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Abstract Booklet

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72

Are Perioperative Digital Health Resources a Feasible Tool for the Older Surgical Population?

Nathan Taylor, Lilly Liu, Judith Partridge, Jugdeep Dhesi

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Checkbox

yes

Abstract

Are Perioperative Digital Health Resources a Feasible Tool for the Older Surgical Population?

Introduction

Patient-facing digital tools are increasingly used throughout the perioperative pathway. Concurrently, the rate of older people undergoing surgery is increasing. This heterogenous cohort of older patients are often living with visual, physical or cognitive impairments. Research describing how an older surgical population interacts with digital tools is sparse. Our project aims to better understand digital and health literacy in older adults, and evaluate the feasibility of digital health tools in this population.

Methods

A questionnaire previously piloted in a geriatric perioperative medicine clinic was adapted using patient feedback, then re-piloted in ten further clinic patients. This questionnaire assesses availability and accessibility of technology, and includes tools validated in older adults to assess digital and health literacy: the Digital Health Literacy Instrument (DHLI)[1] and Newest Vital Sign (NVS)[2], respectively. Data was collected on demographic and frailty parameters. Verbal feedback was also sought from participants.

Results

The demographic, frailty, digital and health literacy results are shown in Table 1.

Accessing technology

Of the ten patients, eight owned a computer or could access one. Nine owned a phone, of which seven were smartphones. Seven could use apps.

Internet usage

Five patients used the internet at least monthly. Of the others, four reported they had no need to use the internet and one found it too difficult. Four had used the internet to search for health information, including two to search for information about their planned operation. Five had been asked by a healthcare professional to use the internet or an app.

Feedback on DHLI and NVS

Several issues arose while administering the validated tools. For example, the DHLI has a section assessing online interactions on social media, which our cohort were less likely to utilise resulting in a lower score. Furthermore, the NVS is based on interpreting a nutrition label, which participants found outdated, and excluded visually impaired participants.

Conclusion

In summary, although our cohort's access to technology was generally good, digital and health literacy was poor compared to the validation papers' populations. With healthcare systems being increasingly digitalised, this has the potential to increase the digital divide and health inequalities. Furthermore, it poses a challenge to effective use of digital health applications, and there is a need for better tools to evaluate their suitability for use in this population. Widespread evaluation of digital and health literacy in the older surgical population will allow digital applications to be tailored to the needs and abilities of this growing population.

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*Table 1: Demographic, frailty, digital literacy and health literacy results. *Two patients excluded due to visual impairment*

Demographics	**Cohort (n=10)**
Age *Mean (Range)*	*77.8 (61-96)*
Age left education *Mean (Range)*	*16.3 (14-24)*
Clinical Frailty Score (CFS) *Median (Range)*	*4 (2-6)*
Nottingham Extended Activities of Daily Living (NEADL) score *Mean (Range)*	*45.7 (30-66)*
Montreal Cognitive Assessment (MoCA) score *Mean (Range)*	*25.8 (18-30)*
Digital and health literacy	
Digital Health Literacy Instrument (DHLI) score (out of 4) *Mean (Range)*	*1.95 (1.57-3.05)*
Newest Vital Sign (NVS, out of 6)* *Median (Range)* *% with 'adequate health literacy' (score 4-6)*	*1.5 (0-5)* *25*

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Poster keywords

perioperative medicine, geriatrics, digital literacy, health literacy, digital tools

73

PRE-OP STOP, a novel presmoking cessation project

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Checkbox

yes

Abstract

Introduction

PRE-OP STOP is a novel anaesthetic trainee lead programme aimed at helping patients achieve smoking cessation prior to surgery. The project has been developed and piloted with promising early results.

Background

Smoking is one of very few modifiable risk factors that can affect patient outcomes in the peri-operative period [1]. Surgical pre-assessment clinic offers a unique opportunity to facilitate smoking cessation and a combination approach has been shown to be the most successful in helping to achieve cessation [2].

Method

This project has been developed, piloted and implemented with the aim of help patients achieve significant smoking reduction or cessation prior to surgery. Patients who are enrolled in the project are provided with three interventions: motivational interviewing, prescription and provision

of Nicotine Replacement Therapy (NRT) and community follow up with smoking cessation teams. Patients then have telephone follow up at six-months for data collection.

Results

In the UK 5.5% of smokers quit successfully per annum; this increases to 13% with community support [3]. We have thus far recruited 48 patients. We have done a six-month follow up on 30 patients. 53% (N=16) successfully quit smoking prior to their operation date. Of those who quit, 87% (N=14) have maintained smoking cessation beyond their operation date. 33% (n=10) have reduced their cigarette use with only 13% (n=4) having made no reduction in cigarette use.

Discussion

The perioperative period offers a unique opportunity to achieve smoking cessation, patients are more health aware and more open to lifestyle interventions. We have shown that through using a multi-faceted approach that excellent results can be achieved with over half of patients quitting smoking prior to surgery. This leads to health benefits to patients and potential benefits to the hospital with reduced length of stay and postoperative complication rate. There is significant potential for expansion in both the scope and data analysis in this project.

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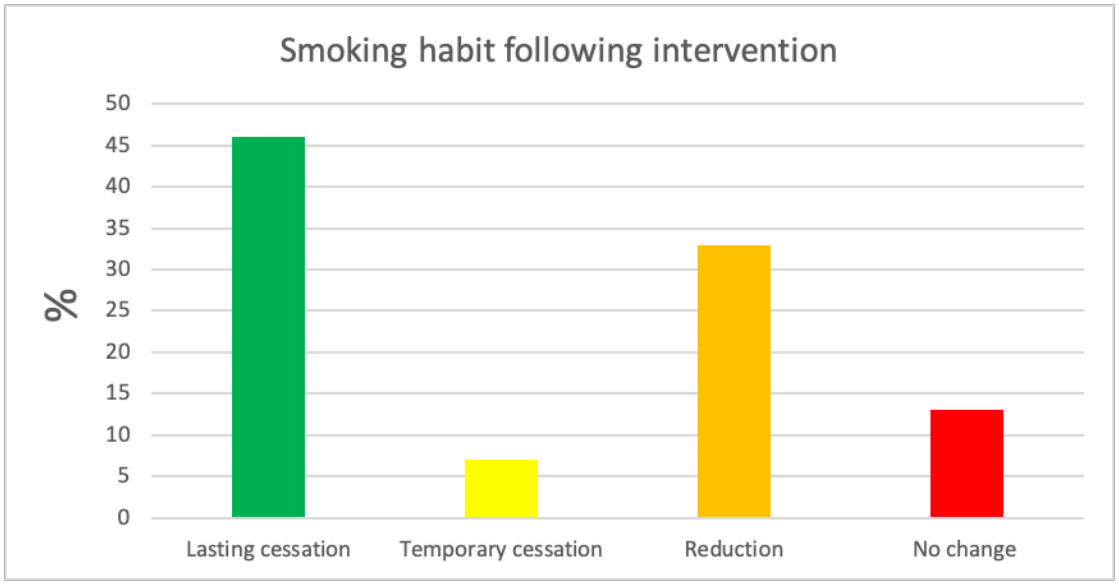

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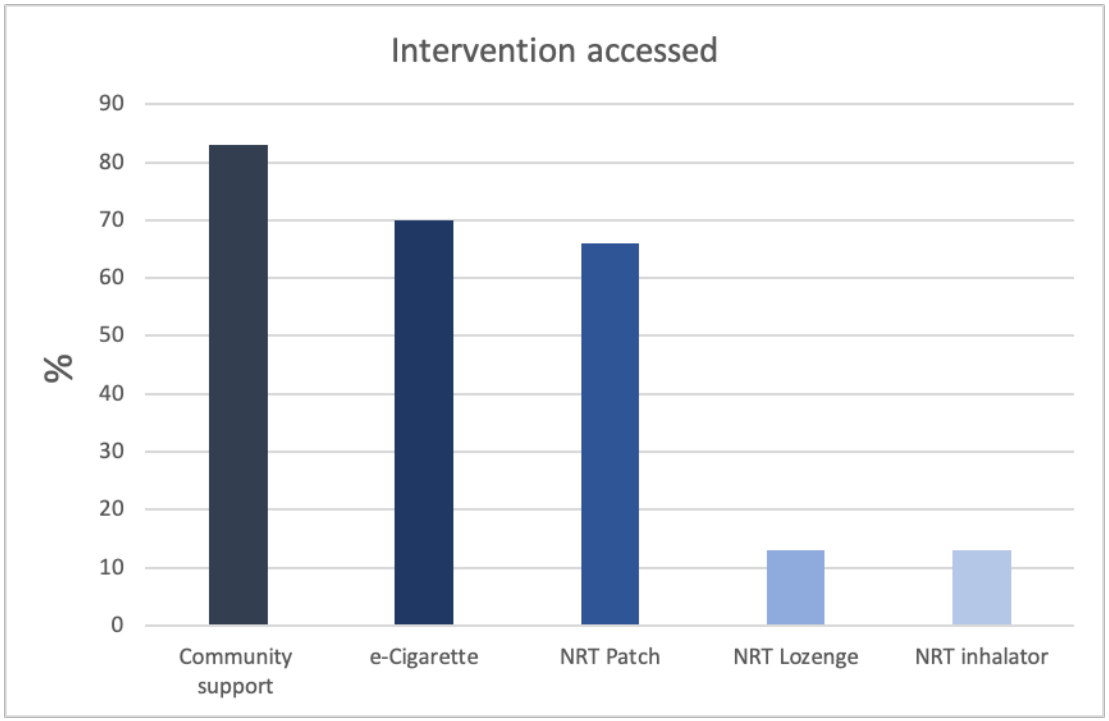

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Poster keywords

Smoking, Nicotine, Surgery, Cessation, Cessation

74

From Shingles to paralysis; A rare case of GBS following VZV infection.

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Checkbox

yes

Abstract

Introduction: Most of the cases of GBS are usually seen after a gastrointestinal or respiratory tract infection. Here we present an unusual case of GBS following a VZV infection.

Case: A 54-year-old male with a history of hypertension, atrial fibrillation, stroke, and hypercholesterolemia presented with progressive lower limb weakness, inability to walk, paresthesias, and lower back pain radiating to his buttocks. Initial examination revealed muscle power of 5/5 in the upper limbs and 4/5 in the lower limbs, absent lower limb reflexes, and normal tone. A lumbar puncture confirmed VZV and MRI of the brain and spine were unremarkable. The patient developed respiratory distress, progressing to bibasal pneumonia, and was transferred to the ICU for respiratory failure. He received a five-day course of IV Ig, five rounds of plasmapheresis, acyclovir for VZV, and piperacillin/tazobactam for pneumonia. Blood and sputum cultures were sterile. Weaning from the ventilator was challenging, leading to a tracheostomy. On the 28th day of ICU stay, he developed a small bowel ileus, which was treated conservatively.

Outcome: The patient's VZV and pneumonia were effectively treated, but he remained myopathic throughout the ICU stay, more so in the lower limbs. Successful weaning from the ventilator and tracheostomy decannulation was achieved after 30 days.

Discussion: The Varicella-Zoster virus (VZV) causes chickenpox as an initial infection and can later reactivate to cause shingles (Kennedy, 2023). VZV-associated neuroinflammation arises from viral replication in sensory ganglia and immune responses that damage tissue. The virus becomes latent in neurons and, upon reactivation, spreads along sensory nerves, leading to inflammation and immune cell infiltration. Both adaptive and innate immune responses contribute to central nervous system damage (Hakami et al., 2024). Reactivation can result in complications such as postherpetic neuralgia, myelitis, meningoencephalitis, and VZV vasculopathy (Nagel and Gilden, 2014).

Conclusion: This case highlights the complexity of managing VZV with severe neurological complications and underscores the importance of comprehensive and multidisciplinary care.

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Poster keywords

SHINGLES, MYELITIS, PARALYSIS, VARICELLA ZOSTER VIRUS, GUILLAIN BARRE SYNDROME

75

Complications following minimally invasive surgical treatment of ectopic pregnancy

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Checkbox

yes

Abstract

Complications following minimally invasive surgical treatment of ectopic pregnancy

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Abstract

Introduction: A ruptured ectopic pregnancy is potentially life-threatening, and timely diagnosis and treatment are imperative. We hypothesised that minimally invasive laparoscopic removal of the pregnancy can be done safely and effectively, even in complex cases.

Methods: A retrospective cohort study was established based on medical records of patients with ectopic pregnancies from two Danish University Hospitals. Inclusion period was from 1/1-2017 to 31/12-2020 at Herlev Hospital and 1/1-2018 to 3/6-2021 at Hvidovre

Hospital, and follow-up was until end of pathway. Data collection included patient demography, risk factors, comorbidities, perioperative and postoperative outcomes as readmissions, reoperations, and need for antibiotics. Postoperative complications were rated by type and graded according to the Clavien-Dindo classification. Further, opioid use and time from admission to surgery were reviewed and compared with hemorrhage at the time of surgery.

Results: A total of 646 patients were operated on for ectopic pregnancy laparoscopically, and 2 (0.3%) were converted to open surgery. The median length of admission was less than 1 day (0.61-1.17 days). The most common procedure was salpingectomy (93.5%), and 2.8% were treated for interstitial pregnancy with partial resection of the uterus. The median amount of bleeding was 100 mL (Q1-Q3: 25-400 mL), and 80 (13%) patients had more than 1,000 mL of blood in the abdomen at the time of treatment. A total of 89 (13.7%) patients experienced at least one postoperative complication; nine patients (1.4%) developed severe complications (CD3-CD4), and no patients died. Seven (1.1%) patients needed re-operation. Subsequent methotrexate was given to 6 patients (0.9%). We found no correlation between bleeding amount and post-operative opioid use (P 0.098), and no correlation between bleeding amount and the severity of post-operative complications (P 0.87).

Conclusion: The laparoscopic approach proved both safe and effective regarding postoperative complications, even in complicated patients, supporting the contemporary practice. Long-term complications to major hemorrhage in women who received surgical treatment for ectopic pregnancy were not examined here, and further studies in this area would be of great value.

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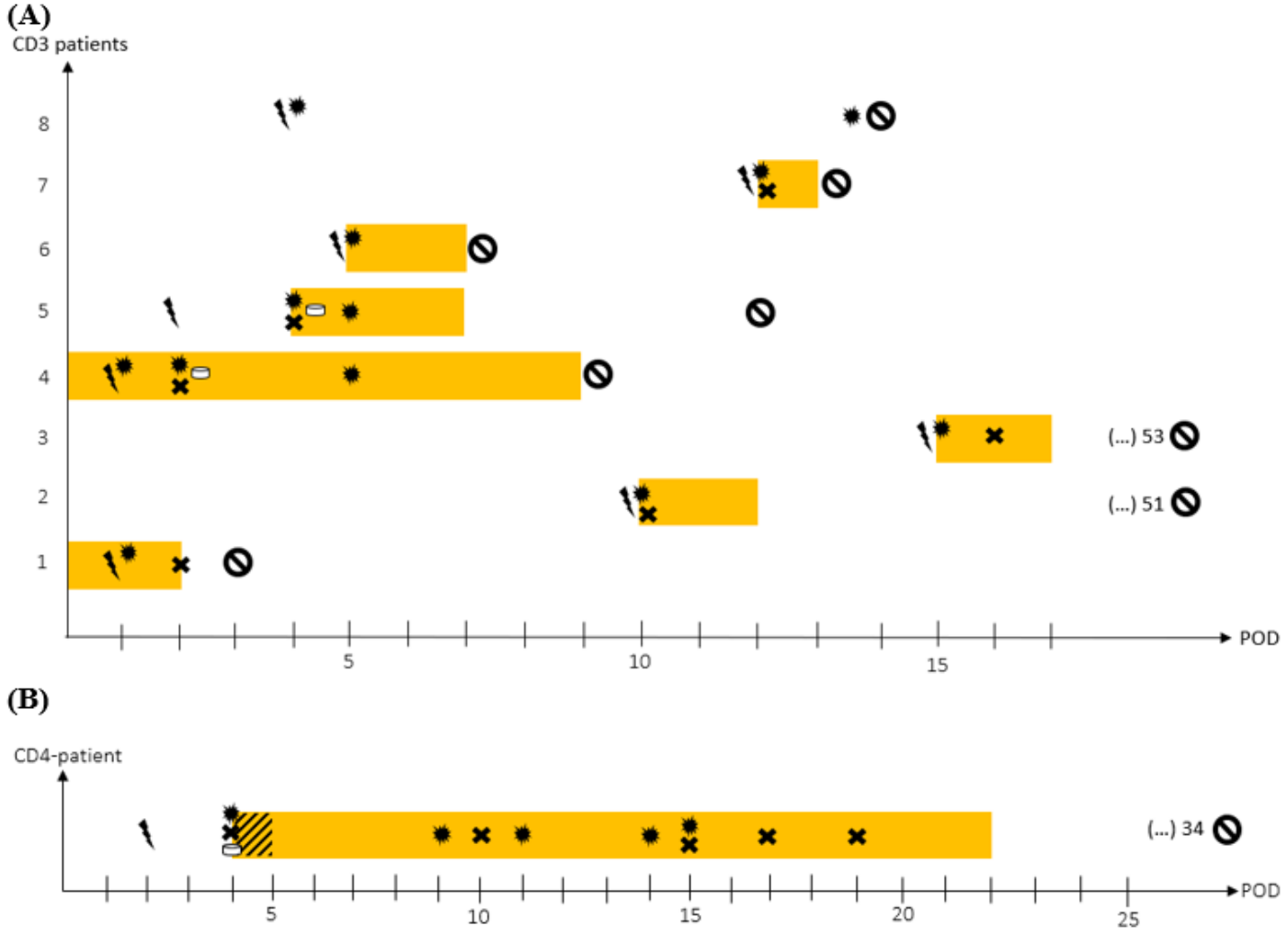
Course of events related to complications in CD3 and CD4 patients



(A) The graph represents the course of events for the 8 patients who had complications corresponding to CD3. Patient 1 and 4 debuted with symptoms during their primary admission, patient 2 and 3 had exceptionally long follow-up (51 and 53 days) due to insufficiently decreasing hCG, patient 8 was never re-admitted but had two radiological interventions due to persisting pain. **(B)** The graph represents the course of events for the one CD4-patient.

