Wessex Anaesthetists in Training Abstracts 2022

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Cardiopulmonary Exercise Testing (CPET): Does Onward Referral to Cardiology Impact Major Surgery?

Amy Cash, William Smith and James Craig

Introduction

Patients at Royal Bournemouth Hospital undergoing CPET pre-operatively may be referred to cardiology for further investigations. This audit looks at CPET patients referred to cardiology and whether surgery is delayed or cancelled because of referral. It also identifies the types of interventions that patients being referred to cardiology receive. There is a sub-group analyses on cancer and non-cancer operations.

Methods

The notes of 307 patients who had CPET between 2016 and 2021 were reviewed for evidence that CPET had prompted onward referral to cardiology.
45 patients identified. We looked at: surgical procedure, indications for referral, cardiology investigations and interventions and delay to surgery or cancellation as a result of the CPET test.

Results

- 18 were having cancer operations vs 27 non-cancer operations
- Main referral reason to cardiology was ECG changes during CPET, followed by a low VO2 or AT
- Most patients referred to cardiology had an ECHO, angiogram, CTA or MRI
- Of the cancer operations 78% had no interventions and the non-cancer operations 48% had no interventions.

Conclusion

Reviewing referral indications comparing cancer and non-cancer cohorts; the main differences were that ischaemic ECG changes were more common for non-cancer patients (63% vs 44%) and other ECG changes were more common for cancer patients (28% vs 4%). Cancer patients were more likely to have no investigations (17% vs 7%) and were less likely to have an investigation capable of identifying potential myocardial ischaemia (33% vs 52%).
Cancer operations were more likely to proceed with surgery regardless of the CPET results. None of the cancer patients had a major intervention compared to 41% of patients on non-cancer pathways.
The main recommendations are:

1) Patients who develop ischaemic ECG changes with CPET should be referred to cardiology.
2) Patients with ischaemic changes during CPET who are not re-vascularised due to the time pressures of a cancer pathway should be treated as higher risk, and low threshold for post-op HDU.
3) Patients who have other CPET indicators suggesting a cardiac problem, but with a normal ECG could bypass cardiology referral if they have a normal echo.

Prevention of accidental awareness under general anaesthesia - a regional service evaluation

Alexander I.R. Jackson, Katie Preston and the Southcoast Perioperative Audit and Research Collaboration (SPARC)

Introduction

Accidental awareness during general anaesthesia (AAGA) is a rare event with the potential to cause significant distress and long term adverse effect1. It has been the subject of a previous national audit project (NAP5) and based on this several guidelines have been produced to minimise the incidence of AAGA1. Key recommendations include using processed EEG (pEEG) when using neuromuscular blocking drugs (NMBD) with TIVA and low end-tidal MAC/AA alarms during volatile anaesthesia.2,3,4 This study aims to understand how these guidelines are being applied across Wessex.

Methods

A regional, multi-centre service evaluation was undertaken by the South- coast Perioperative Audit and Research Collaboration (SPARC). Over a 5-day period in June 2021, each operating theatre was visited once daily. Practices instigated to minimise AAGA were recorded, including anaesthetic type, alarm settings and equipment usage. We also conducted a survey of anaesthetic practitioners to understand their practice and knowledge around AAGA.

Results

Eight hospitals participated with a total of 388 theatre attendances analysed. . A wide range of anaesthetic types were observed (Volatile n=219, TIVA n=117, Regional n=33, Sedation n=9, local n=4). Processed EEG was used in 85% cases during TIVA with NMBD. During volatile anaesthesia, low MAC alarms were used in 51% cases, however, the range at individual sites varied from 97% to 0%, suggesting marked heterogeneity in practice.

Discussion

The recommendation to use pEEG monitoring when paralysing patients with TIVA has been widely adopted into regional practice: from 23% of cases in NAP5, to over 80% in this snapshot. Our regional service evaluation has demonstrated heterogeneity in practice and variability in both the attitude and adoption of measures to limit AAGA. Many of these measures could be easily addressed, therefore wide dissemination and action on these results, could reduce the risk of AAGA for patients.

References

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3.Nimmo AF, Absalom AR et al. Guidelines for the safe practice of total intravenous anaesthesia (TIVA). AAGBI, 2018.
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ARDS Audit

Razaz Elsheikh

Mechanical ventilation has been used for years to save the lives of patients. However, it has well known associated risks in Acute Respiratory Distress Syndrome (ARDS). The normal tidal volume for humans is 6 ml/kg predicted on the basis of sex and height, therefore it has been discussed that the perfect tidal volume for ventilation should also match that at 6mL/Kg of IBW as the use of higher tidal volumes have the potential to cause or aggravate lung injury.

The ARDS Network published a landmark study that looked at 861 with acute lung injury (ALI) or ARDS. Their study was stopped early, and their conclusion was "In patients with acute lung injury and the acute respiratory distress syndrome, mechanical ventilation with a lower tidal volume than is traditionally used results in decreased mortality and increases the number of days without ventilator use" (3).

