSION

Reducing unnecessary blood loss preoperatively: Pillars of patient blood management (2)

Sustainability: reducing consumption of single-use equipment, recycling and eliminating waste (3)



REFERENCES

1. Routine preoperative tests for elective surgery. NICE guideline [NG45]
2. Thakrar, S V et al. Patient blood management and perioperative anaemia. BJA Education, Volume 17, Issue 1, 28-34
3. Fang, L. et al. Sustainability in anaesthesia and critical care: beyond carbon. BJA Education, Volume 22, Issue 12, 456 - 465

Assessing Clinical Staff Knowledge of Medication Shortages: A Quality Improvement Project

Dr Alice Ismail, Dr Charles Vickers, Dr Dhruv Shah, Dr Vimal Grover.
The Royal Marsden Hospital, Chelsea, London.

Introduction

- Medication shortages are an **international issue** with significant clinical, economic, and human impacts [1].
- The frequency of manufacturers alerting the UK government to potential medicine supply issues **increased by 67%** between 2021 and 2023 [2].
- A new report reveals that alerts from drug companies about upcoming shortages have more than **doubled over three years** [3].
- A survey found that although resident doctors most frequently manage these shortages, they **often lack formal training and consistent communication** to handle them effectively [4].

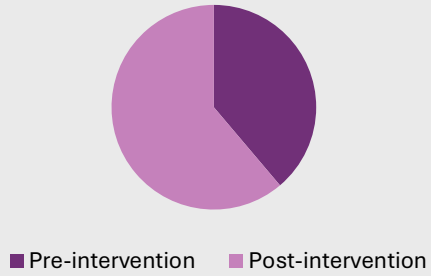
Aim: to assess the knowledge of clinical staff in intensive care and anaesthesia regarding medication shortages affecting the trust and to increase awareness of current shortages and available alternatives.

Results

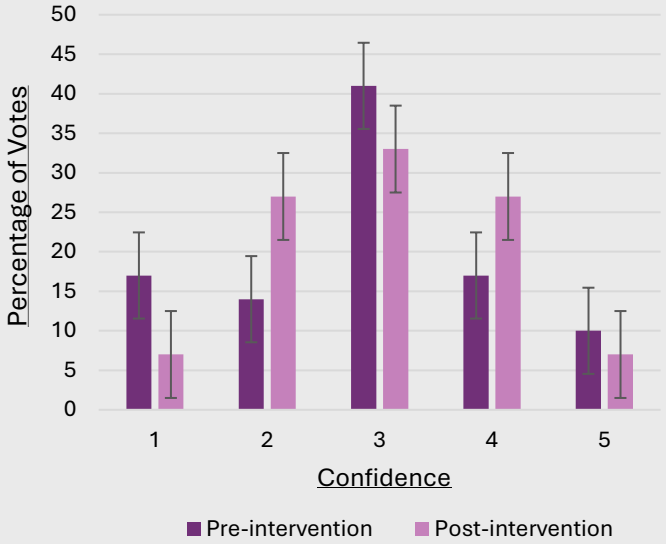
The **pre**-intervention survey received 29 responses. **59%** of respondents were aware of a medication shortage. All respondents unaware of a shortage were **resident doctors**.

The **post**-intervention survey received 30 responses. **93%** of respondents were aware of a medication shortage.

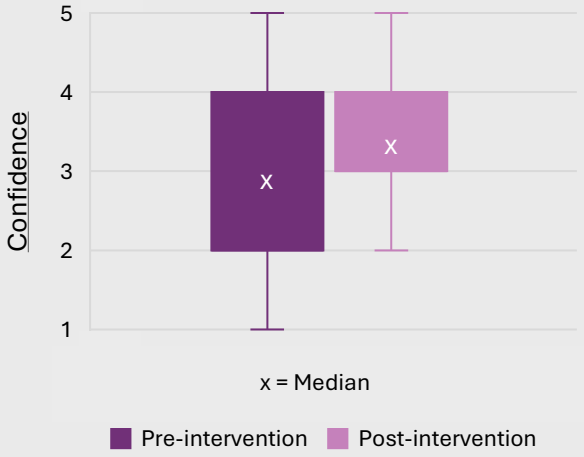
Awareness of Medication Shortages



Confidence in Knowing Mitigation Strategies for Shortages



Distribution of Doctors' Confidence in Knowing Mitigation Strategies



Methods

An **online survey** was distributed to clinical staff involved in perioperative care, including doctors, nurses, allied health professionals and pharmacists, via email and QR codes placed in handover and staff rooms.

The survey assessed **awareness** of medication shortages, **sources of information** about shortages, knowledge of **recommended alternatives**, and requested **suggestions** for improving communication about shortages.

Monthly emails were then implemented, featuring a list of drug shortages along with **mitigations or replacements**. The survey was then **repeated** to assess for any improvement in knowledge.

Conclusion

- Clinical staff require better awareness of medication shortages.
- Resident doctors are the least informed.
- This may be due to them rotating across trusts.
- The implementation of monthly emails keeping staff up to date with current drug shortages and mitigations or replacements has been shown to **improve knowledge** of shortages at our trust by **34%**.

References

1. Phuong JM, Penm J, Chaar B, Oldfield LD, Moles RJ. The impacts of medication shortages on patient outcomes: a scoping review. *PLoS One* 2019; **14**: e0215837.
2. Wickware C. Medicines shortages reported to government increase by almost 70% since 2021. *Pharm J* 2024; **312**: 7983.
3. Dayan M, Hervey T, McCarey M, Blickem C. The future for health after Brexit. Nuffield Trust, 2024.
4. Hantel A, Egan AM, Nguyen TT, Serrano KD, O'Gara PT. A cross-sectional survey of medical trainee experiences during medication shortages. *J Grad Med Educ* 2020; **12**: 38–43.

EMERGENCY FRONT OF NECK ACCESS: Teaching, Preparing & Performing Plan D

AUTHORS: Dr C Rowe, Dr O Abdelaziz, Dr K Jeyarajah & Dr F Perumatantri

Whittington Health NHS Trust

INTRODUCTION

Hypoxaemia can cause cerebral damage within 4 minutes, causing catastrophic disability, or death, in at least 180,000 general anaesthetic cases [1].

A dreaded complication of delivering anaesthesia is the 'Cannot intubate, cannot oxygenate' (CICO) scenario, forcing the airway professional to acquire an 'emergency Front of Neck Access' (eFONA).

STRATEGIES

Two widely-published strategies have been proposed to manage the unanticipated difficult airway: the 2015 published Difficult Airway Society (DAS) guidelines and its 'plan D' to acquire an eFONA, and the Australian proposed Vortex approach. Both approaches aim to avoid the need for an eFONA scenario (optimizing position; drugs & equipment), but if it cannot be avoided, details the final step in an attempt to provide a life sustaining infra-glottic airway.

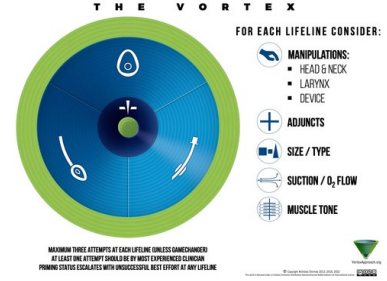


Image 1:

Figure 1: Graphical representation of the Vortex management of an unanticipated difficult airway (Chrimes et al)

PLAN D: WHEN & WHERE?

The National Audit Project 4 (NAP-4) identified significant lessons: eFONA in the UK occurs between 12,500 to 50,000 general anaesthetics; of the reported 80 eFONA attempts, 58 occurred in theatre, 12 in ICU and 8 in the emergency department.

The study reported 63% of the narrow bore cannula and 43% of wide-bore cannula cricothyroidotomies failed, in contrast to a near 100% successful emergency surgical cricothyroid rescue technique.

EDUCATION

Nationally, studies have revealed only 28% of all departments provide eFONA training to all anaesthetic grades [2]. As such, our QIP undertook 3 elements:

- Survey of training that both anaesthetists and ODPs have undertaken
- Tea-trolley teaching of Plan D eFONA scenarios (provided to over 30 anaesthetists of all grades)
- Development of an eFONA equipment pack to facilitate an emergency airway

Table 1: QIP Survey Results

Survey Results	Anaesthetists	ODPs
Formal eFONA Training	29 out of 30	13 out of 14
Real Life Difficult Airway Experience	16 out of 30	5 out of 14
Real Life eFONA situation	8 out of 30	2 out of 14

PERFORMANCE

Simulations at the Whittington hospital from 'declaring CICO' to acquiring all eFONA equipment, took >10 minutes on a ward, but 30secs in theatre:

Figure 2:DAS 2015 Plan D Guidelines

evidencing that regular eFONA training and eFONA equipment packs will save essential time and tissue.