= Debut of symptoms to a potential complication, = Imaging (ultrasound and/or CT), = Re-operation, = Antibiotics, = End of case/follow-up, colored areas = duration of admission, shaded area = ICU, POD = Post-operative day.

Intra,- peri- and postoperative outcomes		
		N=646 (%)
Laparoscopic surgery		646 (100%)
Converted to open surgery		2 (0.3%)
Indication*	Acute	91 (14.1%)
	Subacute	555 (85.9%)
Performed procedure	Salpingectomy	604 (93.5%)
	Salpingotomy	6 (0.9%)
	Oophorectomy	2 (0.3%)
	Other**	92 (14.2%)
Intraperitoneal bleeding in milliliters, *median (Q1-Q3)*		*100 (25-400)*
Duration of surgery in minutes, *median (Q1-Q3)*		*50 (40-64)*
Duration of anesthesia in minutes, *median (Q1-Q3)*		*71 (59-86)*
Pathology findings	Chorionic villi	607 (94%)
	Other***	36 (5.6%)
Postoperative complications****	CD1	54 (8.3%)
	CD2	26 (4%)
	CD3	8 (1.2%)
	CD4	1 (0.2%)
	CD5	0 (0%)
ICU admission		1 (0.2%)
Reoperation		7 (1.1%)
Level of pain management	Standard	646 (100%)
	Opioids	60 (9.3%)
Prescriptions at discharge	Analgesics*****	15 (2.3%)
	Opioids	7 (1.1%)
	Antibiotics	12 (1.9%)
Length of hospital stay, *median (Q1-Q3)*		*0.89 (0.61-1.17)*

*Acute = the patient had symptoms or radiological evidence of large or active hemorrhage, typically being brought in by ambulance and taken directly to theatre. Subacute = waiting for 6 hours of fasting or waiting for availability at the theatre.

**Other procedures included primarily vacuum aspiration and/or curettage, partial resection of the uterus, adhesiolysis and biopsies. Some patients had more than one procedure performed.

***Other pathology findings included, among other, 15 samples that showed no sign of pregnancy, tubal abortion, or implantation (2.3%), 9 samples (1.4%) that showed loose trophoblasts or chorionic villi in the lumen of the salpinx or loose coagulates, indicating tubal abortions. Others showed a decidual reaction in the salpinx wall (0.9%), indicating that a pregnancy had recently implanted in the salpinx.

****Clavien-Dindo classification for post-operative complications. CD1: Unexpected level of pain, treated with opioids. CD2: Wound infection or urinary tract infection requiring antibiotics. CD3: Complications leading to surgical or radiological intervention and CD4: Life threatening complications leading to admission to the intensive care unit and/or single- or multiorgan dysfunction. CD5: Complications leading to the death of the patient.

***** Paracetamol and Ibuprofen

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Poster keywords

Ectopic pregnancy, Cornual pregnancy, Intraabdominal hemorrhage, Post-operative complications, Clavien-Dindo

76

An audit of day of surgery cancellations over 13 months in the National Orthopaedic Hospital Cappagh

Sheena Cassidy, Cormac Redahan

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Checkbox

yes

Abstract

Aim: To investigate the reasons for cancellation of patients on the day of surgery. We were particularly interested in cancellations by anaesthesia and attendance of these patients at our preoperative assessment clinic (PAC).

Methods: Over thirteen months, we audited surgical cancellations occurring on the day of surgery in the National Orthopaedic Hospital Cappagh (NOHC).We identified cancellations over this time period and reviewed our online patient record to identify the reason for cancellation +/- attendance at PAC.

Results: From January 2020 to February 2021 there were 110 cancellations on the day of surgery. This included minor procedures (injections/epidurals) and surgical procedures. We removed minor procedures as anaesthesia would not have had input into these cases. There were 73 cases remaining. Of these cancellations, 16 were by anaesthesia (21%). Ten of these patients were seen in PAC in the preceding six months (62.5%). The reasons for cancellation by anaesthesia are outlined in Table 1. Surgical reasons for cancellation were including failed smoking cessation, joint swelling, asymptomatic patients and theatre overrun.

Discussion: Day of surgery cancellations cause emotional distress to patients and economic consequences to hospitals. Cancellation rates have been reported as between 4-13.4% [1,2] Anaesthesia related cancellations have been quoted as 8-29%.[3] Some of our anaesthesia cancellations were avoidable including a new cardiac murmur despite attendance at PAC within the preceding six months. It is important to emphasise a thorough cardiac exam in PAC. The patients with new atrial fibrillation all were seen in PAC and would have had ECGs completed and so this is somewhat unavoidable if the patient was in sinus rhythm on the day of assessment. Recent COVID-19 infection, failure to detect continued

smoking prior to scheduling acould have possibly been identified prior to presenting for surgery. Given the negative effect on patients, waiting lists and the economic costs, strategies should be considered to reduce avoidable cancellations on the day of elective surgery.

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Reason for cancellation	Number	Number seen in PAC
New atrial fibrillation	4	4
Cardiac murmur	3	3
BMI increase (≥45kg/m2)	1	1
Abnormal bloods	2	2
Rash on lower back	1	0
Breastfeeding-patient choice, lack of prep for 24h post op	1	0
Smoking cannabis	1	0
13 days post COVID-19	1	0
Medically unfit	2	0

Table 1

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Cancellations, Preoperative assessment, Orthopaedics, Elective

77

A Quality Improvement Project (QIP): The impact of increased physiotherapy staffing on early mobilisation rates Enhanced Peri-operative Care Unit (EPOC)

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Checkbox

yes

Abstract

Introduction

Early mobilisation is well embedded within Enhanced Recovery after Surgery pathways and improves patient outcomes (1). Post-operative early mobilisation adherence remains inconsistent, with staffing and clinician experience cited as common barriers (2). This QIP aims to evaluate the impact of enhanced physiotherapy staffing, on patient outcomes within EPOC.

Methods

Patients post abdominal cavity surgery were included in analysis and outcomes compared to historical data.

Physiotherapy staffing was uplifted to meet an increase in surgical capacity. MDT Education was provided by physiotherapists on the importance of early mobilisation post-surgery.

Primary outcome was mobilisation day 1 post-surgery (MMS POD1), assessed using the Manchester Mobility Score (MMS) [3], with secondary outcomes including time to sit out of bed (MMS5), time to mobilise more than 30m (MMS7), hospital length of stay (LOS) and Post-operative pulmonary complications (PPC's).

Results

Table 1 shows the results. Post QIP, patients were significantly more mobile post-surgery and upon EPOC discharge, with reduced time taken to achieve MMS5 and MMS7. There was a significant reduction in LOS, and a trend towards a reduction in PPC's. Subgroup analysis of nurse-led, low-risk patients demonstrated significant improvements in MMS POD1 and time to MMS5. There is also a trend towards reduction in LOS although not statistically significant.

Discussion

Enhanced physiotherapy staffing and MDT education resulted in significant improvements in post-operative mobilisation. These improvements may also be attributable to the experience of the physiotherapist to provide early mobilisation to higher acuity, complex post-surgical patients. The presence of an experienced physiotherapist promoted a positive culture change within the MDT resulting in increased mobilisation of patients reviewed by Nurses. Reduction in LOS and PPC's are also clinically important and can result in reduced workforce burden and financial expenditure. These results justify investment in specialist physiotherapy services in the post-operative setting.

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	Pre QIP		Post QIP		p-value	
	Nurse-led	**Total**	**Nurse-led**	**Total**	**Nurse-led**	**Total**
N	43	100	37	100		
Mean Age (SD) #	56.0 (14.2)	59.7 (14.3)	56.1 (15.4)	61.84 (13.4)	0.980	0.284
Gender ~						
Female	30 (69.8%)	43(43%)	19 (51.4%)	58 (58%)	0.092	0.886
Male	13 (30.2%)	57(57%)	18 (48.7%)	42 (42%)		
Smoking History ~					0.365	0.655
No	34 (79.1%)	64 (65%)	26 (70.3%)	67 (67%)		
Yes	9 (20.9%)	36 (36%)	11 (29.7%)	33 (33%)		
Mean BMI (SD) #	28.1 (6.4)	29.7 (6.7)	27.6 (6.4)	28.8 (6.1)	0.690	0.288
Surgical speciality ~						
Colorectal	5 (11.6%)	15 (15%)	4 (10.8%)	15 (15%)		
Liver	24 (55.8%)	52 (52%)	15 (40.5%)	48 (48%)		
Sarcoma	11 (25.6%)	20 (20%)	6 (16.2%)	16 (16%)	0.073	0.626
Upper GI	1 (2.3%)	7 (7%)	4 (10.8%)	10 (10%)		
Urology	2 (4.7%)	6 (6%)	8 (21.6%)	11 (11%)		
MMS Day 1 ~	3.6 (2.3)	3.7 (2.1)	5.4 (1.3)	5.6 (1.5)	<0.001	<0.001
Days to MMS 5 (SD) #	1.8 (1.2)	1.8 (1.2)	1.1 (0.4)	1.1 (0.4)	<0.001	<0.001
Days to MMS 7 (SD) #	5.6 (8.7)	5.4 (7.3)	2.7 (1.7)	2.4 (1.7)	0.054	<0.001
Hospital LOS (IQR) ∞	6 (4,11)	7 (5, 13)	4 (3,7)	6 (4,8)	0.078	0.0012
PPC ~					0.412	0.663
Yes	4 (9.3%)	13 (13%)	2 (5.4%)	11 (11%)		
No	39 (90.7%)	87 (87%)	35 (94.6%)	89 (89%)		
~ Chi-squared test	** Fishers' exact test*		*#Two tailed t-tests*		*∞ Kruskall Wallis test*	

Table 1: Demonstrates Enhanced EPOC Physiotherapy QIP results

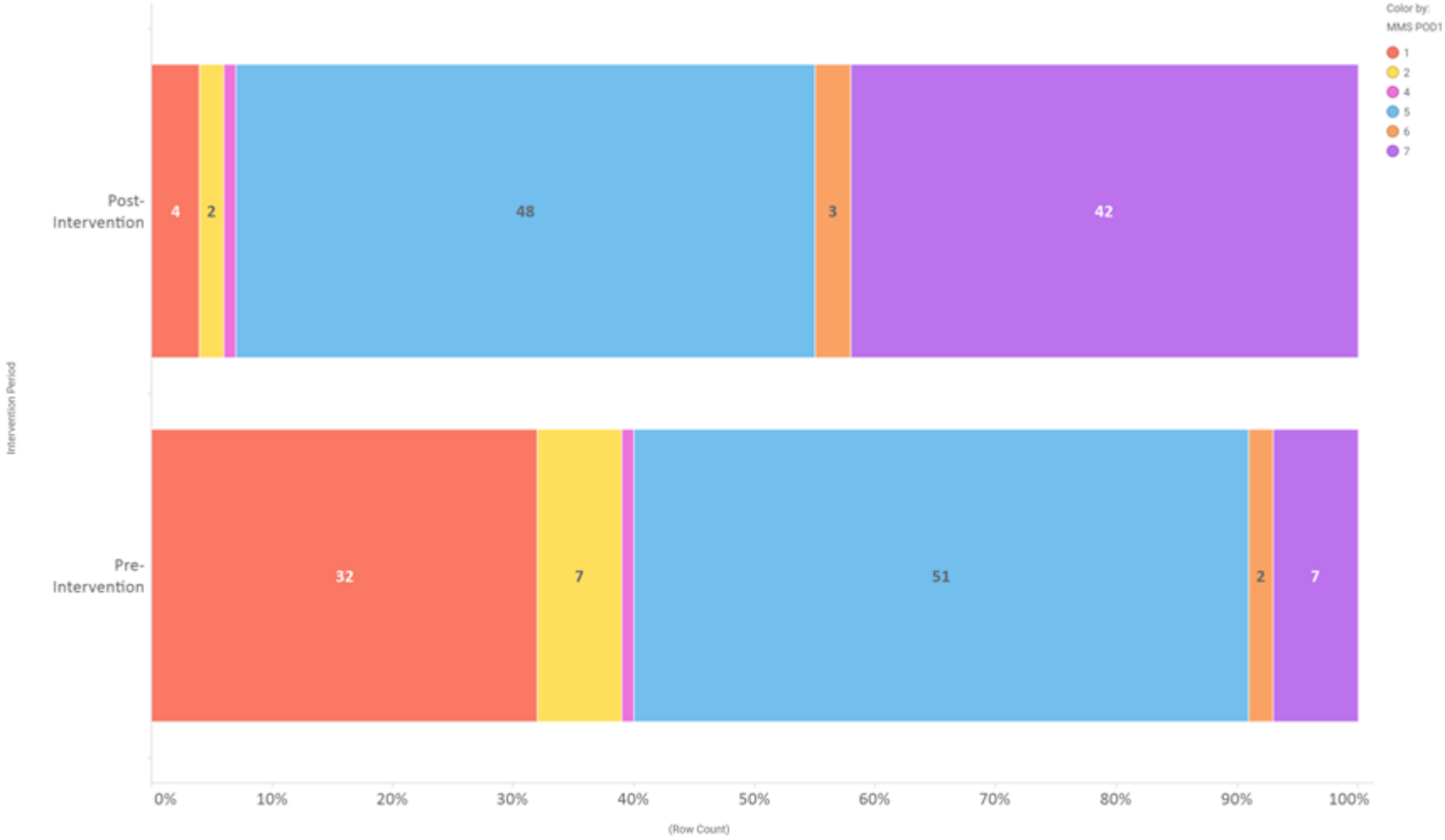

Figure 1: A graph comparing Mobilisation rates day 1 post-surgery (MMS POD1) pre-QIP and post-QIP

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yes

78

An audit of preoperative cardiology referrals for elective orthopaedic surgery

Sheena Cassidy, Cormac Redahan

National Orthopaedic Hospital Cappagh, Dublin, Ireland

Checkbox

yes

Abstract

Introduction

Pre-operative cardiology review aids patient optimisation and risk stratification.[1] However, it can also add to delays and cost.[2] Morbidity and mortality is determined by patient risk and type of surgery.[1] Good pre operative assessment determines if surgery can safely be performed and the safest location to proceed.[1] We audited our cardiology referral pathway in the National Orthopaedic Hospital Cappagh (NOHC) to investigate indications for referral and any interventions following review.

Methods

Date was collected via chart review from two 12-month periods in 2019 and 2021. All patients referred to cardiology from the pre-operative assessment clinic (PAC) in NOHC were included. Reason for referral to cardiology and outcome of their assessment was recorded. We noted the location of surgery when completed.

Results

Over two years 4063 patients attended PAC and 244 were referred to cardiology (6%). 199 charts were reviewed (82% of referrals). The average patient age was 72 years with 80% >65y. 68% of patients reviewed were scheduled for major surgery. The breakdown of referrals is shown in Table 1. All patients attending cardiology clinic had an ECG and transthoracic echo (TTE) and 35% had further intervention (angiogram,

dobutamine stress test, medication changes). We included future cardiology review as an intervention. The most common reason for referral was a murmur (38%) and the majority of patients referred proceeded to surgery in NOHC (95%).

Conclusion

Appropriate preoperative cardiology input helps to quantify the operative risk for a patient. Most of our patients proceeded to have surgery in NOHC with minimal change to their management. However, importantly the patients with pathology and higher risk were identified and managed in the correct location. Recent European guidelines recommend TTE for any new murmur suggestive of clinically significant pathology.[1] We perform a large volume of spinal anaesthesia for orthopaedic surgery and TTE to evaluate a murmur can change management. The literature identifies use of risk scores to further aid patient selection for cardiology review, for example, NSQIP Myocardial Infarction and Cardiac Arrest (MICA).[2] For patients with a low risk of major adverse cardiac event, further testing is not recommended.[2] This may be useful to rationalise or further prioritise cardiology referrals in our centre.

References

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2. 2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery. 9 Dec 2014.

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Indication for referral	n	% requiring intervention	% passed fit for NOHC
Afib/flutter	32	44	94
Other ECG changes	22	9	100
Murmur	75	21	95
General Review/Risk Factors	11	9	91
Cardiac symptoms	30	7	100
Cardiac history with no recent review	27	22	93
Carotid Bruit	2	100	100

Table 1.

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Poster keywords

Cardiology, preoperative assessment, orthopaedics, elective

79

Case Study: - Knotted Labour Epidural Catheter: Changing our daily practice could reduce it!

Sibghat Ullah Khan, Mohammed Baagagah, Syed Najm ul Arfin

St Lukes General Hospital., Kilkenny, Ireland

Checkbox

yes

Abstract

Introduction:

Labour epidural remains the gold standard for labour analgesia[1].However, rare complications can occur.The incidence of knotted catheters at lumbar level ranged from 0.0015% to 0.005%[2].Factors that increase catheter knotting include catheter length in epidural space, difficult epidural insertion, the material, design and diameter of catheter itself[3] and patient specific risk factors include anatomy, position, removal of the catheter, and the body mass index.

Discussion: (Method/Results)

24 year old primigravida presented for induction of labour postdates (Term+10), with BMI 31 and no significant medical history.