In this audit, the ARDS network methodology was replicated. The ulnar length of each ventilated patient was measured and used to estimate the height from the MUAC guidelines. The Ideal Body Weight (IBW) was computed as: 50+0.91× (centimetres of height – 152.4) in males and 45.5+0.91× (centimetres of height – 152.4) in females. Using this equation, the IBW was predicted and the right tidal volume for 6mL/kg was estimated.

24 Patients were reviewed, 8 of whom were females (33%). All the females were overventilated according to their IBW tidal volume. With regards to the males (67% of the study population), just under a half (43.8%) were over-ventilated.

In conclusion, height and weight were usually estimated and therefore there was a general use of higher tidal volume strategies, however it is worse in females.

An audit presentation was carried out to highlight the issue and an update to the online patient system is in progress to improve documentation.

Audit of complications of hypertensive therapy for cerebral vasospasm following aneurysmal subarachnoid haemorrhage

TG Browning, DH Robertson, G Ambrosi, SB Lim, CA Eynon, M Cordingly

Aneurysmal Subarachnoid haemorrhage (aSAH) is a cause of significant morbidity and mortality, affecting 8 people per 100,000 per year worldwide (1)(2). Cerebral vasospasm (CV) following aSAH can lead to further morbidity and mortality. The only effective treatment is induced hypertension. This audit is a review of the complications of hypertensive therapy (HT) among patients admitted to the Wessex Neurological Centre (WNC) over a twelve-month period.

Methods

We collected retrospective data over 12 months (November 2020 to November 2021) on patients admitted to WNC with aSAH. Patients were identified using Clinical Information System records. For patients who received HT, data collection points included duration, complications and target mean arterial pressure (MAP).

Results

Of 151 patients with aSAH, 21 received HT for >24 hours. All patients received prophylactic nimodipine prior to HT and received prophylactic dose enoxaparin following securing of their aneurysm. Commonest indications for HT were new focal neurology (n=12) and a drop in Glasgow Coma Score (n=6). Five patients had a second, unsecured aneurysm. The most common rationale for continuing HT was reversible ischaemia on CT perfusion (n=6). Three patients had no documentation of the rationale for continuation of HT >24 hours. Median highest targeted MAP was 120. Commonest reason for stopping HT was a lack of MAP-dependent change in neurology (n=8). Complications of HT included cardiac ischaemia (n=5), pulmonary oedema (n=2) and ICH (n=2). Neither of the patients with ICH appeared to have bled from the secured aneurysm on review of CT. One patient developed ICH in the region of a second, unsecured aneurysm. Both patients died.

Discussion

Vasospasm is a well-recognised complication following aSAH. Our documentation of the indications for starting HT was good but for continuing HT could be improved. HT for vasospasm is not without significant risk.

References

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Clinical audit: Preoperative fascia iliaca block for fractured neck of femur

Toby Pitts-Tucker

Background

The fascia iliaca block (FIB) is a simple regional anaesthesia technique which aims to block the femoral nerve, obturator nerve and lateral cutaneous nerve of the thigh.[1] Early use of FIB in fractured NOF patients reduces pain and opioid requirements. It may also reduce the time to first mobilisation, the risk of pneumonia and total costs of analgesic regimen.[2] Consequently FIB has become the standard of care in UK emergency departments for this patient cohort.

Audit standards and design

RCEM guidelines recommend that FIB "should be available in ED as part of the pain management strategy for patients with fractured neck of femur" and that this "should be instituted as soon as possible."[3]

I undertook a clinical audit of practice at Salisbury District Hospital, looking at the rate of pre-operative FIBs for patients admitted with a fractured NOF.

Results, intervention and reaudit:

From August-October 2020, 29 out of 79 (37%) patients admitted with fractured NOF received a FIB preoperatively. Following this I delivered teaching sessions for junior doctors across the hospital and secured funding for a new FIB training model.

Reaudit from April-June 2021 showed 48 out of 69 (69.6%) patients admitted with fractured NOF received a preoperative FIB.

This audit demonstrates a significant improvement in practice due to my interventions, and sheds light on the barriers to delivering a key form of analgesia for patients admitted with this common orthopaedic presentation.

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[2] Guay J, Parker MJ, Griffiths R, Kopp S. Peripheral nerve blocks for hip fractures. Cochrane Database Syst Rev. 2017 May 11;5(5):CD001159

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Audit of specialty team documentation in GICU

A Roman, D Barry, K Nolan.

Introduction

At Southampton General Hospital in the General Intensive Care unit, there are often numerous visits by a variety of different specialist teams. Initially, the specialty note entry is a free text entry system on Metavision. The Royal College of Physicians has produced clear guidelines on information that should be present when an entry is written in medical notes.