A simulation study by Groom et al (2019) determined anaesthetists to be proficient at eFONA [3], however, although a 2023 BJA review by Morton et al highlighted greatest success with the surgical-scalpel-bougie technique, it also demonstrated that 9 out of 22 cases took greater than 120 seconds to perform an eFONA - optimizing the need for regular eFONA training.

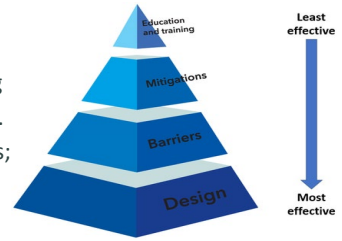
HUMAN FACTORS: NEED FOR DESIGN

Our QIP evolved on how to optimally perform an eFONA procedure – a process defined by Chrimes et al by three stages:

- Priming
- Permission
- Performance

To safely enable the above, human factors must be applied: a significant feature of which being the design of a system provides the safest approach. Practically, this includes clear readability of products; use of suitable environments, and 'trapping' anticipated mistakes [5].

Figure 3: Model for Improving patient safety (Kelly et al)



As such, our QIP noted an absence in which life saving equipment is 1) fully available, and 2) rapidly accessible.

Figure 4: Time Efficient vs Inefficient Approaches to Permitting eFONA (Chrimes et al)

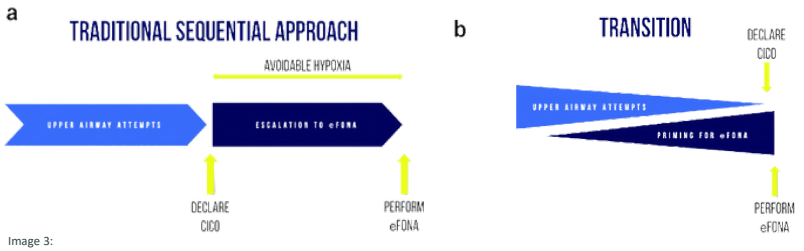


Image 3:

Our creating a scalpel-bougie-tube pack has numerous benefits:

- Environmentally, **all** eFONA equipment is placed in suitable locations
- The rapid retrieval of all essential equipment facilitates *priming* to *performing* an eFONA procedure as airway strategies fail – *transition* allows a concomitant preparation for plan D, in contrast to the longer sequential approach.
- Reduced cognitive overload in a stressful situation – focus is solely on this tissue preserving procedure & not its organization – accessibility to all equipment avoids delay to this potential life saving procedure.

REFERENCES: **1)** Cook, T., J. Harper and N. Woodall (2011). "Report of the NAP4 Airway Project." Journal of the Intensive Care Society **12**(2): 107-111 **2)** Qazi. I, Mendona. C. et al (2019) Emergency front of neck airway: what do trainers in the UK teach? A national survey; J Anaestheliol Clin Pharmacol; 35(3)318-323
3) Groom. P Schofield. L. et al (2019) British Journal of Anaestheisa; 123(50 696-703 **4)** Morton. S., Avery. P., Kua. J & O'Meara (2023) Success rate of prehospital emergency front of neck access; a systematic review and meta-analysis; *British Journal of Anaesthesia; 130(5) 636-644*
5) Kelly. F. E, Frerk. C., Baily. R., Cook. T., Ferguson. K., Flin.R., Fong. K., Groom. P., John. C., Lang. A. R., Meek. T., Miller. K.L., Richmond. L. Sevdalis. N & Stacy (2023) Implementing human factors in anaesthesia: guidance for clinicians, departments and hospitals; *Anaesthesia*; Vol 78; Issue 4 458-478

Estimated Blood Loss Documentation in Surgeries Associated with Moderate to High Blood Loss

Shivani Rae, Manasi Dedhia, Olivia Rose Beesley, Samantha Warnakulasuriya (University College London Hospital)

Introduction

Moderate to high intraoperative estimated blood loss (EBL) may result in **adverse patient outcomes**[1]. Identification of patients at risk relies on accurate EBL documentation, which the Royal College of Surgeons (RCS) states should be on all operation notes[2].

Aims

1. To establish adherence to **EBL documentation standards**
2. To identify the surgical procedures at University College London Hospital (UCLH) Trust associated with **moderate to high blood loss**

Methods

We performed a **retrospective audit** of notes for all non-orthopaedic surgical procedures at UCLH in January 2024 on the UCLH list of "Procedures with Risk of EBL ≥ 500mls"[3]. Ethics committee approval was not required.

All elective surgical cases in January 2024
(n= 1761)

↓

Selection of cases at risk of EBL ≥ 500mls
(n= 233)

↓

Identification of cases with documented EBL ≥ 500mls
(n= 22)

Results

Cases at risk of EBL ≥ 500ml

- **233 cases** (13.2% of all elective cases) had a risk of EBL ≥ 500ml
- **83.3%** of these operation notes **documented EBL**
- **51.9%** of these operation notes gave **numerical EBL**
- Breakdown by specialty is shown in figure 1:

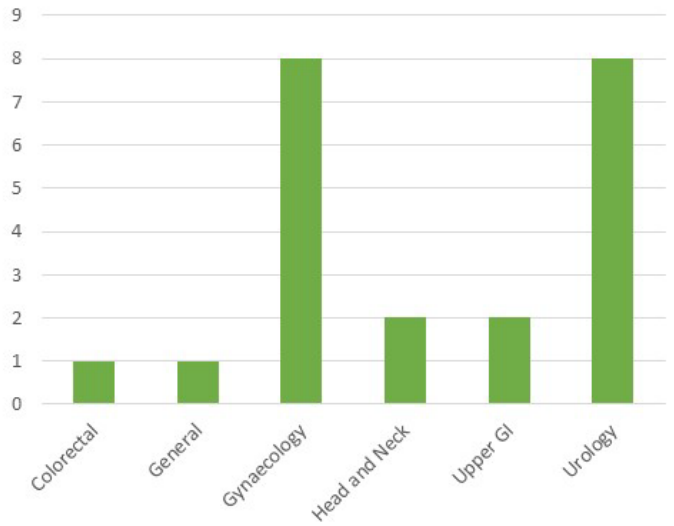


Figure 1: cases with an EBL ≥ 500ml by specialty (numbers of patients)

Cases with documented EBL ≥ 500ml

- **22 cases** (9.4% of those at risk of EBL ≥ 500ml) had EBL ≥ 500ml on the operation note
- **27.2%** of these got perioperative blood products
- **81.8% of these** received perioperative TXA

Conclusion

- **EBL was not consistently documented** and didn't meet the RCS standard. Data extraction from free text documentation was laborious
- **Gynaecological and urological** procedures were associated with highest numbers of EBL ≥ 500mls
- **Under 10%** of cases at risk of EBL ≥ 500mls went on to have a documented EBL ≥ 500mls
- **TXA was not given** perioperatively to all cases with EBL ≥ 500mls

Further Directions

1. To **improve EBL documentation** through education and development of structured data input rather than free-text
2. To use structured EBL data to facilitate further improvement projects to **help identify and optimise patients** at risk of high blood loss

References

1. Kiyatkin ME, Mladinov D, Jarzebowski ML, Warner MA. Patient Blood Management, Anemia, and Transfusion Optimization Across Surgical Specialties. *Anesthesiology Clinics* 2023; **41**(1), 161–174
2. Royal College of Surgeons. Good Surgical Practice. Available from https://www.rcseng.ac.uk/standards-and-research/gsp/
3. Murphy, L, Warnakulasuriya SR. Strategies for increasing the use of tranexamic acid in patients undergoing major surgery. *Anaesthesia Reports* 2024; **12**(2)

Implementing capnography monitoring in recovery units: a success story

Dr D. O'Neill, Dr C. Carslaw, Dr S. Rana, Dr A. Morris
Anaesthesia Department, West Suffolk Hospital, Bury St Edmunds, UK