An epidural catheter was inserted at L3-L4 space in sitting position. A loss of resistance to air technique with an 18G Tuohy needle from Smiths Medical was used. (Fig 1) Epidural insertion was successfully on first attempt, with an epidural space identified at a depth of 5cm. The 20G closed end nylon catheter with three lateral side-holes was threaded easily beyond 20cm mark at the proximal hub of the needle. The epidural catheter was secured at the skin at 10cm with 5cm left remaining in the epidural space. After 9 hours, patient had failure to progress with foetal distress, ultimately a top up was given successfully and uneventful category II LSCS was performed. Resistance was felt while removing the catheter in left lateral position. A gentle manipulation with different positions continued to be unsuccessful. Therefore, the patient was placed in the similar position as used at time of insertion, encouraging her to cough and continuous gentle pulling[4]. Successfully, epidural catheter came out and showed a knot at 4 cm from the tip. (Fig 2)

Conclusion:

We reviewed a series of case reports and concluded that epidural catheter should not be advanced more than 5 cm in the epidural space[5,6]. However, many thread the catheter to more than 7 cm into the epidural space and withdraw it to the desired depth, thus ensuring that enough will remain in the epidural space after needle removal. Recommended manoeuvres[4] include applying slow, continuous steady pressure to avoid breakage; reapplying force and traction after several hours; having the patient assume the same position as during insertion or positioning the patient in the lateral decubitus position; injecting normal saline through the catheter, which may also reveal if the catheter is knotted. If resistance is felt at removal, force shouldn't be applied. Expert input from Radiology and Surgery should be taken.

References:

1.Ashagrie HE, Fentie DY, Kassahun HG. “A review article on Epidural Analgesia for labour pain management: A systematic review.” International journal of Surgery Open. 2020;24: 100-104.

2. Brichant JF, Bonhomme V and Hans P. “On knots in epidural catheters: a case report and a review of the literature.” Int J Obstet Anesth. 2006. 15(2):159-162.

3. Beamer J, French GW. “A simple method for testing for the kinking epidural catheter. Anaesthesia.” 2000; 55(12):1233-4

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6. Brichant JF, Bonhomme V, Hans P. On knots in epidural catheters: a case report and a review of the literature. *Int J Obstet Anesth.* 2006; 15:159–162.

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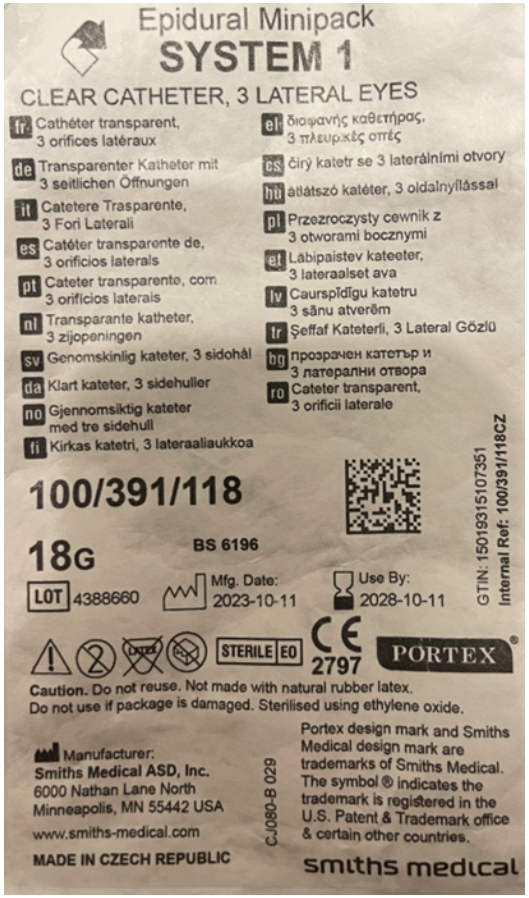

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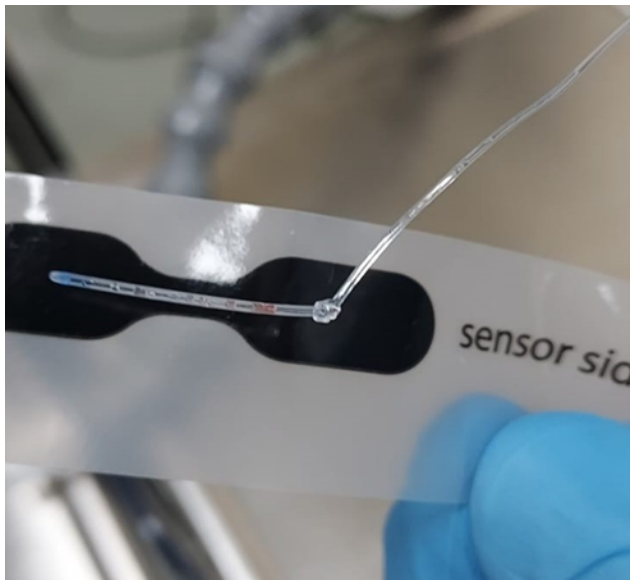

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Poster keywords

Epidural analgesia, Epidural knot, Labour analgesia, Epidural complications, Epidural catheter

80

Effectiveness of high serratus anterior plane block for postoperative pain in patients with axillary clearance

Adil Hakeem Shaikh, Kamran Ahmed, Patricija Ecimovic

University Hospital Waterforfd, Waterford, Ireland

Checkbox

yes

Abstract

Effectiveness of high serratus anterior plane block for postoperative pain in patients with axillary clearance

Dr Adil Hakeem Shaikh, Dr Kamran Ahmed, Dr Patricija Ecimovic

University Hospital Waterford, Waterford, Ireland

Introduction: The serratus anterior plane block (SAPB) is a commonly used and effective regional anaesthesia technique for patients undergoing breast and thoracic surgeries. However, axillary clearance has been less amenable to regional anaesthesia. We started doing SAPB for axillary clearance with slight modification to original description of the block in that we injected local anaesthetic at the tip of the axilla in mid-axillary line, which is higher than originally described (1).

Methods: Informed consent was obtained and SAPB was performed after induction into general anaesthesia in 7 consecutive patients undergoing axillary clearance either for breast cancer or melanoma. In addition to SAPB with 30 mls of 0.25% L-bupivacaine, they all received NSAIDs, paracetamol, morphine, and dexamethasone. Their pain VAS and morphine consumption were recorded in PACU as well as at 6 and 24

hrs after surgery. These variables were then compared to a historical group of 7 patients for the same surgery in the past, who did not receive the block (control group).

Results: The mean age in the control group was 59 and the average morphine requirement intraoperatively was 9.4mg, while in the recovery was 8.2mg. The mean VAS score was 5.8 in the recovery, 3.7 6 hours postoperatively, and 3.5 24 hours postoperatively. The mean age in the test group was 58, the average morphine requirement intraoperatively was 3.1mg, while in the recovery was 1.7mg. The mean VAS score was 2.7 in the recovery, 0.5 after 6 hours postoperatively, and 2.5 after 24 hours postoperatively.

Conclusion: There was a significant reduction in morphine consumption and VAS in both intraoperative and postoperative periods in patients receiving SAPB.

References:

1. Mayes J, et al. Anatomical evaluation of the serratus anterior plane block. Anaesthesia 2016; 71: 1064-9.

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Control group (No SAPB)								Test group (SAPB)							
No.	Age	Sex	Morphine intraop (mg)	VAS recovery	Morphine recovery (mg)	VAS 6hrs	VAS 24hrs	No.	Age	Sex	Morphine intraop (mg)	VAS recovery	Morphine recovery (mg)	VAS 6hrs	VAS 24hrs
1	46.1	F	10	4	6	4	4	1	57.1	F	4	1	0	0	3
2	71.3	F	8	5	6	4	5	2	53.5	M	6	3	2	0	3
3	73.5	F	8	5	8	3	2	3	58.5	F	4	3	2	0	2
4	68.1	F	10	6	8	4	2	4	51.3	F	2	3	2	0	3
5	53.8	F	10	7	10	3	3	5	68.3	F	2	2	0	0	2
6	49.7	M	10	6	10	3	4	6	76.2	F	2	3	2	2	2
7	55.2	M	10	8	10	5	5	7	41.5	M	2	4	4	2	3

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Poster keywords

Pain, Serratus anterior plane block, Local anaesthesia, Pain, Axillary clearance

81

An Audit of Anaesthetic Record Keeping in Cork University Hospital

Rachel O Flynn

Cork University Hospital, Cork, Ireland

Checkbox

yes

Abstract

Title: An Audit of Anaesthetic Record Keeping in Cork University Hospital

Introduction:

The anaesthetic record is central to understanding perioperative events and aids communication and handover between colleagues. While there is no standardised anaesthetic record format, developments have been made in the last 10 years regarding aspects of recording. This has led to an increase in the required amount of information to be recorded. Consequently, existing paper anaesthetic records may not incorporate these updated recommendations and may require frequent redesign.

The aim of this audit was to compare the anaesthetic record keeping in Cork University Hospital with the recommended standards by the Royal College of Anaesthetists [1].

Methods:

The standards were selected in line with the recommendations from the Royal College of Anaesthetists. Data was collected using a predetermined data collection sheet. A retrospective audit was carried out from the 13-17th May 2024 in Cork University Hospital.

Results:

A total of 36 charts were reviewed over five days including both emergency and elective cases as summarised in Fig. 1

An interesting finding was the documentation of an additional piece of information which was not part of the anaesthetic record and not a recommended standard. This was the time the patient had fasted since and it was documented in the 'notes' section of the anaesthetic record. This was recorded identified in 25% of patient records.

Conclusions:

The anaesthetic record in Cork University Hospital does not meet the standard as set out in the Royal College of Anaesthetists guidelines. The record sheet should be reviewed and updated to include a section for equipment checks, consent discussion, anaesthetist MCRNs, and fasting times.

NCHDs should be educated on induction on how to correctly fill out the anaesthetic record sheet and the importance of legibility.

Reference:

1. Royal College of Anaesthetists and Association of Anaesthetists of Great Britain and Ireland. The Good Anaesthetist: Standards of Practice for Career Grade Anaesthetists. 4th ed. London: RCoA; 2010

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Table 1.

Standard to be documented	%*
Patient name + MRN	100%
Anaesthetist name	91.6%
Anaesthetist MCRN	0%
Consultant Supervisor Documented	94.4%
Equipment check at start of day	0%
Equipment check before each patient	0%
Appropriate monitoring	94.4%
Consent discussion	25%
Patient agreement to intervention	11.1%
Physiological data recorded at appropriate intervals	91.6%
Legible	75%
Only recognised abbreviations used	83.3%

*percentage of documents reviewed where standard was met

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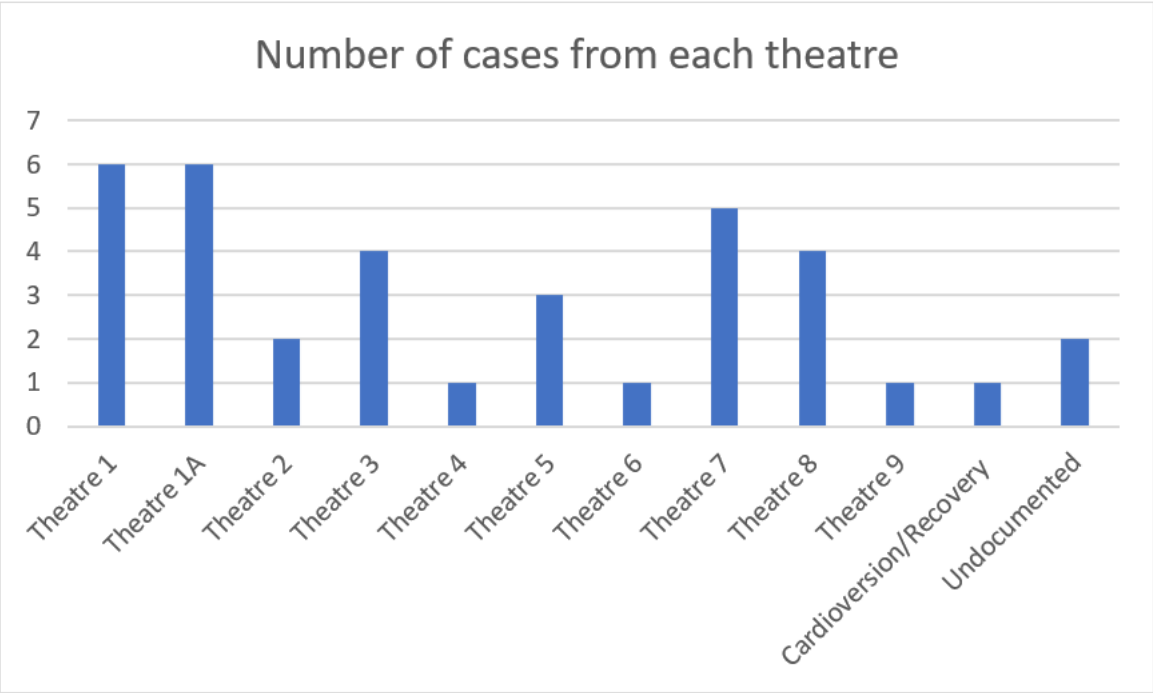
Figure 1.



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Poster keywords

anaesthetic, record, documentation, record keeping, audit

82

Antibiotic prescribing for surgical prophylaxis in patients with obesity

Helen Richardson

Belfast City Hospital, Belfast, United Kingdom

Checkbox

yes

Abstract

Introduction

Obesity alters drug handling due to physiological differences impacting pharmacokinetics and pharmacodynamics. It can result in suboptimal dosing if standard antibiotic dosing regimes are followed. Our local microbiology team suggest an increase in dosing of antibiotics for surgical prophylaxis.

They suggest the following:

- It is recommended that in patients with a total body weight of greater than 100kg, an additional 1g Amoxicillin should be prescribed alongside the standard dose of 1.2g co-amoxiclav

- The dose of cefuroxime should be doubled (1.5g should be increased to 3g)

We commonly use co-amoxiclav for elective surgery in Belfast City Hospital. I wanted to audit local practice in theatre to see if our prescribing for surgical prophylaxis matched this guidance.

Methods

I completed a snap shot audit over 8 days in May 2024.

Selection criteria included any patient presenting for elective or emergent surgery at Belfast City Hospital with a weight over 100kg.

Data was collected from the anaesthetic charts with the help of the nursing staff in the recovery area. It included nature of surgery, weight, height and BMI of the patient, and the choice and dose of antibiotics.

Results

In an 8 day period, I identified 15 patients meeting the selection criteria, with weights over 100kg.

14 patients had a 1.2g dose of co-amoxiclav. All had a lower dose than is recommended.

One patient had 4.5g Tazocin- no alteration is suggested for this drug.

Conclusion

This audit identified 2 things, firstly, that the presence of patients with class A, B and C obesity is now commonplace in the setting of elective surgery. It is almost a daily occurrence in Belfast City Hospital. This audit also demonstrated a gap in knowledge locally of the requirement to increase dosing for surgical prophylaxis in high BMI patients.

I have liaised with the local microbiology team and had our 'micro guide app' updated to include a section on surgical prophylaxis in obesity and will re-audit practice after presenting my findings at the local audit and increasing staff awareness.

References

1. Meng et al, Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy, Volume 43, Pages 226-246, 2023

2. Scottish Antimicrobial Prescribing Group (SAPG), Good practice recommendations for surgical antibiotic prophylaxis in adults and children in NHS Scotland, October 2022

3. Australian National Therapeutic Guideline (eTG), Surgical antibiotic prophylaxis for obese patients. 2020

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Poster keywords

Obesity, Perioperative medicine, Antibiotic prescribing, Bariatric medicine, SOBA

83

Peri-operative Medicines Management in High-risk Elective Surgery – Furthering the case for improvement

Nathan Potter, George Badham, Harry Craven, John Griffiths

Oxford University Hospitals NHS Foundation Trust (OUH), Oxford, United Kingdom

Checkbox

yes

Abstract

Introduction:

Peri-operative medication errors commonly occur during transitions in patient care. Medicines reconciliation (MedsRec) during transition of care enables identification of discrepancies reducing likelihood of medicines related safety incidents [1].

At OUH, pre-operative assessment (POA) MedsRec is undertaken by specialist nurses with no MedsRec training. Peri-operatively, there is no agreed MedsRec process and peri-operative prescribing responsibilities for the patient remain unclear. Analysis of incident reports revealed numerous adverse events related to sub-optimal peri-operative MedsRec and prescribing.

This QIP in peri-operative medicines management for high-risk surgical patients evaluated impact of an intervention: tailored role-specific peri-operative MedsRec education packages on:

- Accuracy of POA Nurse MedsRec
- Accuracy of anaesthetist peri-operative prescribing
- Risk of patient harm

Methods:

A single-centre, intervention, cross-sectional study of elective admissions to an enhanced-care-unit in a large tertiary care centre.

POA Nurse MedsRec accuracy and anaesthetist prescribing accuracy data was collected retrospectively for 137 adults scheduled for admission to the enhanced-care-unit. Baseline (control) data was collected in August 2022 (n=68) and post-intervention data was collected in August 2023 (n=69) and compared using chi-squared test.

The POA nurses and prescribing anaesthetists received tailored peri-operative MedsRec education packages to improve MedsRec and prescribing accuracy. For the 2023 cohort, POA MedsRec accuracy was compared to ward-pharmacist MedsRec. A specialist-panel (pharmacist and 3 anaesthetists) assessed errors and assigned risk-level of patient harm. Ethics approval was not required.