NHS West Suffolk NHS Foundation Trust

Introduction & Aim

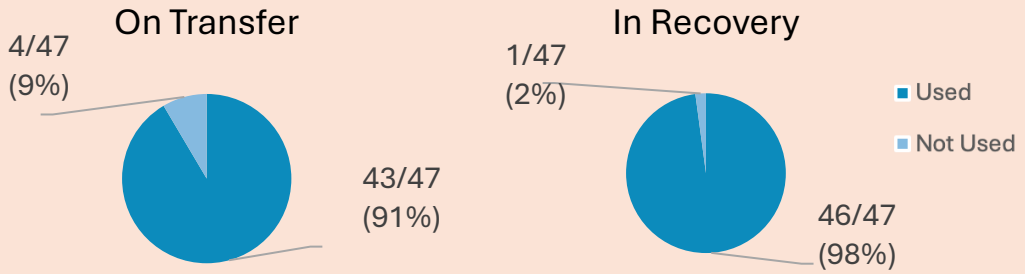
- Previous audit in 2021 identified **0% compliance** with capnography monitoring standards in the two recovery units in our Trust
- AAGBI 2021 guidance states that "*Capnography monitoring is essential at all times in patients with tracheal tubes, supraglottic airway devices and those who are sedated*"[1]
- Educational and awareness interventions were arranged to address the lack of compliance from the initial audit
- We conducted a second audit to assess the **current level of compliance** in the same recovery units, as well as **barriers to full compliance**

Methods

- Recovery staff across the two recovery units at West Suffolk Hospital were asked to record whether patients had capnography monitoring in situ on arrival into recovery
- If capnography monitoring was not in place, reasons for this were recorded
- Data collection was conducted over 4 days in August 2024
- Compliance was compared to our previous audit in 2021

Results

These graphs show the use of capnography on transfer to/within our two recovery units:



- 43/47 cases recorded used capnography monitoring on transfer (**91%**) – **a large improvement from 0% in 2021**
- On arrival in recovery, 3/4 cases without capnography on transfer had capnography attached in recovery, therefore **46/47 (98%)** had capnography monitoring in recovery
- 4/47 cases did not use capnography monitoring. Reasons for this included:
  - Lack of immediate capnography line availability (3/4)
  - Anaesthetist unaware of audit/standard (1/4)

Discussion

- We noted barriers from interventions during our last audit included lack of capnography lines, but also existing departmental culture and financial situation
- We addressed these barriers and have seen a vast improvement in our capnography monitoring, now more in line with national/international standards
- Ongoing work will strive for 100% compliance with these standards to ensure patient safety in our recovery units
- Constructive positive change in current practice can be achieved by engaging with key stakeholders in the process

Conclusion

- Compliance has improved significantly as a result of interventions following our previous audit in 2021
- Lack of equipment or awareness occasionally remains a problem
- Departmental education and involvement can lead to positive changes in standard practice for the benefit of patient safety

References

[1] Lucas, D., Russell, R., Bamber, J. and Elton, C., 2021. Recommendations for standards of monitoring during anaesthesia and recovery 2021. *Anaesthesia*, 76(10), pp.1426-1427.

Reviewing fasting practice for elective surgical patients

Dr A Gregg, Dr Y Samaroo

The National Hospital for Neurology and Neurosurgery, University College London Hospitals NHS Foundation Trust

Introduction

Fasting practices in patients undergoing elective surgery are traditionally 6 hours for foods, 4 hours for breastfed infants and 2 hours for clear fluid. This is recommended to reduce the risk of pulmonary aspiration. However, patients often have longer fasted periods as a result of organisational demands (1). 'Sip til Send' (STS) is a new practice encouraging patients to drink water until their arrival into the anaesthetic room. STS is associated with a reduction in the incidence of postoperative nausea and vomiting (PONV) and dehydration (2), and improved patient satisfaction rates (3) with no increase in adverse events reported so far in the literature (4). STS has been implemented in a number of hospitals across the UK (4), but is yet to be recommended in national guidance (5). The National Hospital for Neurology & Neurosurgery (NHNN) implemented a STS policy in February 2024. For it's elective surgical patients this is implemented at the point of admission clerking by the surgical team rather than the pre-assesment clinic (PAC). This project aimed to review the effectiveness of the current STS policy at NHNN. We also aimed to understand the current fasting practice and average fasting times for adult patients undergoing elective operations at NHNN. We examined the need for changing PAC fasting instructions and the need for uniformity of fasting instruction.

Methods

Data collected were for patients undergoing elective operations at NHNN during the two-week data collection period in July 2024 . Eligible patients were identified through retrospective review of PAC bookings. Patients seen in PAC, admitted on the day of surgery and requiring a general anaesthetic for the procedure were included. Emergency surgical patients, patients admitted the day(s) prior to surgery and procedures under local anaesthetic were excluded. Data examined included all fasting instructions provided by the PAC team, the surgical team during consent clinic and surgical clerking on day of admission. Overall fasting time was calculated only for patients instructed to remain nil-by-mouth (NBM) at the point of admission. They were assumed to have last drunk water at the time their PAC fasting instruction dicatated.

Results

43 eligible patients were identified from PAC. Of these, 37 had undergone elective surgery at the time of data collection. 41/43 (95%) patients were provided with traditional fasting instructions from PAC (solid fast from midnight, water fast from 6am). The remaining two patients had no clear fasting instructions documented (figure 1). 10/37 (27%) patients went on to have a documented STS protocol from the surgical consent clinic or preoperative surgical clerking. 23/37 (62%) were kept NBM on admission. 4/37 (11%) had no documeted fasting instruction on admission, and were therefore assumed to have remained NBM based on their PAC advice (figure 2). For those who were kept NBM on admission, based on their time of arrival in the anaesthetic room, the average length of time kept completely fasted prior to operation was 305 minutes (27 patients). Those on a STS pathway were assumed to have drunk water until their arrival in the anaesthetic room (10 patients).

Figure 1: Fasting advice provided in PAC (*n=43*)

Figure 2: Fasting instruction at time of surgical clerking (*n=37*)

Discussion

The PAC at NHNN continue to provide traditional fasting advice to patients undergoing elective surgical procedures. NHNN currently employs a STS policy implemented at the point of first surgical contact. This policy is effective in approximately one quarter of patients, meaning the majority are not benefiting from STS protocol in the ways discussed. The reasons for this are likely to include a lack of awareness of the protocol, high turnover off staff within the surgical team, and deferral to the traditional advice provided by PAC. We believe consistency in fasting instructions are key for STS success. NHNN are currenty in the process of updating PAC fasting instructions for roll out so that the onus does not rely on the surgical teams.

References

(1) Rüggeberg A, Nickel EA. Unrestricted drinking before surgery: an iterative quality improvement study. Anaesthesia 2022; 77(12), 1386–1394
(2) Marsman M, Kappen TH, Vernooij LM et al. Association of a Liberal Fasting Policy of Clear Fluids Before Surgery with Fasting Duration and Patient Well-being and Safety. JAMA Surgery 2023, 158(3), 254-26
(3) Wiles MD, Macdonald A. The effect of a 'Sip til Send' policy on patient satisfaction: a quality improvement project. Anaesthesia Reports 2024, 12 (1), e12271
(4) Sands R., Wiltshire R, Isherwood P. Preoperative fasting guidelines in National Health Service England Trusts: a thirst for progress. Br J Anaesth 2022. 129(4), 100–102
(5) NICE (2020). Recommendations | Perioperative care in adults | Guidance | NICE. Available at: https://www.nice.org.uk/guidance/ng180/chapter/Recommendations#perioperative-care (accessed 13 January 2025)

Enhancing the safety of local anaesthetic infiltration in theatres

Dr Stephanie Davis ST6 Anaesthetic Trainee
Dr Ana Robles Anaesthetic Consultant
Croydon University Hospital, London, UK

Introduction

We followed the recent coroner's inquest into the death of a patient who received an excessive dose of ropivacaine whilst undergoing elective surgery. The patient suffered irreversible brain damage following a cardiac arrest which was found to be caused by the local anaesthetic. This triggered a Prevention of Future Deaths Report which highlighted the nationwide lack of safety protocols surrounding local anaesthetic infiltration in theatre.

Particular areas of the coroner's concern included:

1. That the responsibility for checking and administering local anaesthetic is unclear

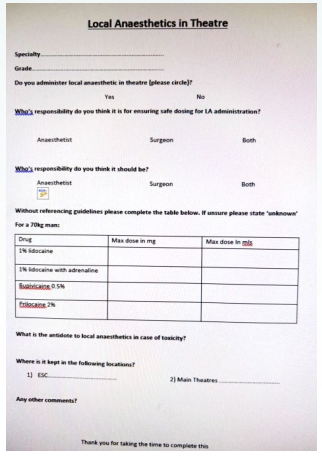
2. The inconsistency in the way the local anaesthetic is prescribed; sometimes specified in millilitres (mls) and sometimes in milligrams (mgs).

3. The wide variation in the way local anaesthetic is prescribed, checked and administered in this type of procedure; and that it is common to use similar practice to that which occurred during this case.

Consequently, we evaluated the knowledge, attitudes, and current practices of our surgical colleagues with regard to local anaesthetics with a view to implementing changes to enhance patient safety.

Methods

A short anonymous survey (Figure 1) was distributed to all grades of surgeons across all surgical specialties operating within our hospital. It evaluated opinions as to whose responsibility local anaesthetic (LA) infiltration in theatre is and assessed knowledge of maximum doses for commonly used local anaesthetics, the ability to convert doses from milligrams to millilitres, and awareness of local anaesthetic toxicity management.



Local Anaesthetics in Theatre

Specialty.....
Grade.....
Do you administer local anaesthetic in theatre (please circle)? Yes No
Who's responsibility do you think it is for ensuring safe dosing for LA administration? Anaesthetist Surgeon Both
Who's responsibility do you think it should be? Anaesthetist Surgeon Both
Without referencing guidelines please complete the table below. If unsure please state 'unknown'
For a 70kg man:

Drug	Max dose in mg	Max dose in mls
1% lidocaine		
1% lidocaine with adrenaline		
Bupivacaine 0.5%		
Prilocaine 2%		

What is the antidote to local anaesthetics in case of toxicity?
Where is it kept in the following locations? 1) ESC..... 2) Main Theatres.....
Any other comments?
Thank you for taking the time to complete this

Figure 1

Results

33 surgeons across 8 specialties responded to our survey. The breakdown of grades and specialty can be found in Figure 2. Where our surgical colleagues felt responsibility should lie is shown in Figure 3.

Figure 2

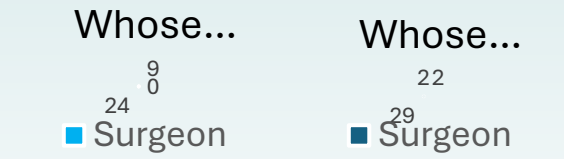


Figure 3

7/33 surgeons correctly calculated the maximum dose of 1% lidocaine for a 70kg patient in mg with the majority giving a higher than safe dose or and answer of 'unknown' (Figure 4).

Figure 4

5/7 correctly converted it from mg to ml. Figure 5 depicts the responses for the maximum dose in mls with answers ranging ranged from 10ml to 210ml.

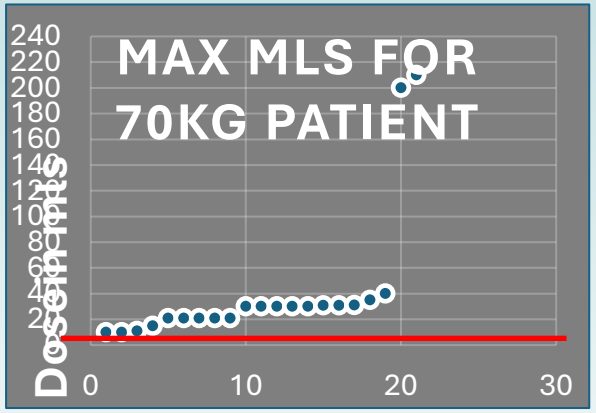


Figure 5: A scatter plot of the responses to the maximum safe dose in mls on 1% lidocaine for a 70kg patient. The red line symbolizes the safe dose (21mls) and highlights the spread of responses around this dose.

- **9/33** knew the correct maximum dose for lidocaine with adrenaline with **7/9** correctly converting this dose from mg to ml.
- **4/33** surgeons knew the correct dose for **bupivacaine 0.5%.** 2 could covert the dose from mg to ml.
- **1 surgeon** knew the maximum safe dose for **prilocaine.**
- Around 50% of surgeons were aware that lipid emulsion is the antidote for local anaesthetic toxicity however none knew its exact location should it be needed.
- Several surgeons requested further training in this area at the end of the survey…

Interventions

The survey results were presented at both surgical and anaesthetic clinical governance meetings. As per feedback, a targeted teaching session on local anaesthetics including how to calculate maximum safe doses, conversion of mgs to mls and the management of local anaesthetic toxicity including the recognition of presenting signs and symptoms was delivered to our surgical colleagues. This was well received and the following interventions were agreed:

1. An addition to the WHO surgical safety checklist at the start of each theatre list to confirm the appropriate dose and type of local anaesthetic for each patient.
2. A mandatory pause: 'check before you inject' immediately prior to local anaesthetic infiltration.
3. A user-friendly calculation tool on a whiteboard in each theatre to assist the multidisciplinary team in determining appropriate weight-based doses of local anaesthetic.
4. Posters have been put up in theatres for surgeons to refresh their knowledge (Figure 5).

Conclusion

Our survey identified significant knowledge gaps with regard to local anaesthetics and we have comprehensive measures to address them. The teaching session was well received and the posters aim to reinforce the salient points. This initiative demonstrates the importance of structured education, robust protocols, and multidisciplinary collaboration in preventing avoidable harm.

References

Gibson R. Prevention of Future Deaths Report. Courts and Tribunals Judiciary, https://www.judiciary.uk/prevention-of-future-death-reports/rachel-gibson-prevention-of-future-deaths-report/ [Accessed 12/1/2025].
Centre for Perioperative Care, National Safety Standards for Invasive Procedures 2 (NatSSIPs),2023 (https://cpoc.org.uk/guideline/guidelines-resources-guidelines/nationalsafety-standards-invasive-procedures-natssips)
Adapa RM, Mani V, Murray LJ, et al. Errors during the preparation of drug infusions: a randomized controlled trial. British Journal of Anaesthesia 2012; 109: 729–34.
Royal Pharmaceutical Society, Professional Guidance on the Safe and Secure Handling of medicines, 2018 (https://www.rpharms.com/recognition/setting-professional-standards/safeand-secure-handling-of-medicines/professional-guidance-on-the-safe-and-secure-handlingof-medicines)
https://www.rcoa.ac.uk/sites/default/files/documents/2019-11/QRH_3-10_Local_anaesthetic_toxicity_v1.pdf

Retrospective Review of Surgical Re-admissions to WHH Critical Care Unit

Author: Dr Analisa Johnson , Junior Clinical Fellow, William Harvey Hospital

East Kent Hospitals University NHS Foundation Trust
East Kent Critical Care

Introduction

The Intensive Care National Audit and Research (ICNARC) centre is a national database in which participating critical care units, submit data for analysis. The database is utilised for audits, research and data services; with overall aims of improving care standards of critical care.

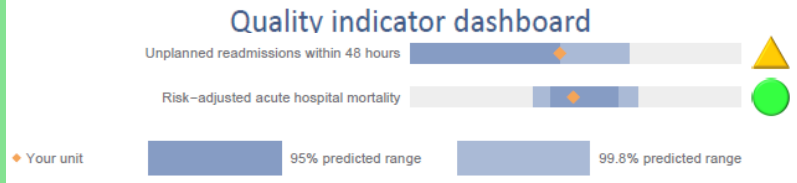


Image I: ICNARC Quality indicator Amber scoring for unplanned re-admissions within 48hrs[1]

From July to August 2023, EKHUFT William Harvey Hospital Critical Care Unit received an amber ICNARC scoring for unplanned re-admissions within 48 hours of discharge[1]; with the observed percentage above the 95% predicted range; indicating some evidence that the quality indicator value was worse than expected. Our observed rate of unplanned re-admission was 3% compared to the 1.2% expected.

On this basis, a quality improvement project looking into the unit re-admissions was formulated. Whilst the initial ICNARC data looked at re-admissions within 48 hours; we expanded the study to review re-admissions with 7 days of initial discharge over 2 quartiles, from July to December 2023.

On preliminary review of the data, we discovered that of the 13 patients re-admitted to the unit; 92% were surgical patients. This pivoted the study to focus on surgical re-admissions to the critical care unit

Unplanned readmissions within 48 hours

	Eligible n	Complete n (%)		Observed n (%)	Expected %	95% predicted range	99.8% predicted range	
Quarter 1	131	131 (100.0)	●	2 (1.5)	1.0	(0.0, 2.8)	(0.0, 4.4)	●
Quarter 2	135	134 (99.3)	●	4 (3.0)	1.2	(0.0, 2.9)	(0.0, 4.5)	▲
Quarter 3								
Quarter 4								
Year to date	266	265 (99.6)	●	6 (2.3)	1.1	(0.0, 2.3)	(0.0, 3.3)	▲

Image 2: ICNARC Quartile 1 and 2 demonstrating the increase in observed re-admissions compared to expected.