Results:

Overall, 86% of patients were affected by a POA MedsRec error; no significant change to August 2022 (88.5%, p = 0.51). 32 POA MedsRecs were recorded by trained staff (52%); a significant improvement to August 2022 (43%, p = 0.027). Of 279 medications documented, there were 224 POA MedsRec errors: 37.6% of these errors involved inaccurate documentation; no significant change to August 2022 (33.4%, p = 0.28). 70% of POA MedsRec errors were considered high-risk (figure. 1).

Overall, 36.5% of the peri-operative prescriptions for regular medications were inaccurate; no significant change to August 2022 (34.9%, p = 0.72). There were 88 unexplained prescribing omissions of pre-admission medications across 41 patients in August 2023; no significant change to August 2022 (p=0.41). 26% of unexplained prescribing omissions were deemed to be either a high (3%) or intermediate (23%) risk (figure. 2).

Conclusion:

Despite a tailored MedsRec education package, there was no significant improvement in:

- POA Nurse MedsRec accuracy (despite significant improvement in those undertaken by trained practitioners)
- Anaesthetist peri-operative prescribing accuracy

The frequency of POA MedsRec errors and prescribing omissions remains high, and the risk of patient harm is significant. Future work intends to evaluate the local impact of pre-operative pharmacist MedsRec and peri-operative non-medical prescribing support.

References:

1.NICE(2016)MedicinesoptimisationQualityStandard[online]Availableat:https://www.nice.org.uk/guidance/qs120/resources/medicines-optimisation-pdf-75545351857861.

Fig.1 Risk of patient harm: POA Nurse MedsRec errors

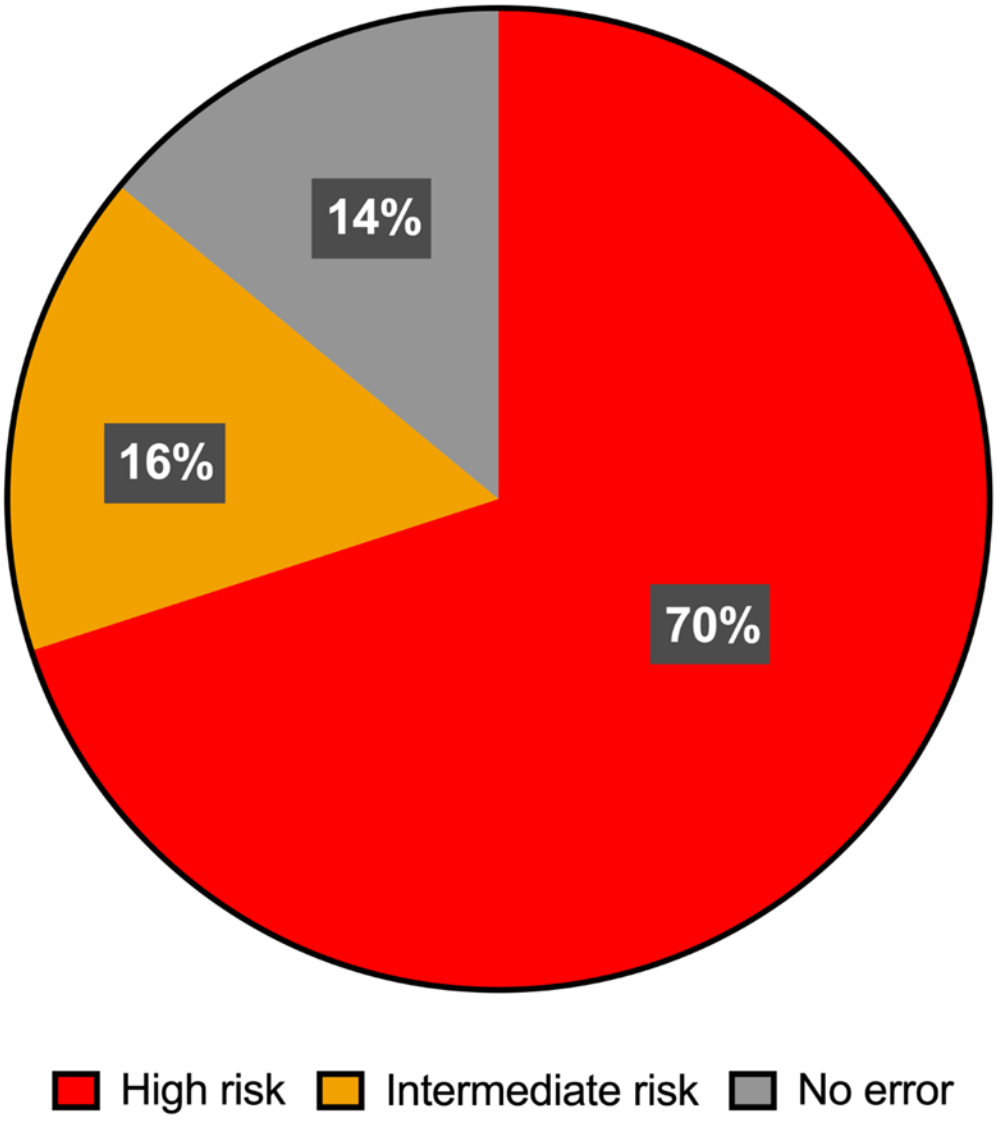
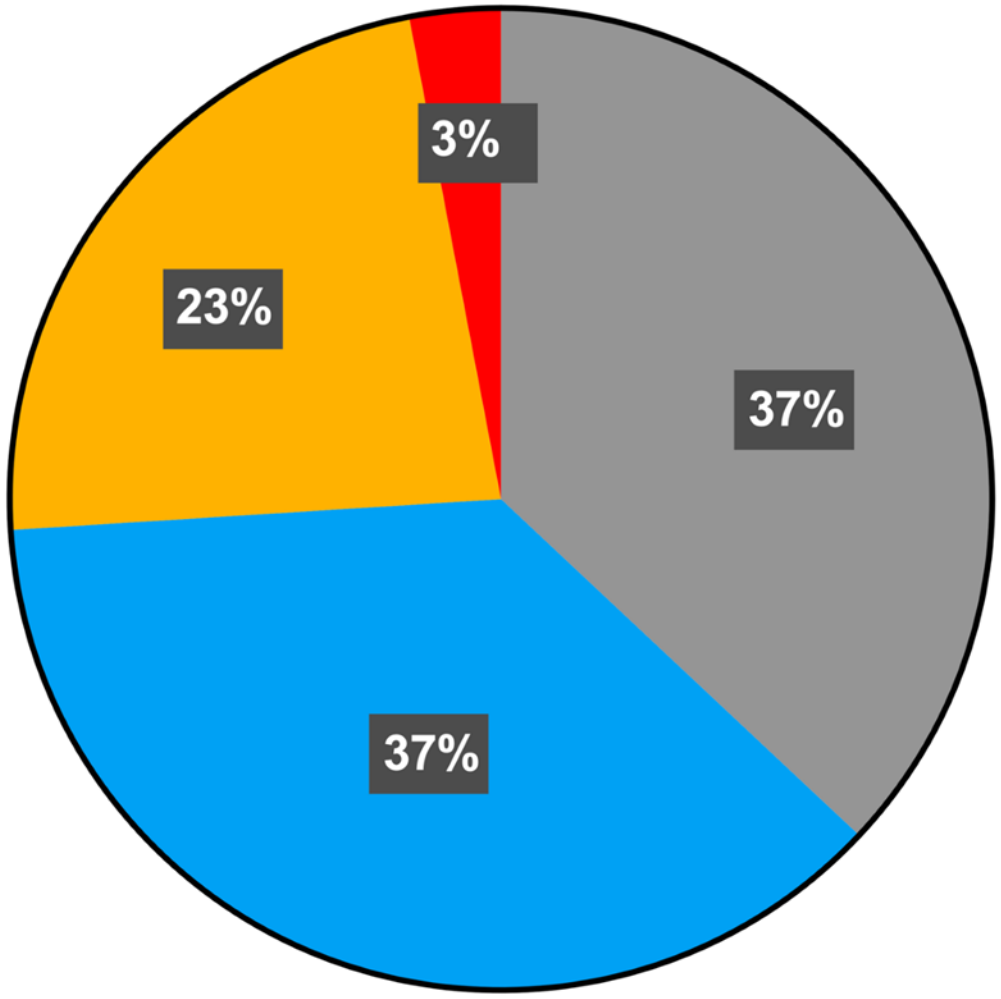


Fig 2. Risk of patient harm: peri-operative prescribing omissions



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Poster keywords

Medication error, Medicines Reconciliation , Medicines management , Pharmacist, Quality Improvement

84

The use of rectal diclofenac for postop lower segment caesarean section pain: An audit examining compliance, complications and efficacy. Department of Pain Medicine , Mayo University Hospital.

joanna fahey, Michelle Duggan

mayo university hospital, mayo, Ireland

Checkbox

yes

Abstract

Abstract

The use of rectal diclofenac for postop lower segment caesarean section pain: An audit examining compliance, complications and efficacy.

Duggan M[1,] Fahey J[2]

1. Department of Anesthesiology, Mayo University Hospital

2. Pain Clinical Nurse Specialist, Mayo University Hospital.

Objective: To investigate the efficacy, side effects and prescribing adherence associated with the use of Diclofenac analgesia for pain relief in women undergoing Lower Segment Caesarean Section. Caesarean section pain is associated with moderate to severe post-operative pain which can influence post-operative recovery and patient satisfaction as well as breast-feeding success and mother-child bonding

Methods: We conducted a cross-sectional convenience sample questionnaire of patient's day 1 post-op lower segment caesarean section (LSCS) and thus were eligible for FAST-TRACK analgesia. MUH Clinical Research Ethics Committee granted ethical approval and data was analysed using excel. The data was collected in the month of January 2024 on the Maternity ward.

Results: 43 participants, with a mean age of 34.5, were recruited: with 32 participants prescribed as per FAST-TRACK. Non-adherence to prescribed post-op analgesia was reported in 11 participants. A median pain score of 1 (0-10) and median pain satisfaction of 'very satisfied' (satisfied – very satisfied) was reported.

Conclusion: Mayo University Hospital has achieved significant standardisation in post-operative pain management. Anesthetist's have initiated evidenced based management strategies improving outcomes. Our data suggests the practice of a multimodal approach to post-operative analgesia and that the use of Diclofenac 100mg PR/ PO 50mg in conjunction with paracetamol (Oxynorm if required) provides effective postoperative analgesia.

Keywords: Diclofenac, analgesia, caesarean section, pain score.

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86

Demographic Patterns in Patients with Opioid and Gabapentinoid Prescriptions on First Presentation to a Chronic Pain Clinic.

Sean Flannery[1], Andrew Purcell[2], David Moore[3], Barry McHale[3]

[1]Department of General Medicine, Armadale Health Service, Armadale, Western Australia, Australia. [2]Department of Anaesthesiology, South Infirmary Victoria University Hospita, Cork, Ireland. [3]Department of Critical Care and Anaesthetics, Beaumont Hospita, Dublin, Ireland

Checkbox

yes

Abstract

Introduction:

Opioids are an effective analgesic for management of acute pain[1]. The data for longer term use is inconclusive[2]. Gabapentinoids are an accepted treatment for neuropathic pain, however their use in patients without a neuropathic component is debated[3]. People with substance use disorder are at known risk of gabapentinoid misuse[4]. We wished to investigate if there are groups that are more at risk of inappropriate opioid and gabapentinoid prescribing.

Methods:

Data was collected from standardised clinic letters for 173 patients presenting for the first time to a chronic pain service in Dublin, Ireland (over the period April 2021 – June 2022). Past medical history, patient demographics, prescribed medications and pain diagnosis were recorded, as documented by a single pain specialist. Statistical analysis was performed using simple 2-sided comparisons to give odds ratios with 95% confidence intervals. P-values were then calculated using chi-square analysis.

Results:

Of 173 patients, ~41% (n=71) were prescribed opioids prior to first review and ~30% (n=53) were prescribed gabapentinoids. There was no statistically significant correlation between gabapentinoid and opioid co-prescribing. There was a statistically significant correlation between people with a psychiatric diagnosis and having either an opioid or gabapentinoid prescription. There was a statistically significant correlation between gabapentinoid prescribing and age >65, however not with opioid prescribing. There was no statistically significant difference in opioid or gabapentinoid prescribing between sexes or in people with co-prescriptions for benzodiazepines.

Conclusion:

Both opioid and gabapentinoid prescriptions are common in patients attending a chronic pain service for the first time. Statistically significant correlations were seen in people with psychiatric diagnoses and people aged over 65 (for gabapentinoids). Further research is necessary to determine the clinical significance of these correlations. Prescriber education would be beneficial to update on current guidelines on opioid and gabapentinoid use.

References:

1. National Institute for Health and Care Excellence. Perioperative Care in adults: Guidance [Internet]. United Kingdom: National Institute for Health and Care Excellence. [cited 2024 May 15]. Available from https://www.nice.org.uk/guidance/ng180/chapter/Recommendations

2. Chou R, Turner JA, Devine EB, Hansen RN, Sullivan SD, Blazina I, et al. The effectiveness and risks of long-term opioid therapy for chronic pain: A systematic review for a National Institutes of Health Pathways to Prevention Workshop. Annals of Internal Medicine. 2015 Feb 17;162(4):276–86.

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4. Hägg S, Jönsson AK, Ahlner J. Current Evidence on Abuse and Misuse of Gabapentinoids. Drug Saf. 2020 Dec;43(12):1235-1254.

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Poster keywords

Pain, Opioid, Gabapentinoid, Demographics, Clinic

87

Factors affecting stress and wellbeing in anaesthesia training; in depth qualitative analysis

Thomas Gale[1,2], Sophie Winter[1], Harriet Daykin[1], John Tredinnick-Rowe[1], Lyndsey Withers[1], Marie Bryce[1]

[1]Peninsula Medical School, Plymouth, United Kingdom. [2]University Hospitals Plymouth NHS Trust, Plymouth, United Kingdom

Checkbox

yes

Abstract

Introduction

Anaesthesia is a high-pressure specialty where trainees experience acute and challenging clinical situations, with decreasing supervision relatively early in their careers. Recent studies found a high prevalence of stress and burnout in trainee anaesthetists.[1,2] Our study aimed to explore factors contributing to stress and wellbeing in UK anaesthesia trainees as well as supportive mechanisms, through in-depth qualitative analysis.

Method

The study was funded through the National Institute of Academic Anaesthesia and ethical approval granted by the University of Plymouth Ethics Committee. The study used a qualitative design with two phases: 1) semi-structured interviews; and 2) focus groups. A call for participants was circulated by the Royal College of Anaesthetists and the Association of Anaesthetists. We conducted semi-structured interviews sampling from CT2-3, ST4-5 grade, and stakeholders involved with training. For phase 2 we ran two focus groups with participants not involved in phase 1 (one with trainees and another with key stakeholders in educational roles). Interviews and focus groups were conducted online, and audio-recorded. Data were transcribed, coded and thematically analysed using NVivo 14 with framework analysis used to capture emerging themes.

Results

52 participants were interviewed in Phase 1, which included trainees from across the training grades in England, Wales and Scotland (Table 1).

Analysis identified overarching themes which contributed to stress amongst trainees; factors related to clinical and non-clinical work, structure of training and workplace culture. A number of supportive features have been identified in this research which have been categorized as individual, local, regional and national factors.

Stress and burnout was a common occurrence, particularly during stressful periods such as exams. Balancing non-clinical commitments (logbook, LLP, exams etc) alongside a busy workload was difficult. Clinically, ITU and obstetrics were found to produce the most stress in trainees. Frequent rotations and long commutes compound stress, and reduced the quality of working and family relationships. External factors such as changes to examinations, curriculum and competition for higher training posts added to demoralisation and stress.

Conclusion

Our study has highlighted individual as well as many external factors which contribute to stress and wellbeing in anaesthesia trainees. Many of these external factors could improve trainee wellbeing with changes to policy and practice at local, regional and national levels.

References

1. Royal College of Anaesthetists, A report on the welfare, morale and experiences of anaethetists in training: the need to listen. 2017: London.

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Participants interviewed		Participant characteristics			
Trainees - stage of training		Sex		Ethnic group	
		Female	Male	BME	White
CT2	10	4	6	4	6
CT3	10	6	4	3	7
ST4	10	5	5	3	7
ST5	10	6	4	4	6
Other	4	2	2	0	4
Stakeholders	8	3	5	1	7

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Poster keywords

Training , Education, Stress , Wellbeing , Policy

88

Fresh Gas Flow Practices during Total Intravenous Anaesthesia: A snapshot from a Model 4 Hospital

Peter Watters, Brian Doyle, Aislinn Sherwin

St James's Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Watters P[1], Doyle B[1], Sherwin A[1].

1Department of Anaesthesia and Perioperative Medicine, St. James's Hospital, Dublin.

Anaesthetic gases account for roughly 5% of global healthcare emissions1. Total Intravenous Anaesthesia (TIVA) offers a safe, effective, and more environmentally friendly alternative to traditional volatile based anaesthesia[2].

Circle breathing systems are designed to reduce consumption and atmospheric emission of volatile agents by using low fresh gas flows (FGFs) and soda lime to reduce recirculation of carbon dioxide. Low FGFs are not required for TIVA and increase Soda Lime consumption, having significant financial implications. Soda Lime canister lifespan can be extended by 4 times at 6 litres FGF when compared to 4 litres[3]. This audit evaluates FGF practices during TIVA at St James's Hospital, Dublin.

METHODS

Anonymous data from 20 TIVA cases was collected opportunistically between July 22 and July 26, 2024, and then analysed.

RESULTS

Analysis of the 20 cases revealed a mean FGF of 2.65L [Mode 2, SD 1.68] and a range of FGFs from 0.5L - 6L. In 85% of cases, FGFs of ≤4L were used. ET Control was used for 5 cases (25%) with minimum flow rates set between 0.5L and 2L.