Methods

A 6-month retrospective study from July to December 2023 of surgical re-admissions to WHH Critical care Unit was performed as to identify any causative factors. Inclusion criteria included: >18 years old, elective admissions and emergency admissions. The exclusion criteria were set as any re-admissions more than 7 days from initial discharge from the critical care unit. Data was collected using the ICNARC database as well as patient documentation records from Sunrise PAS electronic records which included NEWS 2 scores.

Results

On reason for initial admission post-procedure, 67% were emergency admissions, with approximately 40% of cases being emergency lower gastrointestinal surgeries.

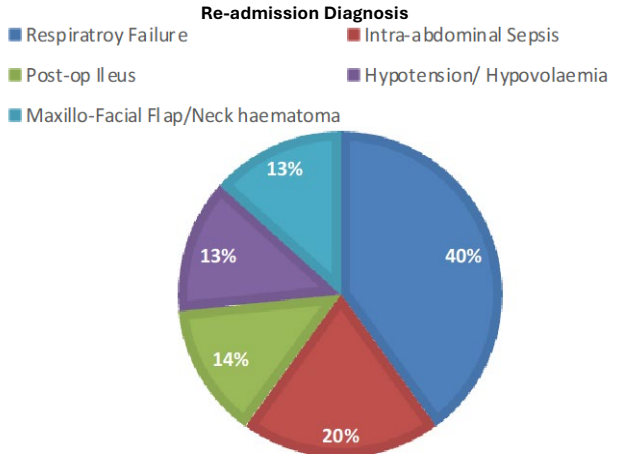


Image 3: Demonstrates the distribution of diagnosis contributing to re-admission to Critical Care .

Majority cause of re-admissions were due to respiratory failure, secondary to hospital acquired pneumonia.The last recorded vital signs of patients prior to discharge from the unit were calculated using NEWS2 scoring; more than 50% patients had a NEWS 2 score of ≥ 3 and 12% had a NEWS2 score of ≥ 6. Also, 1 in 3 patients re-admitted to the unit were initially discharged out-of-hours as set out by current standards between 10.00pm and 6.59 am[2].

Results

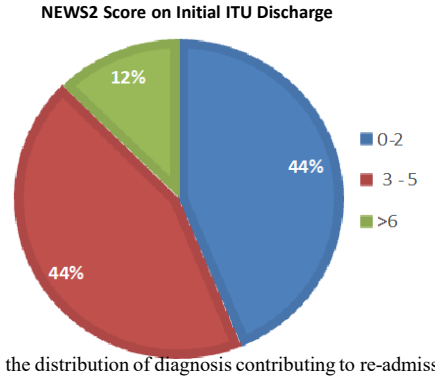


Image 4: Demonstrates the distribution of diagnosis contributing to re-admission to Critical Care .

Data also showed that most of the re-admissions to then unit occurred more than 4 days post-discharge, as well as a commonality in re-admissions from specific wards. Of the patient's re-admitted to critical care, there was a 33% mortality; with 75% of those following an emergency laparotomy procedure.

Conclusion

Several quality improvement areas were delineated from this data. One of these initiate a QI project, in which any patient deemed suitability for step-down to the wards with a NEWS2 score >5 prior to discharge, automatically triggered senior critical care doctor review. Since then we have not discharged a patient from the unit with a high NEWS2 score. Also, once discharged from the unit onto surgical wards, the requirement of closer monitoring of patient's post-emergency procedure with a NELA score greater than five and ensuring escalation protocol for deteriorating patients are followed by clinical staff and supported by Critical Care Outreach Team. Moreover, additional aims to ensure patients are discharged in-hours as research has shown out-of-hours discharge is strongly associated with increased mortality and critical care re-admission[2]. A limitation to note of this review was the incomplete data of NELA scores for each emergency laparotomy cases, as to be able to fully interpret the potential correlation of NELA scoring on surgical re-admissions.

References:

1. Data from the Intensive Care National Audit & Research Centre (ICNARC) dataset, accessed [April 2024]
2. Vollam S, Dutton S, Lamb S, Petrinic T, Young JD, Watkinson P. Out-of-hours discharge from intensive care, in-hospital mortality and intensive care readmission rates: a systematic review and meta-analysis. Intensive Care Med. 2018 Jul;44(7):1115-1129

We care
East Kent Critical Care

Routine use of fluid warmers - Not so Hot?

Dr Alex Feben (ST7) & Dr Tom Williams (Consultant Anaesthetist) Kings College Hospital, London

Fluid warmed to 41°C can drop to ambient temperatures before reaching the patient when infused at normal flow rates

Cassette style fluid warmers are commonly utilised intra- operatively to warm intravenous fluids and prevent hypothermia. In a standard set up, there can be approximately 2m of giving set, distal to the cassette, subject to radiative & conductive heat loss to the ambient environment. It was hypothesized that at clinically utilised infusion rates, the warmed fluid would undergo significant cooling prior to reaching the patient.

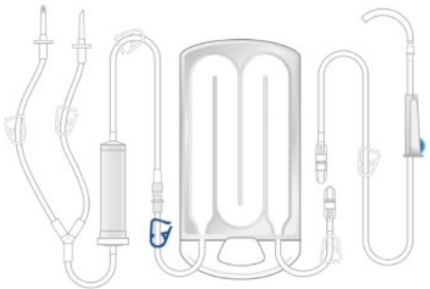


Fig. 1 - A cassette style fluid warmer

A 1L bag of compound sodium lactate solution at ambient temperature was connected to an infusion pump, then a cassette fluid warming system set to 41°C, and a wide bore 2m giving set with a temperature probe inserted into its distal end, with the fluid collected in a reservoir. The fluid temperature at equilibrium was assessed at flow rates from 0-1500ml/h.

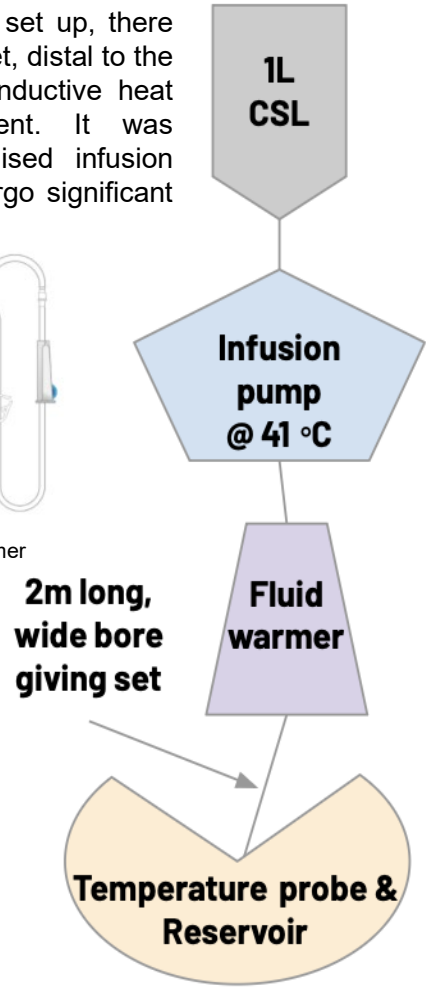


Fig. 2 - Experimental set up

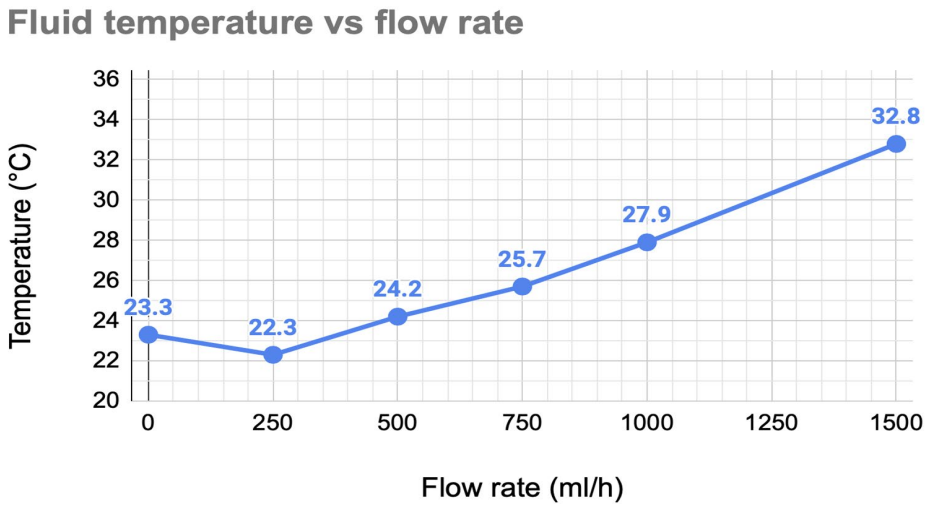


Fig. 3 - Graph of fluid temperature at the distal end of the giving set with varying flow rates

The results (fig. 3) show that significant cooling of warmed fluids does occur by the time it reaches the distal end of the giving set at clinically utilised flow rates.

The calculated core body temperature drop prevented by using 1L of 41°C, rather than ambient temperature fluids, in a 70kg patient, at each flow rate, and the duration of forced air warmer use required to offset this is shown in Table 1.

Flow rate ml/h	Fluid temperature (°C)	Temperature drop prevented v ambient fluids (°C)	Duration of BH use to offset change (mins)
0	23.3		
250	22.3	-0.05	
500	24.2	0.05	1.85
750	25.7	0.13	4.93
1000	27.9	0.25	9.45
1500	32.8	0.51	19.51
2000	36.1	0.69	26.29

Table 1 - calculated body temperature drop prevented by infusing 1L of 41°C fluids over 23.3°C (ambient) fluids and the theoretical duration of forced air warmer use (assuming a 90W output) that would be required to offset such a drop in a 70kg patient

In this set up, warmed fluids undergo such significant cooling to render their clinical utility questionable, unless used at rapid flow rates, or for the infusion of colder than ambient fluids. Limiting their use to rapid infusions, or operations with a high estimated blood loss, e.g >500ml, for transfusion of cold blood products, and in patient at risk of harm from hypothermia, could present a cost saving opportunity.

We believe similar temperature drops may occur in any set up where there is significant length of giving set between the warmed fluid and patient. Alternative fluid warmers less vulnerable to radiative & conductive heat loss could instead be used.

No sources of funding / conflicts of interest

WatchPAT® testing in obstructive sleep apnoea

Umar R,[1] Melhuish J,[2] Bates L[3]
[1]Core Trainee Year 2 Anaesthetist, [2]Core Trainee Year 1 Anaesthetist, [3]Consultant Anaesthetist and Pre-operative Assessment Lead
Queen Alexandra Hospital, Portsmouth

Portsmouth Hospitals University NHS Trust

1. Introduction

- Obstructive sleep apnoea (OSA) is a sleep disorder, affecting 5-9% of the general population and **~10-20% of elective surgical patients**.(1, 2)
- Diagnostic criteria includes: >5 apnoeic/ hypopnoeic episodes per hour.

2. Background

- Prior to 2022, at Queen Alexandra Hospital, OSA testing involved stratifying patients with STOPBANG scores >3 to receive serum bicarbonate testing.
- Samples **>28 mmol/L then had formal sleep studies.**
- A 2022 retrospective cohort study reviewed serum bicarbonate testing, identifying 7% had positive sleep studies. Subsequently, a new protocol introduced mobile WatchPAT® testing for high risk OSA patients.

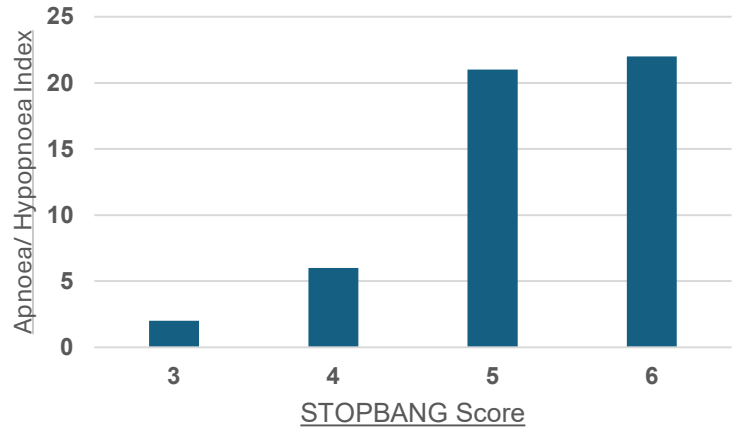
3. Methodology

- A **re-audit retrospective cohort study** of WatchPAT® testing between July – September 2024 was performed.
- Patients identified using coding data and pre-assessment clinic referrals.

4. Results

- 102 patients received WatchPAT® testing
- 57.8% had an apnoea/hypopnoea index (AHI) >15 (moderate-severe OSA).
- 87% of these patients **were not** on the cancer wait time and 90.3% of this group had an AHI >30 (severe OSA)

Figure 1: STOPBANG scores vs AHI



- Thus, STOPBANG scoring is a **strong indicator of the severity of OSA.**

5. Conclusion

- WatchPAT® testing is **fundamental** in identifying moderate-severe OSA, who previously would have been missed.
- This has allowed for **earlier anaesthetic clinic and respiratory review** and subsequent intervention with CPAP.
- Thus **improving patient outcome** by reducing the likelihood of end organ complications such as pulmonary hypertension but also improved patient flow, **minimising cancellation rates** as a consequence of late referrals.

References

1. Sleep physiology and the perioperative care of patients with sleep disorders Hall, Andrew BJA Education, Volume 15, Issue 4, 167 – 172
2. Guillermo Martinez, Peter Faber, Obstructive sleep apnoea, Continuing Education in Anaesthesia Critical Care & Pain, Volume 11, Issue 1, February 2011, Pages 5–8, https://doi.org/10.1093/bjaceaccp/mkq042

Paralyse, Twitch, Reverse, Record: A quality improvement project improving the use and documentation of quantitative peripheral nerve stimulators

Dr Paige Baylis-Jones CT4, Dr Sophie England CT1, Dr Megan Prince CT2

NHS Airedale NHS Foundation Trust

Introduction

The AAGBI recommend the use of quantitative peripheral nerve stimulators (PNS) whenever neuromuscular blockers are used [1]. Residual neuromuscular blockade (Train-of-Four ratio < 0.9) is linked to adverse events including pneumonia, respiratory failure and increased length of stay.

Method

We compiled data from patients who received neuromuscular blockade perioperatively over a 5-day period. Data was collected on:

- Whether a PNS or quantitative PNS was used,
- If reversal was given and documented,
- If ToF was documented both before and after reversal.

Data was collected before and post-interventions

Designed and introduced 'Paralyse, Twitch, Reverse, Record' prompt onto anaesthetic machines

Departmental teaching and presentation at local governance meeting

Placed posters in anaesthetic department

Replaced non-quantitative PNS with quantitative PNS in theatres and moved to a more accessible place

Results

Pre-Interventions		Post-Interventions
32%	PNS	88% ↑
65%	Reversal Documentation	100% ↑
21%	Quantitative PNS	83% ↑
32.4%	Neostigmine + glycopyrrolate	75% ↑
64.7%	Reversal	100% ↑
18%	TOF Documentation	67% ↑

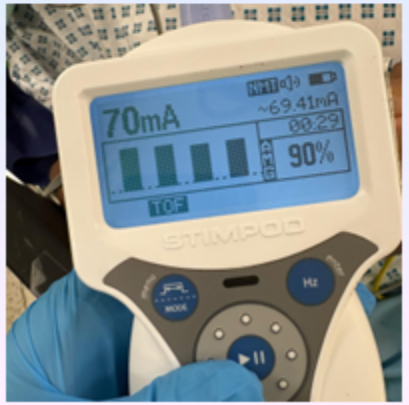


Figure 1 - Image of quantitative peripheral nerve stimulator

Figure 2 - Image of 'Paralyse, Twitch, Reverse, Record' prompt on anaesthetic machine

Conclusion

We showed an increase in the use and documentation of quantitative PNS. As well as an increase in the use of classical reversal agents and reduction in sugammadex use. This has potential impact on both patient safety and experience as well as the concern regarding increasing rates of sugammadex hypersensitivity [2].