CONCLUSION

This audit shows there is significant potential to extend Soda Lime lifespan during TIVA, given that in the majority of cases FGFs were ≤4L, in turn reducing costs.

We plan a teaching session on the environmental benefits of TIVA and the advantages of increasing FGFs, followed by a reaudit at the end of this six months.

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3. ‘Environmental and economic impact of using increased fresh gas flow to reduce carbon dioxide absorbent consumption during clinical anaesthesia practice’: Zhong et al., BJA, Volume 129, Issue 6, E165-E166, December 2022

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Poster keywords

Total Intravenous Anaesthesia, Sustainability, Fresh Gas Flows, Cost, Audit

89

Measuring Pulmonary Artery Occlusion Pressure with Smart Wedge Algorithm

Nathan Angel, Feras Hatib, Zhongping Jian

Edwards Lifesciences, Irvine, USA

Checkbox

yes

Abstract

Introduction: Pulmonary artery occlusion pressure (PAOP) waveforms can be used to estimate left atrial pressure and aid in assessing left ventricular function.[1] PAOP measurements are deemed a low-risk procedure when preformed at specialty high volume centers, however at lower volume centers misinterpretation of the PAOP waveforms is common.[1] Our objective is to validate a combined physiological and machine learning algorithm that can identify PAOP waveforms and measure PAOP at end of expiration with similar accuracy to clinician annotation.

Methods: The algorithm was developed and tested using two different data sources (1) a retrospective cohort used for training and model development, consisting of 553 patient records with 2632 annotated PAOP measurements; and (2) a retrospective sampling of pulmonary arterial pressure (PAP) waveforms from Edwards Lifesciences database and MIMIC III data base used for independent algorithm validation that contained 129 patient records with 110 annotated PAOP measurements (see table 1 for summary of demographics). The algorithm was evaluated with sensitivity and specificity analysis for identifying wedged PAP waveforms and was evaluated with Bland-Altman analysis for PAOP measurement as compared to clinician annotation.

Results: The Smart Wedge Algorithm was developed to analyze hemodynamic features from the PAP waveform using a combination cardiopulmonary physiology and population-based statistics and machine learning.

The key components of Smart Wedge algorithm are:

1. Featurization of the PAP waveform
2. Identifying wedged waveforms utilizing the “delta change” PAP waveform features in a fuzzy logic state machine.
3. Quantifying the quality of the wedged waveform (wedge index) by combining cardiopulmonary physiological heuristics and a support vector machine classifier.
4. Measuring the PAOP at end of expiration utilizing the respiration type.

PAOP measurements are averaged from the highest wedged index measurements available from the wedged PAP waveform, thus lower quality wedge index measurements do not impact the final measurement. Smart Wedge Algorithm has clinician level accuracy in identifying wedged PAP waveforms (Sensitivity: 100%, Specificity: 96%, PPV: 95%, and NPV: 100%) and in measuring PAOP at the end of expiration (0.4 ± 1.7 mmHg (bias ± stdev)).

Conclusions: A combination physiological and machine learning derived algorithm was developed using PAP waveform features and has demonstrated clinician level accuracy in identifying wedged PAP waveforms and measuring PAOP at end of expiration.

References:

1. Bootsma, I. T., Boerma, E. C., de Lange, F. & Scheeren, T. W. L. The contemporary pulmonary artery catheter. Part 1: placement and waveform analysis. *J. Clin. Monit. Comput.* **36**, 5–15 (2022).

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Table 1. Patient demographics and clinical setting. This was a retrospective analysis of three aggregated datasets.

	George Washington University Hospital	University of California San Diego	University of Minnesota	MIMIC-III Public Database (Beth Israel Hospital)
Number of patients	26	33	26	44
Number of waveforms	92	50	28	55
Age (years)	59 (17), 56 (49, 74)	60 (14), 58 (49, 69)	62 (13), 64 (56, 71)	67 (11), 68 (60, 77)
BSA (m^2)	1.95 (0.35), 1.84 (1.75, 2.03)	1.90 (0.23), 1.91 (1.70, 2.09)	2.06 (0.24), 2.08 (1.81, 2.3)	1.96 (0.24), 2.00 (1.78, 2.15)
Sex (%)	Male 16 (62), Female 10 (48)	Male 16 (48), Female 17 (52)	Male 21 (81), Female 5 (19)	Male 33 (75), Female 11 (25)
Clinical Setting	Medical ICU	Cardiac Surgery Only(N=20) Medical ICU Only (N=7) Both Medical ICU and Cardiac Surgery (N=6)	Cardiac Surgery	Medical ICU

Data are presented as absolute number (percentage), mean (standard deviation), or median (25th percentile, 75th percentile).

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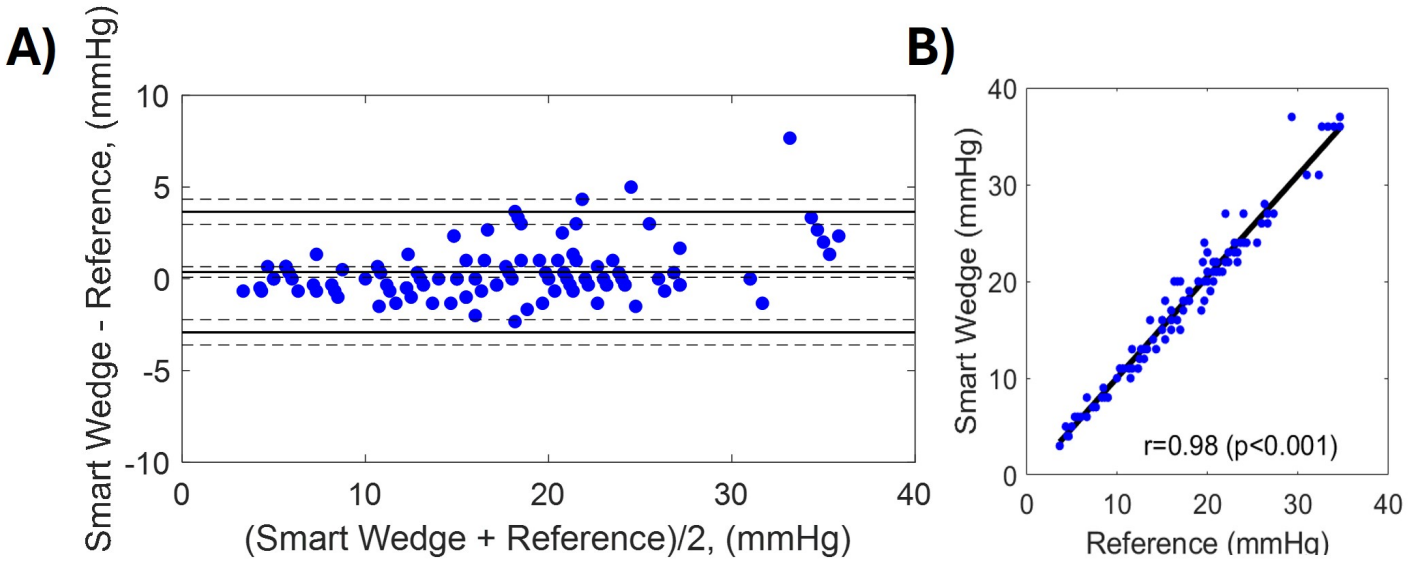

Figure 1. Smart Wedge algorithm validation plots as compared to health care professionals. A) Bland-Altman plot of Smart Wedge PAOP measurement at end of expiration as compared to consensus of clinician annotation. Dashed lines show the 95% confidence intervals for bias and for the agreement limits. **B)** Scattering plot of Smart Wedge PAOP measurement at end of expiration as compared to consensus of clinician annotation. Best fit equation is computed and shown (solid-black).

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Poster keywords

wedge pressure, pulmonary artery occlusion pressure, pulmonary artery catheterization, left atrial pressure, machine learning

91

Understanding the Relationship between MAP and cerebral StO2 with the Cerebral Adaptive Index (CAI)

Antonio Albanese, Paul Benni, Zhongping Jian, Feras Hatib

Edwards Lifesciences, Irvine, USA

Checkbox

yes

Abstract

Introduction

Clinicians are often interested in understanding the relationship between Mean Arterial Pressure (MAP) and cerebral oxygen saturation (StO2), and particularly in evaluating the possible impact that MAP fluctuations, which inevitably occur in patients during surgical procedures or ICU stay, may have on cerebral StO2. This is because MAP is the primary determinant of cerebral perfusion pressure and cerebral StO2 is highly correlated with cerebral blood flow [1]. Until now, clinicians have been forced to observe the individual trends of MAP and cerebral StO2 and mentally evaluate their relationship. The Cerebral Adaptive Index (CAI) automates this mental process, by quantifying the dynamic relationship between MAP and cerebral StO2 and expressing the level of coherence between them on a 0-100 scale.

Methods

We have conducted a clinical validation study to demonstrate that CAI is accurate in discriminating conditions of “weak/moderate” MAP-StO2 association from conditions of “strong” MAP-StO2 association. A total of 145 clinical cases from 4 different sites were used in this study (Table 1).

Results

To assess the performance of CAI, a Receiver Operating Characteristic (ROC) analysis was performed against labels of "weak/moderate" and "strong" MAP-StO2 association states obtained based on the Pearson’s Correlation Coefficient (Corr) between MAP and StO2 in the utilized

time-series clinical data. Corr is in fact a widely accepted metric to capture the relationship between two time-series [2]. Specifically, data with 0≤Corr<0.7 were labeled as “weak/moderate” MAP-StO2 association and data with Corr≥0.7 were labeled as “strong” MAP-StO2 association. The ROC analysis (see Figure 1) showed excellent Area Under the Curve (AUC = 0.88) and, at the chosen CAI threshold of 45, resulted in the following performance (data in mean [2.5% CI, 97.5% CI]):

- Sensitivity: 84 [78, 88] %
- Specificity: 80 [76, 85] %

Conclusion

CAI quantifies the dynamic relationship between two existing hemodynamic parameters, MAP and cerebral StO2, to show the level of coherence between them. The ROC analysis against Corr demonstrates that CAI can accurately differentiate weak/moderate MAP-StO2 association states from strong MAP-StO2 association states at the chosen threshold of 45. CAI can enhance clinician’s understanding of the underlying hemodynamic changes behind cerebral desaturation events that may not be easily identifiable if just visually looking at MAP and StO2 values individually.

References

[1] Wong FY *et al*. *Intensive Care Med*. **35**, 1464-1470 (2009).

[2] Derrick TR *et al*. *Med Sci Sports Exerc*. **26**, 919-28 (1994).

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Table 1. Summary of clinical validation study

Site	N° Patients	Age (years)	Gender	Surgery Type
Northwestern University, Chicago, USA	29	60.1±12.3	7 Females 22 Males	Cardiac surgery
UC Davis, Sacramento, USA	43	62.9±15.9	20 Females 23 Males	General surgery
University of Minnesota, Minneapolis, USA	67	63.1±10.1	14 Females 53 Males	Cardiac surgery
Stanford University, Stanford, USA	6	54.0±17.4	3 Females 3 Males	Surgical ICU

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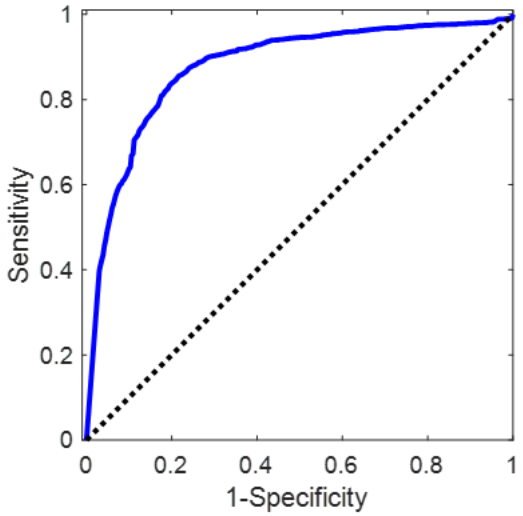

Figure 1. ROC curve for CAI

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yes

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Poster keywords

cerebral autoregulation, perfusion pressure, dynamic relationship, cerebral oxygen saturation, cerebral blood flow

92

Antimicrobial Stewardship in Mayo University Hospital: Critical Care Antimicrobial Prescribing

Mary Joyce[1,2], Dr Colm Keane[3]

[1]University Hospital Limerick, Limerick, Ireland. [2]University of Galway, Galway, Ireland. [3]Mayo University Hospital, Mayo, Ireland

Checkbox

yes

Abstract

Introduction:

According to the World Health Organisation, antimicrobial resistance is currently one of the

greatest threats facing humanity (1). Antimicrobial stewardship programs have been proven to

reduce antimicrobial resistance rates. Antimicrobial prescribing guidelines encompass a crucial

aspect of this (2). The aim of this audit is to investigate adherence to Galway Antimicrobial Prescribing Policy Guidelines (GAPP) in the Intensive Care Unit (ICU) in Mayo University Hospital, over a three-week period.

Methods:

Antimicrobials administered in the ICU were audited upon admission, day 1, day 3 and at discharge. This information was obtained from attending daily microbiology rounds and checking patient drug kardexes and ICU medication prescriptions. Intravenous to oral switching of antimicrobials was also monitored. 32 patients were admitted throughout.

Results:

Admission: 56% of patients were prescribed ≥1 antimicrobial prior to ICU admission. 75% of the total antimicrobials prescribed were appropriate according to GAPP guidelines. 89.3% of

antimicrobials were prescribed for less than or equal to the recommended duration.

Day 1: 65.6% of patients were prescribed ≥1 antimicrobial. 54.8% of antimicrobials were

prescribed appropriately, 38.7% were inappropriate and 9.7% of antimicrobials

were prescribed for conditions not within GAPP guidelines. 93.5% of antimicrobials were

prescribed for less than or equal to the recommended duration.

Day 3: 69.2% of patients were prescribed ≥1 antimicrobial, in which 66% were on a new

antimicrobial regime compared to day 1. 66.7% of antimicrobials were prescribed

appropriately. 86.7% of antimicrobials were prescribed for less than or equal to the recommended

duration.

Discharge: 34.4% of patients were on ≥1 antimicrobial. 50% of antimicrobials were

prescribed appropriately. 42.9% of antimicrobials were prescribed for less than or equal to

the recommended duration, 7.1% were prescribed for greater than recommended, and 50% had no specified duration.

In all stages there was mixed compliance with antimicrobial prescribing principles including dosage, route, frequency, duration and indication. When antimicrobials were prescribed for greater than the recommended duration, there was no specific documented reason or stop date, but durations were specified on admission and at discharge. There was intravenous to oral switching of antimicrobials in all stages.

Conclusions:

Compliance with GAPP guidelines needs to be optimised. Correct antimicrobial prescribing principles, in particular duration and documentation, must be targeted. The data acquired will be used to inform and augment antimicrobial stewardship in Mayo University Hospital.

References:

[1] www.who.int/drugresistance

[2] (EU Guidelines for the prudent use of antimicrobials in human health, 2017)

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Results:	% of patients prescribed >/=1 antimicrobial:	% of antimicrobials prescribed appropriately:	% of antimicrobials prescribed for </= recommended duration:
Admission	56%	75%	89.30%
Day 1	65.60%	54.80%	93.50%
Day 3	69.20%	66.70%	86.70%
Discharge	34.40%	50%	42.90%

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Antimicrobial use summary:	Average number of antimicrobials per patient:	3 most frequently prescribed antimicrobials:	3 most common indications for antimicrobials:
Admission	1.6	• Piperacillin / tazobactam • Co-amoxiclav • Gentamicin	• Surgical prophylaxis • Sepsis • Lower respiratory tract infection (LRTI)/query LRTI
Day 1	1.5	• Piperacillin/ tazobactam • Co-amoxiclav • Metronidazole	• Sepsis • Query LRTI • Neutropenic sepsis
Day 3	1.9	• Vancomycin • Piperacillin/ tazobactam • Metronidazole	• “As per micro” • Sepsis • “Dose adjustment”
Discharge	1.3	• Co-amoxiclav • Co-trimoxazole • Piperacillin / tazobactam	• LRTI/query LRTI • Unspecified • Sepsis

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Poster keywords

Antimicrobial resistance, Antimicrobial stewardship, Critical care, Prescribing principles, Intensive care

93

Continuous Measurement of Total Blood Hemoglobin with Tissue Oximetry

Andres Aguirre[1], Stefan Wonderen[2], Rokus van den Dool[2], Paul Benni[1], Feras Hatib[1], Alexander Vlaar[2], Zhongping Jian[1]

[1]Edwards Lifesciences, Irvine, USA. [2]Amsterdam UMC location University of Amsterdam, Amsterdam, Netherlands

Checkbox

yes

Abstract

Introduction:

One of the key challenges during surgery is to maintain adequate oxygen delivery to tissues. Anemia, a common occurrence in patients undergoing surgery, decreases the capacity of oxygen delivery to tissues and is associated with adverse outcomes [1]. Standard practice to measure blood hemoglobin levels, includes laboratory or arterial blood gas analyses. Both require blood sampling and are limited by a delay in the results. Hence, their ability to capture hemoglobin level fluctuations that could occur during rapid blood loss and volume replacement is limited. Access to continuous total blood hemoglobin levels in real-time can facilitate early recognition of anemia, preventing major adverse events.