References

1. Klein AA, Meek T, Allcock E *et al* (2021). Recommendations for standards of monitoring during anaesthesia and recovery 2021. *Anaesthesia*, **76(9)**, 1212–23.
2. Orihara M, Takazawa, T, Horiuchi T *et al* (2019). Comparison of incidence of anaphylaxis between sugammadex and neostigmine: a retrospective multicentre observational study. *Br J Anaes*, **124(2)**, 154–63

A **Simple** Paediatric Airway Equipment QIP

Dr Laurence Baker, Dr Angus Sutherland
Portsmouth Hospitals University NHS Trust
Correspondence: laurencejjabaker95@gmail.com

WHY?

Paediatric airway emergencies have high incidence of adverse events[1].
Correctly sizing airway equipment relies on memorising formulae or clinical experience; **human factors can easily lead to errors** in equipment selection in an emergency.

A recent regional **PICU audit** demonstrated use of **>40% incorrectly sized equipment**, necessitating a **patient safety alert**[2].
Incorrectly sized endotracheal tubes carry morbidity, like **tracheal injuries** requiring surgical referral.
Intubation aids and suction catheters within our department did not have accessible information regarding product dimensions.

We aimed to design an **easy-to-use tool** to **reduce morbidity** associated with incorrect use of paediatric airway equipment.

Figure 1: Intervention

Age (years)	Term - 8 months	8 months - 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12
ETT Size (cuffed)	3.0 (Stylet)	3.5 (Stylet)	4.0	4.5	5.0	5.5	6.0
Length (cm)	11	12	13	14	15	16	17
Bougie	5Fr			10Fr			14Fr
Suction catheter	6		8		10		

Before

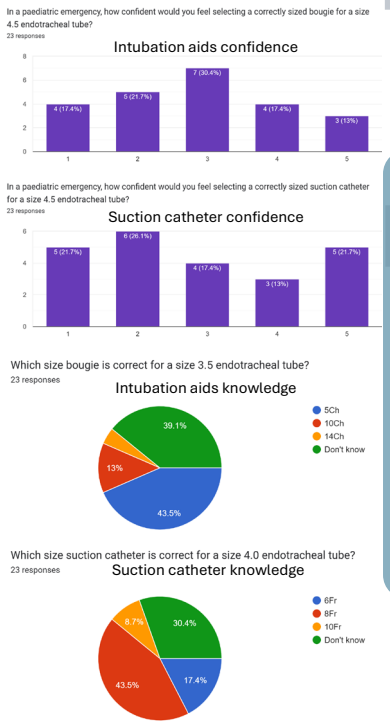


Figure 2: Pre-intervention audit

Results

Intubation aids
+52% knowledge
+32% confidence

(44% to 96%, and 44% to 88% respectively);

Suction catheters
+44% knowledge
+29% confidence

(30% to 62%, and 35% to 64% respectively).

After

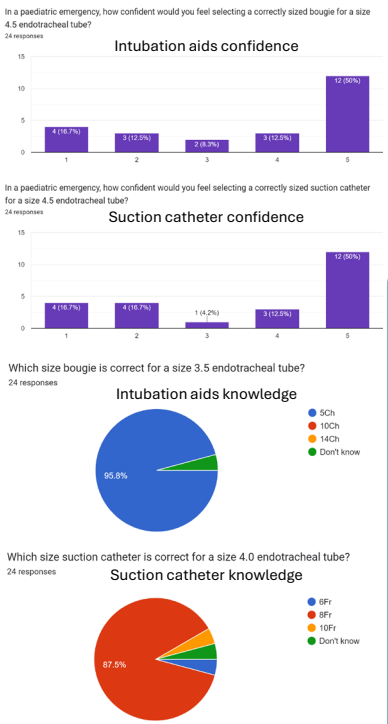


Figure 3: Post-intervention audit

HOW?

We designed a **minimalistic** and **easy-to-follow** reference table, based on **locally available equipment**, distributed in hospital **locations where emergency paediatric intubations were performed**.

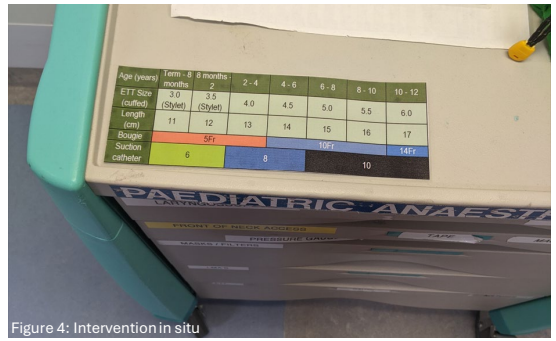


Figure 4: Intervention in situ

SO WHAT?

Following introduction, there was a **significant improvement in knowledge and confidence** in correctly selecting paediatric airway equipment in an emergency.
Simple interventions designed locally can indirectly **reduce morbidity.** We are currently working to bring this project region-wide as a local trainee-led QIP.

References:
1. Cook TM *et al*. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. *Br J Anaesth* 2011; **106**: 617-631
2. PIER Network Patient Safety Alert https://www.piernetwork.org/news/important-ett-size-and-placement-advice (accessed 25 January 2025)

‘Stop before you block’ audit project

Dr Julian Cumberworth (ST6 Anaesthetist) and Dr Ann Barron (Consultant Anaesthetist), Surrey and Sussex Healthcare NHS Trust

Introduction

‘Stop Before You Block’ (SBYB) is a national patient safety initiative aimed at reducing the incidence of inadvertent wrong-sided nerve blocks during regional anaesthesia.[1,2] This project investigates local practices relating to the SBYB campaign, through digital surveys including questions inspired by suggestions in the RCoA QI Compendium.[3] This project was registered locally and approved by the Surgical Governance team.

Methods

One survey was for anaesthetists, and one for anaesthetic assistants. The former aimed to ascertain awareness of the SBYB campaign, awareness of deconstruction of the process in to ‘Prep-Stop-Block’, compliance with SBYB, involvement of the anaesthetic assistant in the process and performing the ‘STOP’ moment immediately prior to needle insertion. The latter investigated the percentage of anaesthetic assistants always performing SBYB, training received in this process, access to continuing training opportunities and reasons for non-compliance. Descriptive statistics were employed.

Results

There were 26 anaesthetist respondents. 24 (92.3%) reported that they were aware of the SBYB campaign, whilst 2 were not. 23 (88.5%) were aware that SBYB has been deconstructed into the three component parts ‘Prep, Stop, Block’ whilst 3 were not. 23 reported always performing a SBYB check, whilst 3 reported not always doing so. 20 (80%) respondents reported always performing the ‘STOP’ moment immediately prior to needle insertion, whilst 5 reported not always doing so and 1 did not answer that question. 25 respondents reported that they always involve the anaesthetic assistant in the SBYB process, 1 did not answer that question.

There were 8 anaesthetic assistant respondents. All 8 reported always performing a SBYB check with the anaesthetist before each block. 6 (75%) reported having received training in the SBYB process, whilst 2 had not. Only 3 (37.5%) reported having access to continued training opportunities in the SBYB process, 5 did not.

Conclusion

These results show that the majority of anaesthetists responding to the survey in our institution are aware of the SBYB campaign and usually perform a SBYB check involving the anaesthetic assistant, but not always prior to needle insertion.

Some anaesthetic assistants had not received training or ongoing training in SBYB checks suggesting a role for this; this may also lead to a greater proportion of anaesthetists correctly performing the ‘STOP’ moment immediately before needle insertion, rather than earlier, as the process is collaborative and timing partly dependent on when the anaesthetist or anaesthetic assistant initiates it. The RCoA QI Compendium standards of 100% of anaesthetic assistants reporting always performing SBYB checks, and 100% of anaesthetists always involving anaesthetic assistants in the SBYB process, were both met.

We aim to introduce further training opportunities including short teaching sessions at theatre morning meetings, circulating the ‘Stop Before You Block – Training Video 2021’ (by RA-UK, SALG and Nottingham University Hospitals NHS Trust)[4], and organising ‘tea trolley training’ for anaesthetists and anaesthetic assistants, with a goal of repeating this 6-monthly.