Methods:

Based on the ForeSight tissue oximeter [2] (Edwards Lifesciences, Irvine, CA, USA) and using a reference blood hemoglobin measurement for initial calibration, an algorithm to continuously monitor the concentration of total hemoglobin in blood (NIRS_tHb) has been developed. Convenient sample data from 189 adult patients, from 3 institutions, undergoing elective cardiac surgery was used to assess the performance of the algorithm. Hemoglobin levels of blood samples from the patient's radial artery (BG_tHb) were measured using arterial blood gas CO-oximetry and used as both, reference standard for hemoglobin measurements and to calibrate the algorithm.

Results:

Statistical analysis from a total of 453 blood samples indicates that, compared to arterial blood gas CO-Oximeter, the NIRS_tHb measurement from the algorithm has a bias and precision [95% confidence interval] of 0.08 [0.02, 0.19] g/dL and 1.01 [0.93, 1.09] g/dL, respectively. The limits of agreement were -1.90 and 2.06 g/dL. The RMSE is 1.12 [0.94, 1.30] g/dL and the MAE is 0.79 [0.69, 0.91] g/dL. Error grid analysis (Figure 1) using a hemoglobin range from 6 to 10 g/dL as proposed by Morey et al [3] shows no measurement in the red zone, where measurement inaccuracy can lead to major therapeutic errors with large risks to patients.

Conclusion:

An algorithm to measure blood hemoglobin using tissue oximetry has been developed. The algorithm provides an accurate and clinically acceptable measurement of total blood hemoglobin, continuously and non-invasively, enabling effective monitoring of hemoglobin trends.

References:

[1] Hogervorst EK *et al*. J Cardiothorac Vasc Anesth. 2016;30(2):363-72.

[2] Benni PB *et al.* J Clin Monit Comput. 2018; 32:269–284.

[3] Morey TE *et al*. Anesth Analg. 2011;113(1):89-91.

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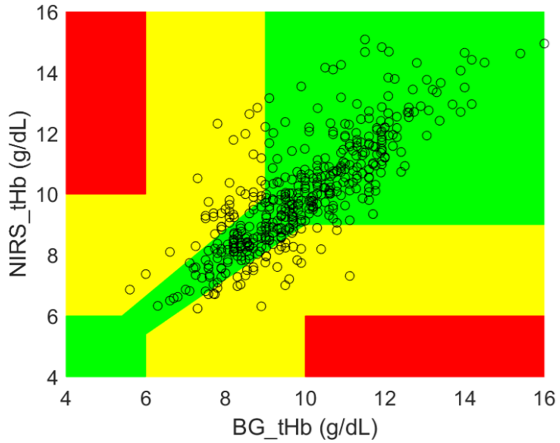

Figure 1. Error-grid analysis of NIRS based total hemoglobin (NIRS_tHb) and arterial blood gas total hemoglobin (BG_tHb). No measurements are in red zone.

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yes

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Poster keywords

total blood hemoglobin , tissue oximetry, cerebral oximetry, blood transfusion , continuous measurement

94

Optimizing Patient Handover in PACU with Standardized Checklist(2nd Cycle).

Muhammad Safullah, Isra Sayedahmed, Aidan Spring

University Hospital Limerick, Limerick, Ireland

Checkbox

yes

Abstract

- **Introduction:** Effective communication during patient handover in the Post Anesthesia Care Unit (PACU) is vital to ensure patient safety and high quality perioperative care. We initially examined the handover to nurses at University Hospital Limerick's PACU which showed an average of 57% compliance to a standardized checklist, incorporating the SBAR (Situation, Background, Assessment, and Recommendation) format. Our initial data collection highlighted significant gaps in conveying critical information such as ASA grade, flushed IV line and contact details.
- **Method:** Educational sessions and posted documents in PACU were implemented to address gaps the in previous SBAR handovers. We then employed the same standardized checklist to evaluate compliance following the intervention. The data collection was conducted by PACU nurses for all surgical procedures between February 12 to March 4 2024. Descriptive statistical methods were utilised for data analysis.
- **Results:** This audit revealed variable compliance rates across different parameters. The reported compliance rates were 86% for name, 77% for age, 82% for procedure name and 52% for theater number. The compliance rates for ASA grade, allergies, and co-morbidities were 48%, 89%, and 86%, respectively. Furthermore, the compliance rates for intra-operative issues, analgesia, antiemetic, antibiotic, IV fluid, postoperative analgesia, investigations, line flushed, and concerns ranged from 52% to 98%. The reported contact details for queries and discharge had compliance rates of 64% and 52%, respectively. On average compliance was 72.5%.
- **Conclusion:** This audit identified critical areas that require attention. There was a clear improvement in compliance after the implementation of educational posters and sessions.
- **References:** **[1]** E. Gebremedhn, "Audit on Postanaesthetic Patient Handover at the Recovery Room, Completing the Audit Cycle," Journal of Anesthesia & Critical Care, 2017. **[2]** A. Grover and E. Duggan, "Chinese Whispers in the Post Anaesthesia Care Unit (PACU)," Irish Medical Journal, 2013. **[3]** T. K. B. S. E. M. B. Bernice Redley, "Inter-professional clinical handover in post-anaesthetic

care units: tools to improve quality and safety," International Journal for Quality in Health Care,, vol. 28, no. 5, p. 573-579, October 2016. **[4]** R. T. B. B. B. W. Patricia Kitney, "Handover between anaesthetists and post-anaesthetic care unit," Journal of Perioperative Nursing, vol. 29, no. 1, pp. 29-35, 2016. **[5]** E. A. c.-s. s. "Assessment of postoperative patient handover practice and safety at post anesthesia care unit of Dilla University Referral Hospital, Ethiopia: A cross-sectional study," annals of medicine and surgary, vol. 79, 2022.

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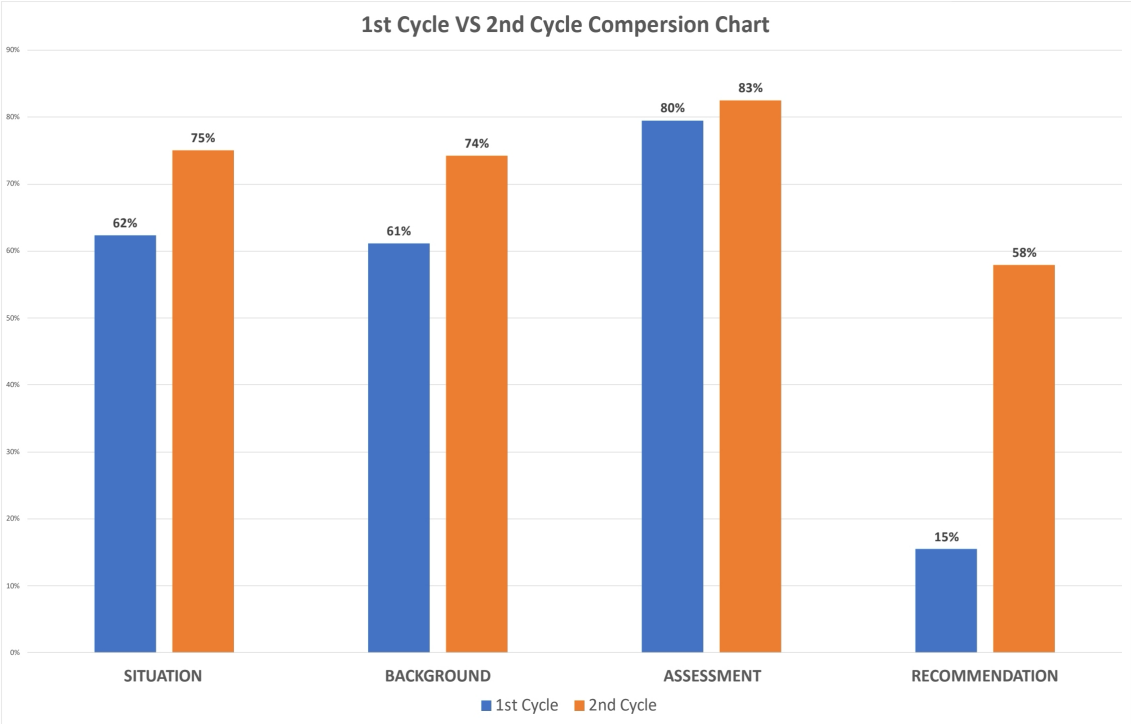

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Poster keywords

Postoperative , Patient Handover , Post anesthesia care unit, PACU, SBAR

96

An Audit of Peri-operative Emergency Equipment

Shane O' Gorman, Liam Murphy, Tara Feeley, Mary Joyce

Department of Anaesthesia, University Hospital Limerick, Limerick, Ireland

Checkbox

yes

Abstract

Introduction

A primary role of the anaesthetist to ensure the maximum degree of safety for the patient throughout the peri-operative period. It is essential the anaesthesiologist has access to the equipment and medications necessary to safely manage emergency situations that may arise, including rare anaesthesia emergencies such as malignant hyperthermia, local anaesthetic toxicity syndrome, difficult airway and total oxygen supply failure. The aim of this audit is to determine the knowledge of trainee anaesthetists regarding the location of specific emergency equipment in University Hospital Limerick operating theatres and assess does it meet required professional standards outlined by AAGBI Checking Anaesthetic Equipment 2012[1].

Methodology

A targeted questionnaire was distributed to 11 trainee anaesthetists to determine their level of knowledge regarding the location of nine sets of essential safety equipment. These pieces of equipment were selected based upon the AAGBI Checking Anaesthetic Equipment guidelines. The standard set out for this audit is 100% accuracy in the exact location of this equipment.

Results

A total of 11 trainee anaesthetists were surveyed with the targeted questionnaire, all of whom had spent a minimum of four weeks working in the Department of Anaesthesia. Of those interviewed 45% were could accurately describe the location for the dedicated malignant

hyperthermia trolley, 27% could locate the local anaesthetic toxicity box, 45% knew the location of the difficult airway trolley and 27% could describe the exact location of the resuscitation trolleys. 100% of those interviewed knew the location of a ambu ventilation bag and the location of soda lime replacements. Interestingly 100% of the cohort could accurately identify the closest coffee shop.

Conclusion

From this audit, we found that there was a significant knowledge deficit with regards to the location of safety equipment less frequently used in the perioperative period such as bundles required for malignant hyperthermia, local anaesthetic toxicity and resuscitation. In contrast, a higher level of knowledge was reported regarding more frequently used or readily available equipment such as Ambu bags and soda lime. To ameliorate the knowledge deficits, an education session was organized during dedicated teaching time. We will re-audit to ensure trainees reach the accepted professional standard outlined previously. Re-audit results will be included in the final presentation.

References

1. The Association of Anaesthetists of Great Britain. Checking Anaesthetic Equipment 2012 AAGBI SAFETY GUIDELINE. Checking Anaesthetic Equipment 2012 [Internet]. 2012 Jun;67. Available from: https://www.aagbi.org/sites/default/files/checking_anaesthetic_equipment_2012.pdf

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Poster keywords

Audit, Peri-operative, Emergency Equipment, Location Assessment

97

Anaesthetic Management of ALCAPA Repair

William Lehane, Catalin Iulian Efrimescu, Lars Nolke, Georgina Flood

Mater Misericordiae University Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Intoduction

Anomalous origin of the left main coronary artery from the pulmonary artery (ALCAPA) is a congenital heart disorder in which the left coronary artery arises from the pulmonary artery instead of the Aorta. This anomaly can lead to coronary steal, in which the ventricles are perfused with deoxygenated blood, causing myocardial ischaemia.[1] The vast majority of these cases present in EALY childhood, with a 90% mortality in untreated patients.[2] However, in very rare instances, these cases last into adulthood. The definitive treatment for this condition is surgical intervention.

Case presentation

This is the case of a 29 year old female with a first presentation of ALCAPA. Relevant background history includes Trisomy 14, DiGeorge Syndrome and Pierre Robin Syndrome causing significant functional and intellectual disability. Her ALCAPA was discovered post out of hospital cardiac arrest, when she was out walking for a school event. She was resuscitated with bystander CPR and 1 shock of the defibrillator, and recovered in ICU. An echocardiogram and MRI heart suggested reduced left ventricular function, and follow-up CT coronary angiogram confirmed the presence of ALCAPA. She had a surgical repair of her ALCAPA, and has made a good recovery.

Discussion

While ALCAPA is a congenital abnormality which is mostly found in infancy, cases exist where it remains undiscovered into adulthood. These presentations present as arrhythmias and ventricular dysfunction which can be catastrophic. In this case, it was likely that a rise of functional demand above baseline, given her syndromic background, led to presentation by way of ischaemia and VF arrest. This case represents unique anaesthetic challenges, including meticulous pre-operative optimisation with multi-modal investigation techniques,

Multi-modal investigation techniques were required for diagnosis, as well as pre-operative optimisation and post-operative follow-up. This case demonstrates the unique anaesthetic techniques required to ensure good outcomes of surgical repair, such as avoiding coronary steal by not giving additional oxygen during induction.

Conclusion

While most cases of ALCAPA present in childhood, a variety of factors caused a delayed presentation in this patient. This lead to some interesting anaesthetic considerations when preparing for surgical correction, particularly given the rare nature of this case.

References:

1. Bland EF, White PD, Garland J. Congenital anomalies of the coronary arteries: report of an unusual case associated with cardiac hypertrophy. American Heart Journal. 1933;8(6):787-801.
2. Peña E, Nguyen ET, Merchant N, Dennie C. ALCAPA syndrome: not just a pediatric disease. Radiographics.2009;29(2):553-65.

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Poster keywords

Cardiac, Congenital, TOE, CTCA, Counterintuitive Anaesthesia

98

How ART one supposed to know? A service evaluation of correct labelling of arterial lines within an Intensive Care setting.

Pádraig Gardiner, Catriona Kelly

Beaumont Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Title: How ART one supposed to know? A service evaluation of correct labelling of arterial lines within an Intensive Care setting.

Dr. Pádraig Gardiner[1], Dr. Catriona Kelly[1].

[1] Department of Anaesthesia, Beaumont Hospital, Dublin, Ireland.

Introduction: Arterial lines are employed for haemodynamic monitoring and frequent blood sampling in an ICU setting. Failure to label arterial lines correctly can lead to complications such as inadvertent intra-arterial drug administration and inaccurate blood sampling. The latter of these complications has been associated severe patient morbidity and mortality resulting from neuroglycopenic brain injury. Simple methods such as a colour identifying sticker can be used to correctly identify lines and prevent complications associated with their use. We seek to evaluate the consistency of their use within our department.

Methods: The arterial lines of 50 consecutive patients within the intensive care unit of our institution were reviewed prospectively. Each line was checked for the presence of absence of a colour identifying sticker within a stipulated distance from the line's insertion point.

Results: Pending.

Conclusions: Pending.

References:

1. Membership of the Working Party: TE Woodcock,, Cook TM, Gupta KJ, Hartle A. Arterial line blood sampling: preventing hypoglycaemic brain injury 2014: the Association of Anaesthetists of Great Britain and Ireland. Anaesthesia. 2014 Apr;69(4):380-5.
2. Sinha S, Jayaram R, Hargreaves CG. Fatal neuroglycopaenia after accidental use of a glucose 5% solution in a peripheral arterial cannula flush system. Anaesthesia. 2007 Jun;62(6):615-20.

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99

Documentation of markers of the potentially difficult airway in pre-operative assessment records.

Padraig Gardiner, Edel Duggan

Beaumont Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Title: Documentation of markers of the potentially difficult airway in pre-operative assessment records.

Pádraig Gardiner[1], Edel Duggan[1].

[1.] Department of Anaesthesia, Beaumont Hospital, Dublin, Ireland.

Introduction: Failure to identify and predict potential difficulties in airway management and to incorporate these into a tailored management plan can result in catastrophic patient outcomes. As such a comprehensive airway assessment is integral for any patient in whom management of their airway may be undertaken. Whilst this is undertaken prior to the commencement of anaesthesia in preoperative assessment and on day of surgery, there are interindividual differences in recording documentation of assessments. We sought to investigate current practices surrounding the documentation of markers of the potentially difficult airway within our department.

Methods: The anaesthetics records of 50 consecutive patients were retrospectively analysed for documentation of markers of potentially difficult airway which included i) Mallampati Score ii) thyromental distance iii) head and neck movement iv) BMI v) prominent incisors vi) upper lip bite test (ULBT) and vii) inter-incisor gap. Information was gathered from both pre-operative assessment clinic reviews and from anaesthetics charts.

Results: Pending

Conclusions: Pending

References:

1. Apfelbaum JL, Hagberg CA, Connis RT, Abdelmalak BB, Agarkar M, Dutton RP, Fiadjoe JE, Greif R, Klock Jr PA, Mercier D, Myatra SN. 2022 American Society of Anesthesiologists practice guidelines for management of the difficult airway. Anesthesiology. 2022 Jan 1;136(1):31-81.
2. Frerk C, Mitchell VS, McNarry AF, Mendonca C, Bhagrath R, Patel A, O'Sullivan EP, Woodall NM, Ahmad I. Difficult Airway Society 2015 guidelines for management of unanticipated difficult intubation in adults. BJA: British Journal of Anaesthesia. 2015 Dec 1;115(6):827-48.

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DATs very important: Anaesthesia NCHD awareness of the location and contents of difficult airway trolleys within a busy tertiary centre.

Padraig Gardiner, Edel Duggan

Beaumont Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Title: DATs very important: Anaesthesia NCHD awareness of the location and contents of difficult airway trolleys within a busy tertiary centre.

Pádraig Gardiner[1], Edel Duggan[1].

[1] Department of Anaesthesia, Beaumont Hospital, Dublin, Ireland.

Introduction: Societal guidelines stipulate that suitably stocked difficult airway trolleys (DATs) should be available in areas of the hospital where anaesthesia and airway management is conducted. These trolleys should be uniformly stocked in accordance with the Difficult Airway Society (DAS) guidance to ensure that, in the event that an anaesthetist should find themselves encountering a difficult airway, they will know what equipment is available to them. As such we seek to identify the current level of knowledge amongst our department's NCHDs as to the contents and location of the DATs within our hospital.

Methods: We conducted a departmental survey which looked at establishing the current level of knowledge surrounding the location and contents of our difficult airway trolleys. The survey was anonymous and solely amongst the NCHD cohort.

Results: Pending.

Conclusions: Pending.

References:

1. Frerk C, Mitchell VS, McNarry AF, Mendonca C, Bhagrath R, Patel A, O'Sullivan EP, Woodall NM, Ahmad I. Difficult Airway Society 2015 guidelines for management of unanticipated difficult intubation in adults. BJA: British Journal of Anaesthesia. 2015 Dec 1;115(6):827-48.
2. Cook TM, Woodall N, Frerk CO, Fourth National Audit Project. 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. Part 1: anaesthesia. British journal of anaesthesia. 2011 May 1;106(5):617-31.

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101

Enhancing Perioperative Temperature Management: A Quality Improvement Initiative at Tallaght University Hospital (TUH)

Emma Garry, Jamie Rice, Clare O'Connor

Tallaght University Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Introduction:

Inadvertent perioperative hypothermia (IPH) is a common, preventable complication of anaesthesia and surgery, associated with adverse outcomes. These include surgical site infections, prolonged hospital stays, and higher mortality rates 1 . Current guidelines by NICE 2 and the American Society of Anesthesiologists 3 recommend maintaining perioperative normothermia through vigilant temperature monitoring and the utilisation of active warming strategies. This project aimed to utilise QI methodology to improve adherence to temperature monitoring and hypothermia prevention strategies and therefore reduce IPH incidence at TUH.

Methods:

Model for Improvement was the QI methodology used. Pre-intervention data was collected from 105 patients undergoing elective surgery over a 6-week period. The outcome measure selected was the patient's temperature on arrival in the recovery room postoperatively. Process measures included whether temperature was measured intraoperatively and what hypothermia prevention strategies were implemented. After a review of the baseline audit, 3 change idea strategies were selected and implemented through Plan-Do-Study-Act cycles. These included educational sessions and the production of IPH awareness posters. Re- audits were performed frequently.

Results:

Pre-intervention data revealed an IPH incidence of 36%. Post- intervention, the incidence reduced to 35%. The interventions also significantly increased rates of intraoperative temperature measurement and the rates of warming device usage also increased.

Conclusion:

Although the interventions did not substantially reduce IPH rates, they did improve rates of temperature monitoring and utilisation of warming devices, emphasising the importance of continuous education and practice reinforcement. One barrier to effective IPH management identified, was that there was an insufficient number of forced air warmers to facilitate prewarming. There was also difficulty in obtaining intraoperative temperature data from the electronic patient record (EPR), which has been fed back to the EPR company. Future change interventions planned include the rolling out of a prewarming protocol and the completion of an IPH prevention guideline. These interventions will hopefully complement the work of this QI project and further reduce rates of IPH in TUH.

References:

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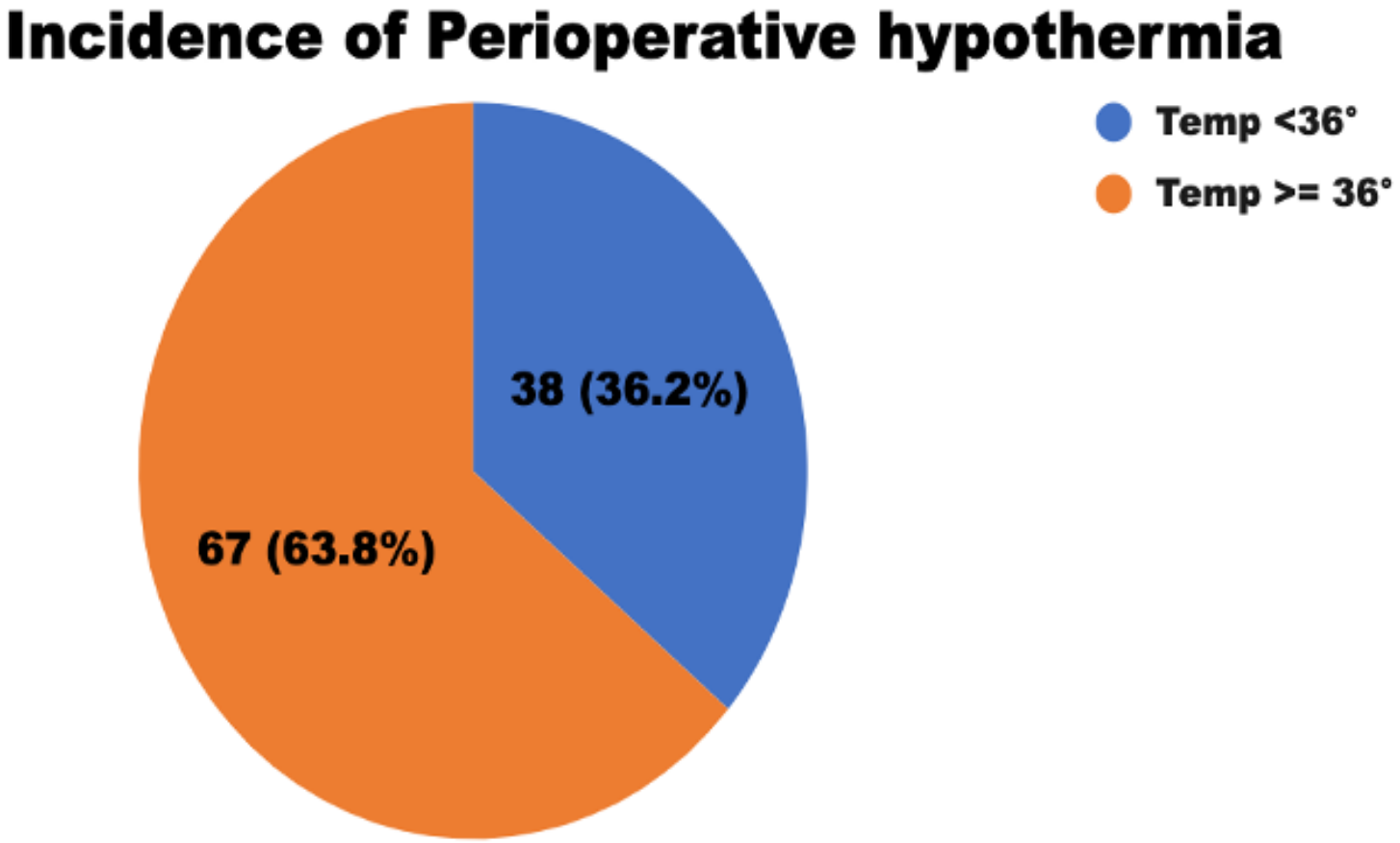

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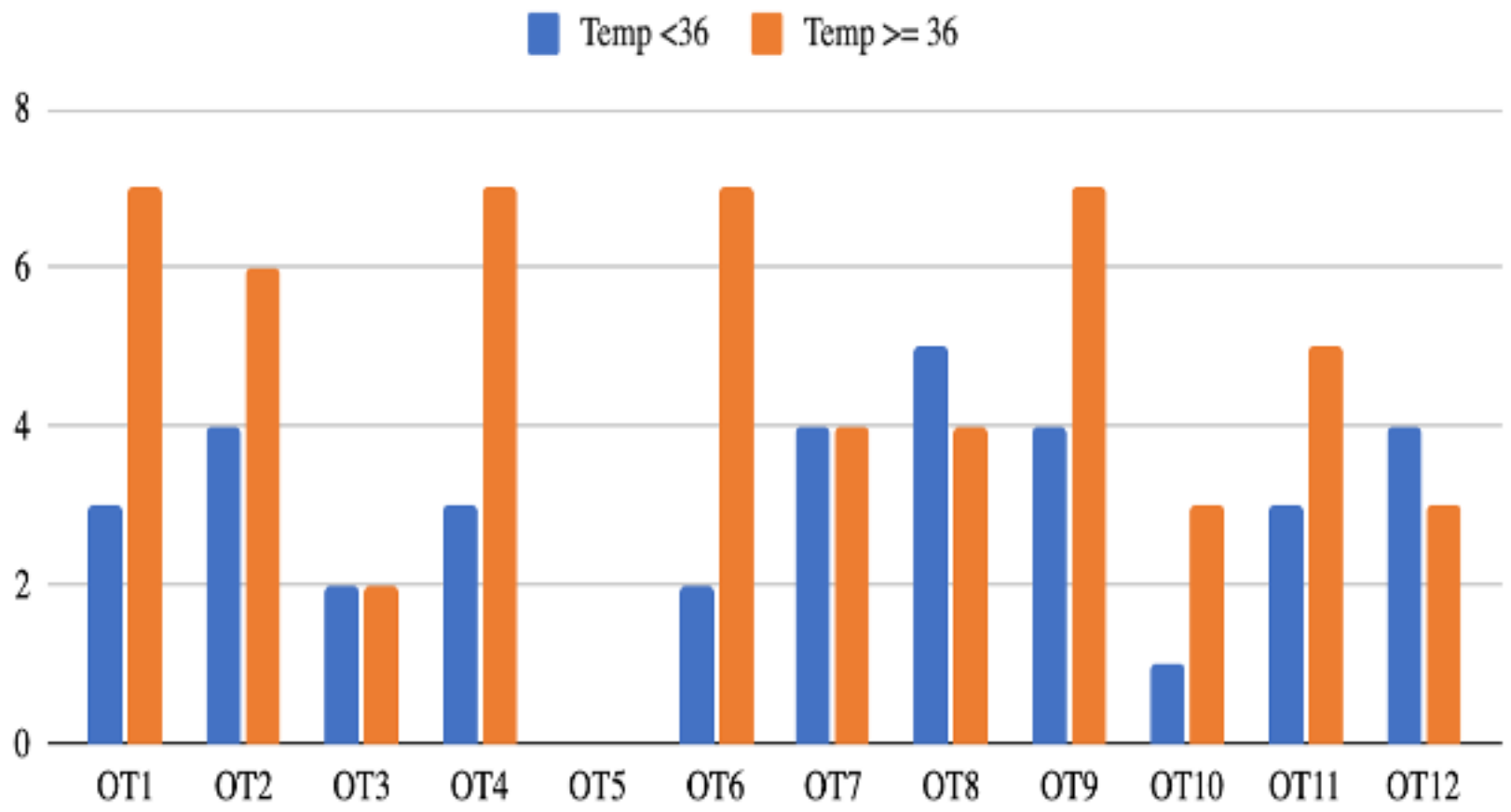

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Poster keywords

Inadvertent perioperative hypothermia, quality improvement, hypothermia, warming

102

The RVCO Algorithm – Calculating Cardiac Output from the Right Ventricular Pressure Waveform

Cristhian Potes[1], Kevin Moses[1], Feras Hatib[1], Andre Denault[2], Etienne Couture[3], Tjorvi Perry[4], Jonathan Leff[5], Paul Heerdt[6], Peiman Lahsaei[7], Jennifer Cutler[8], Olaf Mercier[9], Lachlan Miles[10], Daniel Lopez[11]

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Checkbox

yes

Abstract

Title: The RVCO Algorithm – Calculating Cardiac Output from the Right Ventricular Pressure Waveform

Introduction: The Right-Ventricular Cardiac Output (RVCO) algorithm is a pressure-based cardiac output algorithm in which cardiac output (CO) is continuously calculated using the right ventricular pressure (RVP) waveform measured from the right ventricular port of the Swan-Ganz IQ catheter.

Methods: The RVCO algorithm analyzes the pressure waveform at 10-second time intervals using a sampling rate of 100 Hz to calculate RVCO and RVP features. The core of the RVCO algorithm is the transformation of the RVP waveform into a pulmonary artery (PA) flow waveform based on the physiological relationship between flow and pressure in the pulmonary cardiovascular system. This transformation is performed using a deep learning model that was first trained on porcine animal models to learn the basic physiological relationship between the pressure in the right ventricle and the flow in the PA measured with ultrasonic flow probes placed around the PA. The deep learning model was then adjusted through transfer learning on patients with CO measured using intermittent thermodilution CO (ICO) with the Swan-Ganz catheter. The RVP waveform is the input of the deep learning model to transform the pressure waveform into PA blood flow, which is then filtered and integrated to calculate right ventricular CO. In addition to the deep learning model, the RVCO algorithm uses a second model that captures the relative

change in CO. The RVP features are inputs to a machine learning model to calculate relative changes in CO. The outputs of both models are then fused using a Kalman filter to calculate and display the final CO. The deep learning and machine learning models were trained using a large and geographically diverse dataset (400 patients and 943 ICOs), including a wide range of cardiac outputs across cardiothoracic, liver transplant, chronic thromboembolic pulmonary hypertensive, and right heart catheterization (RHC) patients.

Results: The RVCO algorithm was validated on an independent dataset that includes 370 patients and 1,143 ICOs from multiple geographically diverse sites within the United States, Europe, Canada, and Australia. The performance testing compares the cardiac output from the RVCO algorithm with the reference gold standard ICO. The Bland-Altman results, accounted for multiple measurements per patient, show a bias of 0.18 Lpm with a percent precision of 21.6 % and concordance of 86.1%.

Conclusion: These results demonstrate that continuous cardiac output can be accurately calculated using the RVP waveform.

Reference(s)

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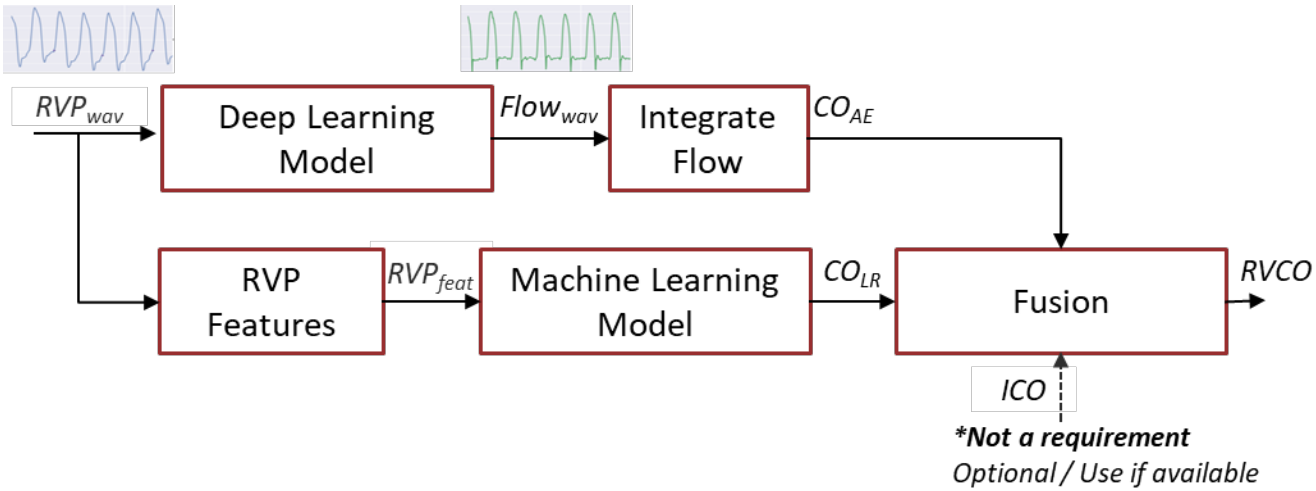

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Analysis	# Patients	# ICOs	Percent Precision (%)	Bias (Lpm)	Grid A (% samples)	Grid B (% samples)	Concordance (%)
With ICO	265	1,143	18.7	0.22	77.2	96.5	89.1
Without ICO	370	1,558	21.6	0.18	72.8	93.9	86.1

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Poster keywords

cardiac output, right ventricular pressure, deep learning, pulmonary artery flow, Swan Ganz catheter

103

Global Hypoperfusion Index (GHI) Algorithm: Predicting future global hypoperfusion using the Swan Ganz catheter.

Kevin Moses[1], Cristhian Potes[1], Feras Hatib[1], David Berger[2], Juan Pedro Macias[3], William Hand[4], Jukka Takala[5]

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Checkbox

yes

Abstract

Introduction

SvO2 has been shown to have significant value as a prognostic tool. Holm et al., reported ICU patients with an SvO2 less than 60% had higher 30-day mortality, lower 5-year survival, and higher incidence of perioperative myocardial infarction, renal failure, and stroke[1]. Protocolized care using SvO2 was also found to improve outcomes in cardiac surgery patients; patients had shortened length of hospital stay and reduced organ dysfunction when compared to those patients receiving standard clinical care[2]. Given the value of SvO2, an algorithm was built for prediction of global hypoperfusion.

Methods

The algorithm contains a logistic regression model that utilizes features derived from the patient's SvO2 and cardiac output (CO) for prediction of global hypoperfusion. The model was trained on data from 510 ICU patients. The positive labelled data was the 30 minutes of data preceding a global hypoperfusion event, defined as where SvO2 <= 60% for 1 minute, and negative labelled data was all other data where SvO2 > 60%.

The validation dataset for the algorithm contains data from 729 patients collected from 14 different clinical sites.

Results

To evaluate the predictive capability of the algorithm the sensitivity, specificity, and ROC was calculated on the 30-minute period of data preceding all global hypoperfusion events in the validation dataset. The performance is split in 5-minute predictive windows and is shown Table 1.

To compare the GHI algorithm to a clinically relevant model, the performance of only using SvO2 was calculated at the prediction window of 10 to 15 minutes. These models reflect the current clinical standard of an alarm based on SvO2. The results of this analysis are shown in Table 2.

An example of the GHI algorithm's output is shown in Figure 1.