References

1. SALG. SOP For Safe Performance of Peripheral Nerve Blockade: Stop Before You Block (SBYB). Available from: https://tinyurl.com/5xpbc8ux (accessed 22 January 2025)
2. Haslam N, Bedforth N, Pandit JJ. ‘Prep, stop, block’: refreshing ‘stop before you block’ with new national guidance. *Anaesth*. 2022; **77**:372–375
3. RA-UK, NUH NHS Trust, SALG. Stop Before You Block training video 2021. Available from: https://tinyurl.com/4dv5ady3 (accessed 22 January 2025)
4. RCoA**.** Raising the Standards: RCoA Quality Improvement Compendium. 2020. Available from: https://tinyurl.com/26m33cf3 (accessed 22 January 2025)

A **Simple** Paediatric Airway Equipment QIP

Dr Laurence Baker, Dr Angus Sutherland
Portsmouth Hospitals University NHS Trust
Correspondence: laurencejjabaker95@gmail.com

WHY?

Paediatric airway emergencies have high incidence of adverse events[1].
Correctly sizing airway equipment relies on memorising formulae or clinical experience; **human factors can easily lead to errors** in equipment selection in an emergency.

A recent regional **PICU audit** demonstrated use of **>40% incorrectly sized equipment**, necessitating a **patient safety alert**[2].
Incorrectly sized endotracheal tubes carry morbidity, like **tracheal injuries** requiring surgical referral.
Intubation aids and suction catheters within our department did not have accessible information regarding product dimensions.

We aimed to design an **easy-to-use tool** to **reduce morbidity** associated with incorrect use of paediatric airway equipment.

Figure 1: Intervention

Age (years)	Term - 8 months	8 months - 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12
ETT Size (cuffed)	3.0 (Stylet)	3.5 (Stylet)	4.0	4.5	5.0	5.5	6.0
Length (cm)	11	12	13	14	15	16	17
Bougie	5Fr			10Fr			14Fr
Suction catheter	6		8		10		

Before

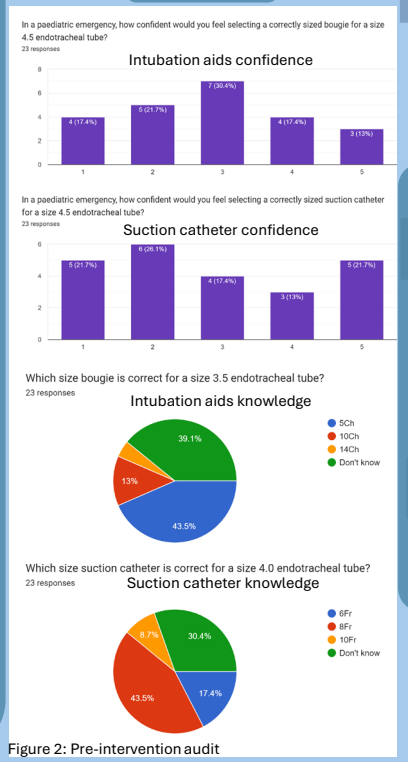


Figure 2: Pre-intervention audit

Results

Intubation aids
+52% knowledge
+32% confidence

(44% to 96%, and 44% to 88% respectively);

Suction catheters
+44% knowledge
+29% confidence

(30% to 62%, and 35% to 64% respectively).

After

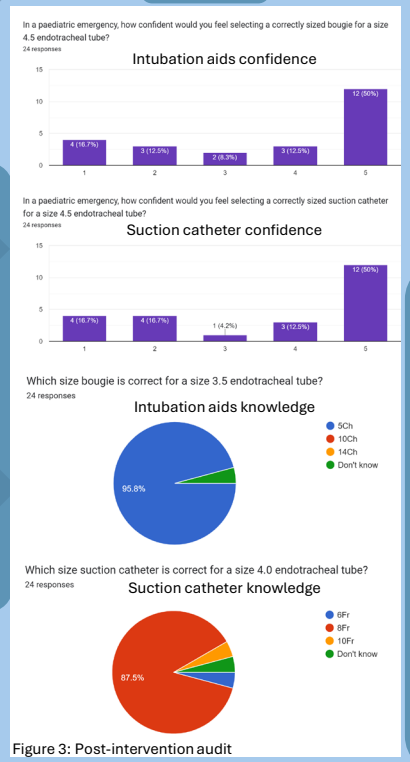


Figure 3: Post-intervention audit

HOW?

We designed a **minimalistic** and **easy-to-follow** reference table, based on **locally available equipment**, distributed in hospital **locations where emergency paediatric intubations were performed**.

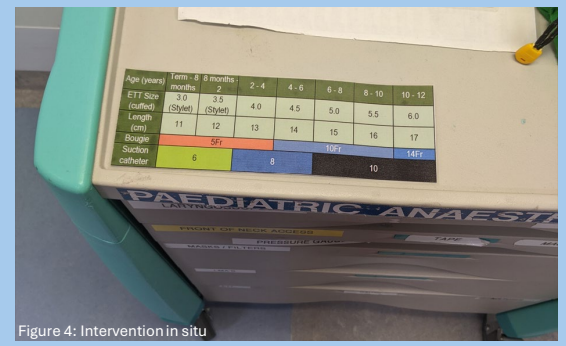


Figure 4: Intervention in situ

SO WHAT?

Following introduction, there was a **significant improvement in knowledge and confidence** in correctly selecting paediatric airway equipment in an emergency.
Simple interventions designed locally can indirectly **reduce morbidity.** We are currently working to bring this project region-wide as a local trainee-led QIP.

References:
1. Cook TM *et al*. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. *Br J Anaesth* 2011; **106**: 617-631
2. PIER Network Patient Safety Alert https://www.piernetwork.org/news/important-ett-size-and-placement-advice (accessed 25 January 2025)

Improving Clinical Incident Reporting in a District General Hospital

H White (CT4) and J Foley (CT1) - Anaesthetic Trainees, Princess of Wales Hospital, Bridgend, Wales

*Scan for Example Form

Background and Aims:

- Although widely recognised as an important mechanism to improve patient safety, **clinical incident reporting is underutilised.**[1]
- We suspected that we were **under-reporting** clinical incidents and **specifically near-misses** at a local level.

Our project aimed to:

1. Identify **perceived barriers** to reporting in our department.
2. **Improve the system** we use for reporting incidents in our department.
3. **Quantify the improvement** needed in our reporting, and to increase reporting of **near-misses** to facilitate learning.

Themes for success from the literature:[2,3]

- **Non-punitive** approach, anonymised reporting.
- **Simple system** with **useful outcomes.**
- **Regular feedback** with action plans, keeping clinicians 'in-the-loop'.
- **Systems-based** evaluation, focusses on processes rather than people.

1 Identify Perceived Barriers to Reporting

Survey sent out to department consultants, SAS doctors and trainees. 17 respondents total.

24% didn't know how to enter a datix form.

88% had not reported an incident as a datix due to the amount of time it takes.

0% had never received any training on datix form access/completion at induction

100% would be more likely to submit patient safety concerns if a simpler, anonymised process with a focus on learning was available

2 Improve the System

- Developed **datix 'cheat sheet'** for accessing and completing complex system.
- Introduced **datix training** to departmental induction and ensured trainees had access.
- Developed a **simple QR code* linked form** for the reporting of incidents and near misses, and fed these back at monthly departmental meetings with **action plans.**

3 Quantify Improvement

Our baseline data:

- Included all anaesthetics between 01/10/23-30/09/24 in Princess of Wales Hospital: **9209 anaesthetics.**
- **13 cases** discussed in monthly audit meetings in the same time period.

= 1 in 708 anaesthetics

Setting a goal against National standards:

- **NAP6** Nov-2015 to Nov-2016 identified **3.13 million anaesthetics.**
- **SALG reported 42,880 incidents** in the same time period.

= 1 in 73 anaesthetics.

Setting a goal of a 10-fold improvement.

Post-intervention data – Round 1:

- Live since 01/12/2024 **1271** anaesthetics total.
- **10 cases** discussed so far in monthly audit meetings with action plans agreed.

= 1 in 127 anaesthetics so far.

Conclusions

- Implementing a simple QR code linked form can **improve departmental incident reporting** and **facilitate learning discussions** within a department.
- Future plans are in place to roll out **across health board** and **publish monthly safety newsletter** of interesting cases.

References

1. Pendersen TH, Nabecker S, Greif R, Theiler L, Kleine-Brueggeney M. Critical airway-related incidents and near misses in anaesthesia: a qualitative study of a critical incident reporting system. Br J Anaesth 2024; 133(2): 371-379
2. Majahan RP. Critical Incident reporting and learning. Br J Anaesth 2010; 105: 69-75.
3. Yong H, Kluger MT. Incident Reporting in Anaesthesia: A Survey of Practice in New Zealand. *Anaesthesia and Intensive Care.* 2003;31(5):555-559.