Conclusion

The GHI algorithm accurately predicts global hypoperfusion 10 to 15 minutes in advance with a sensitivity of 74.2%, specificity 93.4%, and ROCAUC of 0.93. Across all baseline SvO2 models the GHI algorithm had a superior ROCAUC. Given its performance, the GHI algorithm provides clinically valuable information on the prediction of global hypoperfusion.

Reference(s)

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Prediction Window (Minutes)	Sensitivity (%)	Specificity (%)	ROCAUC
0 – 5	99.1	93.4	0.97
5 – 10	81.0	93.4	0.94
10 – 15	74.2	93.4	0.93
15 – 20	68.9	93.4	0.92
20 – 25	69.0	93.4	0.91
25 - 30	68.4	93.4	0.90

Table 1. Sensitivity, Specificity, and ROCAUC for the GHI algorithm when using a threshold of 75.

SvO2 Threshold	Sensitivity (%)	Specificity (%)	ROCAUC
61	36.3	96.7	0.57
62	48.7	92.5	0.62
63	59.0	88.3	0.68
64	69.1	84.0	0.71
65	76.4	80.5	0.74
66	81.8	77.2	0.75
67	87.1	74.6	0.76
68	89.7	72.4	0.76
69	92.2	70.4	0.75
70	94.3	68.6	0.74

Table 2. Performance of thresholding SvO2 at the 10 - 15 minute prediction window.

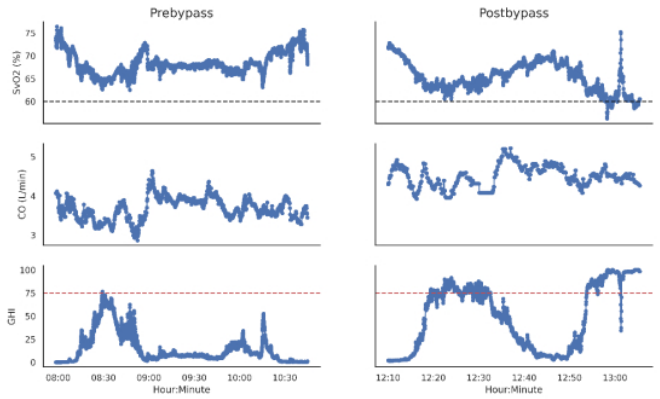

Figure 1. Example of the GHI algorithm on a cardiac surgery patient in the OR.

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Poster keywords

Predictive model, Hypoperfusion, Machine Learning, Swan Ganz, SvO2

105

An audit of pre-operative fasting times in a Model 4 Irish Hospital

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Department of Anaesthesia, University Hospital Galway, Galway, Ireland

Checkbox

yes

Abstract

Introduction:

Pre-operative fasting is essential for minimising pulmonary aspiration risk during anaesthesia for both elective and emergency surgery. This must be balanced against the negative effects of excessive fasting, which include patient discomfort, risk of dehydration and increased post-operative nausea and vomiting[1]. International guidelines, including those from the American Society of Anaesthesiologists (ASA) and the European Society of Anaesthesiology and Intensive Care (ESAIC), recommend fasting durations of 6 hours for solid foods, 4 hours for breast milk, and 2 hours for clear fluids[2]. Patients and healthcare providers may lack awareness of specific fasting durations.

Objective:

The aim of this study was to assess the adherence to ESAIC-recommended fasting guidelines in patients undergoing surgery at Galway University Hospital.

Methods:

Data were collected via patient interview over a two-week period in August 2024. Patients undergoing both elective general surgery and emergency orthopaedic trauma surgery were included in the study.

Results

50 patients were interviewed (25 male, 25 female. 29 elective, 21 emergency).

The mean fasting time for solids and liquids for both elective general surgery and orthopaedic trauma surgery are displayed in table 1. Figure 1 and 2 demonstrates the range of fasting times for both solids and liquids for patients undergoing elective and trauma surgery respectively.

	Elective General Surgery	**Orthopaedic Trauma**
Solids – mean fasting time	15.44 hours	13.6 hours
Liquids – mean fasting time	12.4 hours	12.8 hours

Table 1: Mean fasting times for solids and liquids for both elective general surgery and orthopaedic trauma surgery

Only 10% of patients knew the correct fasting times. Of the elective patients, 69% (20/29) patients were sent a letter informing them of recommended fasting times. Others were informed by nursing or medical staff to 'fast from midnight'.

Of the orthopaedic trauma patients, 100% received fasting instructions from nursing or medical staff to 'fast from midnight'. 28.5% (2/7) of elective patients and 9.5% (2/21) of trauma patients were prescribed IV fluids.

Conclusion

This audit highlights the need to address prolonged fasting times among surgical patients.

Recommendations include:

- Clear pre-operative instructions to inform patients about appropriate fasting times.
- Ensuring that all healthcare providers are well-informed about fasting guidelines and communicate these effectively to patients.
- Prescription of IV fluids where appropriate.
- Ongoing monitoring of fasting practices.
- Segregation of the trauma orthopaedic list into morning and afternoon lists, acting to limit excessive fasting times for patients on the afternoon list.
- This study supports the ongoing implementation of 'Sip-til-Send' policy.

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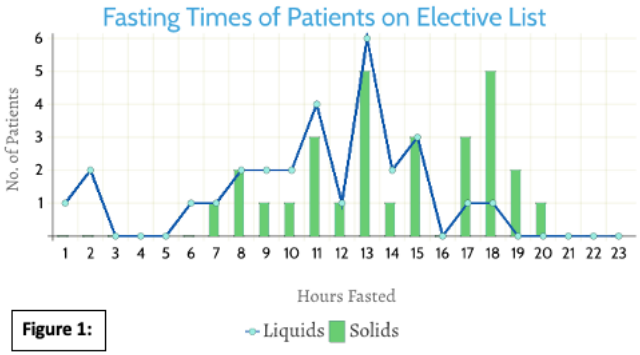

Figure 1:

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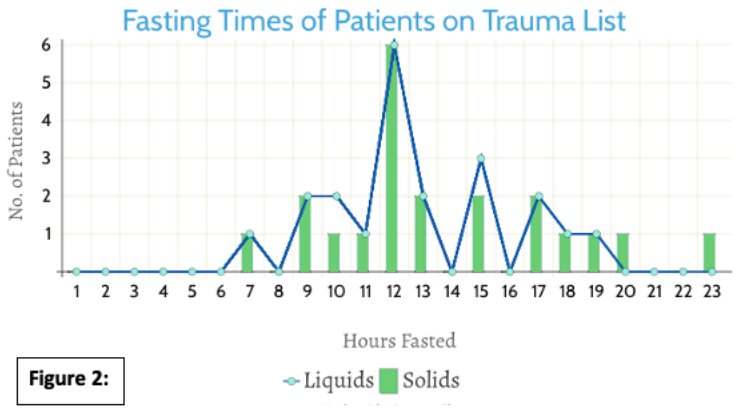

Figure 2:

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Poster keywords

fasting , patient safety, Pre-operative management

106

Occupancy of Recovery Beds

Jakub Hlasny[1], Nabiha Ali[2], Noria Alabdulbaaqi[1]

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Checkbox

yes

Abstract

A recovery room, sometimes also referred to as the PACU (post anaesthesia care unit) is a part of the hospital, situated close to the operating theatre where patients are brought for close monitoring after procedures carried out under anaesthesia. In a recovery room nurses will closely observe and monitor the patient as they overcome the effects of anaesthesia and are fit to go back to a normal ward.

As per the Royal College of Anaesthetists Guidelines for the provision of Postoperative Care 2019 'it is recommended that a minimum of two recovery beds per operating theatre be provided,

depending on local knowledge of the clinical specialties and the number of patients."

At present we only have a total of four recovery beds for four theatres, meaning one recovery bed per theatre. Due to inadequate recovery beds theatre had to be paused in order to recover patients in theatre.

The data was collected from January 2023 until June 2023. In this audit we asked the nurses to document the total number of recovery beds occupied every 30 minutes from 10:30 am until 17:30 pm every Monday to Friday.

This data was put into an excel sheet and analysed. If no record was made or number is illegible N/A is recorded. If no beds are occupied, the number zero is recorded. The data showed of times the number of occupied beds was four, meaning the recovery was at full capacity. We suggest an increase in the number of recovery beds.

Dr. Jakub Hlasny, Dr. Nabiha Ali, Dr. Noria Alabdulbaaqi, 2024.

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Thu	26-Jan	0	1	1	1	1	1	1	0	0	1	1	2	2	3	2
Fri	27-Jan	1	2	2	2	2	2	1	0	3	3	2	2	3	2	2
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Mon	06-Feb	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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Wed	08-Feb	3	3	4	3	4	2	3	4	4	3	4	1	1	0	1
Thu	09-Feb	0	0	0	0	0	1	1	3	3	1	2	3	3	4	4
Fri	10-Feb	1	1	1	2	3	2	4	2	2	2	0	1	2	3	3
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Fri	17-Feb	1	2	2	3	4	3	2	1	2	2	2	0	1	2	2
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Tue	21-Feb	1	1	0	1	1	1	2	2	1	1	1	2	1	2	1
Wed	22-Feb	1	1	1	1	N/A	1	2	1	1	1	2	1	1	2	3
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Fri	24-Feb	1	1	3	3	4	4	4	4	4	4	3	4	4	3	2
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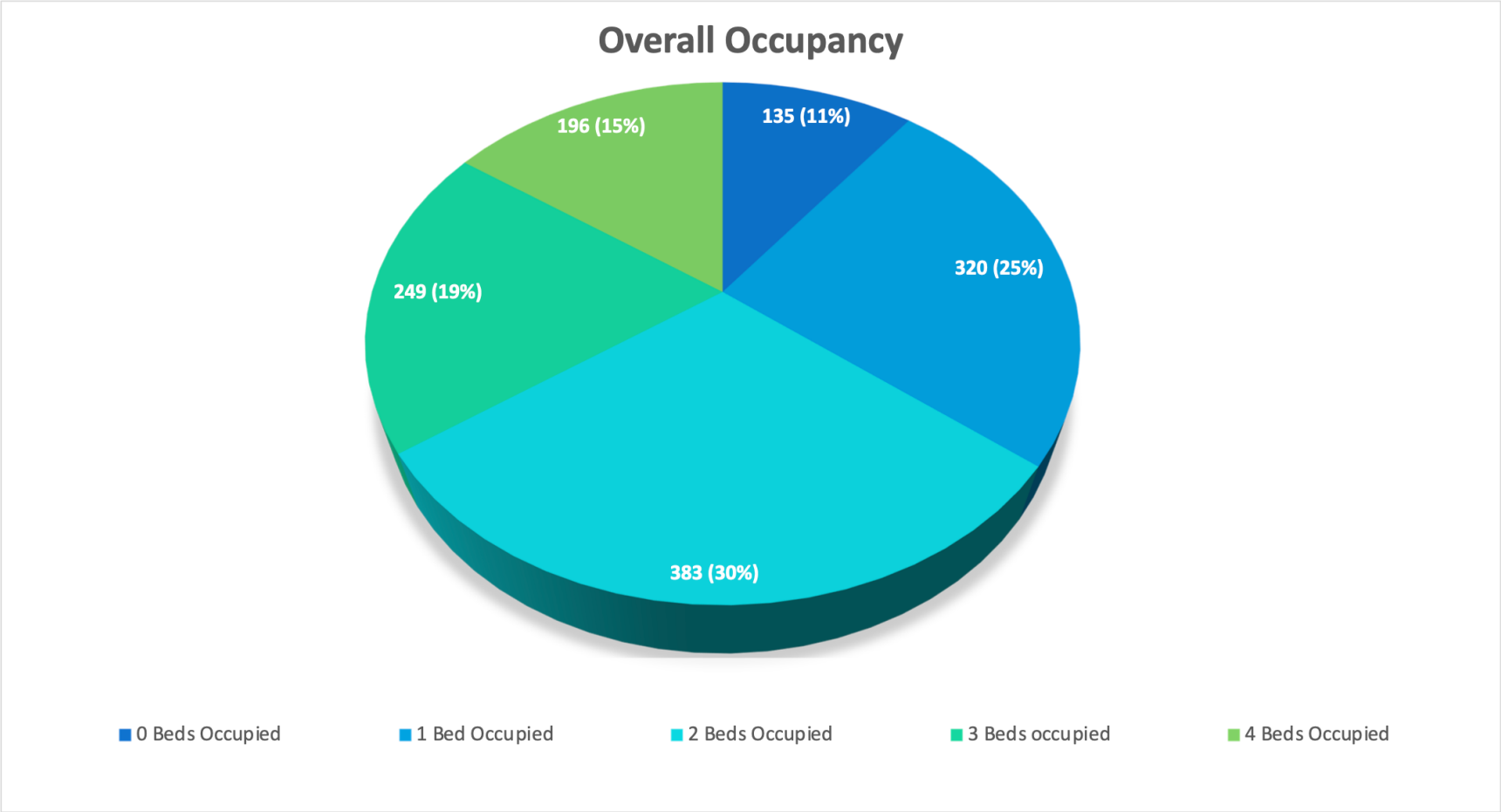

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Sciatic nerve catheters as an analgesic method for refractory critical limb ischaemic pain: a case report

Dr Saoirse Ni Mhaoilriada, Dr Niamh Conlan

St Vincents University Hospital, Dublin, Ireland

Checkbox

yes

Abstract

Introduction

With a prevalence of approximately 3.4%, peripheral arterial disease (PAD) represents a significant burden of disease that is currently managed in hospital (1). Critical limb ischaemia is characterised by severe and chronic ischaemic rest pain, ulceration or gangrene and can result in necessitation of amputation of the affected limb (2).

Method

A retrospective case report was performed to facilitate discussion surrounding an alternative method of analgesia for this cohort, namely via continuous sciatic nerve block catheter.

Case report

A 58-year-old male was transferred to our Vascular Surgery department with a first presentation of PVD with ischaemic rest pain in his left foot and an infected hallux. He had severe uncontrolled pain despite Paracetamol 1g QDS, Lidocaine 5% patch, Palexia SR 50mg BD, Lyrica 50mg TDS, Palexia SR 50mg TDS, ketamine100mg + dexamethasone 0.5mg over 24 hrs. He was scheduled for below knee amputation secondary to severe uncontrolled pain.

A sciatic nerve catheter (sonolong curl echo) was placed under ultrasound guidance and an infusion of 0.15% bupivacaine was commenced at 8mls/hour. He experienced immediate resolution of his pain, and the infusion was continued for 10 days. He was delisted for amputation and had a lower limb angiogram and subsequent successful angioplasty. His sciatic catheter was removed 2 days after his angioplasty and he was discharged home on no analgesics.

14 months later he represented with recurrent pain in his left leg. Repeat angiogram showed an occluded stent. He had a second sciatic catheter placed to control the ischemic pain which bridged him to a successful fem-pop bypass, and he was subsequently discharged home well.

Discussion

This case report is representative of several of the key benefits we have observed from the use of continuous sciatic nerve block in patients with PVD and critical limb ischaemia.

1. Alleviating acute severe ischaemic pain resistant to opioids or in patients who are intolerant of opioid side effects

1. Improving target site for revascularization
2. Breaking the cycle of opioid induced hyperalgesia

Conclusion

The above case, which yielded an excellent outcome by bridging a patient successfully to bypass and avoiding an amputation, outlines some of the benefits of utilising continuous sciatic nerve catheters in patients with rest pain from critical limb ischaemia.

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Poster keywords

regional, casereport, pain, analgesia, anatomy

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Audit of Post-Surgical Admissions to Intensive Care Unit (ICU)

Chad Lim, Francisca de Sousa, Darragh Enright, Divya Sunny

Galway University Hospitals, Galway, Ireland

Checkbox

yes

Abstract

Background: Post-surgical admissions to the Intensive Care Unit (ICU) are critical for monitoring and managing patients who have undergone major surgical procedures. This audit aims to evaluate the patterns, outcomes, and factors associated with post-surgery ICU admissions over a one-year period.

Methods: This audit was conducted at a 521-bedded Model 4 Hospital. Data was retrieved electronic records of surgical admissions to the ICU between July 1, 2023, and July 1, 2024. The anonymised dataset includes patient demographics, admission details, surgical procedures, ICU stay duration, and outcomes. Key variables analysed include the type of surgery (elective vs. emergency), duration of ICU stay, readmission rates, and patient outcomes.

Results:

- **Total Admissions: The audit reviewed a total of 242 ICU admissions post-surgery.**
- **Demographics: The average age of patients was 62 years, with a male predominance (63%).**
- **Type of Surgery: 58.7% of the admissions were due to emergency surgeries, while 33.5% were elective. 7.8% were re-admissions (within 30 days).**
- **Duration of ICU Stay: The average duration of ICU stay was 5.2 days. Emergency surgeries had a longer average ICU stay (6.1 days) compared to elective surgeries (4.1 days).**
- **Readmissions: 15% of patients were readmitted to the ICU within 30 days of discharge.**

- **Outcomes: The overall mortality rate was 7.8%. Patients admitted for emergency surgeries had a higher mortality rate (12%) compared to those admitted for elective surgeries (2.5%).**

Conclusion: This audit highlights the significant burden of emergency surgeries on ICU resources and patient outcomes. The higher mortality and readmission rates among emergency surgery patients underscore the need for enhanced perioperative care and monitoring. Future audits should focus on identifying specific risk factors and implementing targeted interventions to improve patient outcomes post-surgery.

Keywords: Post-surgery ICU admissions, emergency surgery, elective surgery, ICU stay duration, readmission rates, patient outcomes.

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Post-surgery ICU admissions, Emergency surgery, ICU , ICU re-admission, Elective surgery