Aims

The aim of this audit and subsequent re-audit was to assess the impact on the introduction of a structured specialty entry note.

Methods

An analysis of Speciality Notes entered for patients residing in GICU using MetaVision. 30 randomly selected patients who had a specialty review from the 340 patients who had a documented specialty review were utilised. This was then re-audited following the introduction of the structured specialty team note.

Results

A total of 109 entries were made across 30 patients in the first audit, that included 27 different specialty teams and other health care professionals. A total of 112 entries were made across 25 patients during the re-audit, that included 28 different specialty teams and other health care professional alongside 6 discussions with specialty teams. Recording of the 5 auditable parameters showed 80% of all reviews fulfilled the RCP documentation guidance compared to the 45% on first audit with the introduction of the specialty form.

Conclusion

The current system for documentation has improved when compared to prior implementation of change. Speciality teams are still not currently meeting guidelines for entry in generic medical notes; however it is improved. Further work and alterations to the documentation template may improve these audit findings and a re-audit undertaken.

Written guidance and helpline for the postoperative management of oral anticoagulation medication for day case surgery patients at Queen Alexandra Hospital

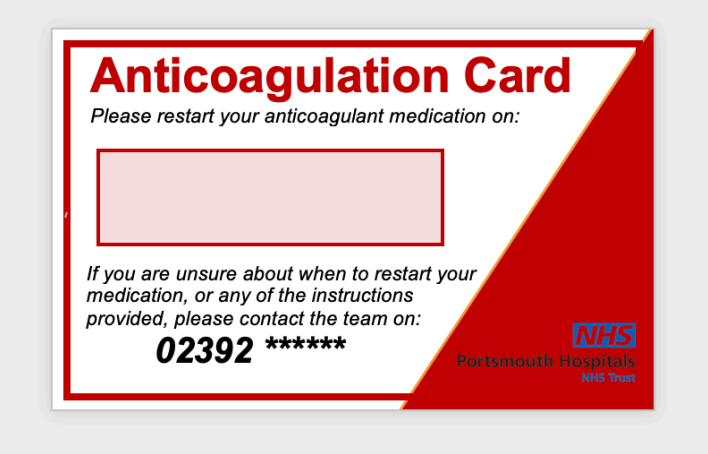
Rebecca Smart, Genevra Pillinger, Katie Pavel, Adam Edwards

The perioperative management of patients on oral anticoagulation and anti-platelet medication who are undergoing surgery is a common clinical problem. Stopping and re-starting an oral medication sounds simple enough, however, it is fraught with complexities surrounding the type of procedure, surgical preference, patients' comorbidities and thromboembolic risk during interruption of medication. The patients receive written instructions preoperatively at assessment of when to stop anticoagulation prior to surgery, but currently there is no clear system in place postoperatively.

A recent Serious Incident Requiring Investigation (SIRI) at Queen Alexandra Hospital has highlighted this issue. A patient was instructed verbally to restart their oral anticoagulation after a TURP procedure once their haematuria had resolved, however, the patient did not restart their oral medication as they felt they had ongoing haematuria and had no point of contact to clarify or discuss the matter. The patient continued to omit their anticoagulation and sadly died from the sequelae of a thromboembolic event.

Subsequently, we have decided to develop this as patient safety project, in the form of issuing patients with a card (see figure below), detailing a date of when to restart oral anticoagulation, as well as a contact number, should there be any uncertainty or concerns.

In order to audit this quality improvement measure, we are currently monitoring the calls to the helpline provided on the card. This allows us not only to observe the need for this service, but also to look for common themes and questions that may guide further improvements in the management of oral anticoagulation medication in the perioperative period.



Anaesthetic junior doctor algorithm driven rostering quality improvement project

D Barry, A Roman

Introduction

Rostering has long been known to be an important factor in junior doctor morale and wellbeing[1]. Despite mutually agreed guidelines produced by NHS Employers and British Medical Association imploring the importance of treating those on rotas as: '*individuals with lives, families and commitment outside of medicine'*; fixed rolling rotas remain the norm[2]. The aim of this quality improvement project was to trial an alternative to the current archaic system to meet the aforementioned guidelines.

Method

35 anaesthetic trainees/trust grades at a DGH, on four discrete rotas, were contacted and allowed to submit ideal leave requests for a 3-month period. 119 leave requests were submitted. A recursive greedy algorithm using a constraint programming paradigm was developed to produce an approximate globally optimal rota solution in an optimized time frame incorporating a maximal quantity of requests. A questionnaire was distributed to gather feedback on the rotas generated by the doctors involved.

Results

Four rotas were produced which incorporated 100% of leave requests. The on-call frequency for each doctor's bespoke rota line was within the range encountered on the pre-existing fixed rolling rota for the timescale. All rotas were compliant with terms and conditions set out in junior doctor contract[3]. Seven doctors completed the feedback questionnaire. 85% were very satisfied with the ability to submit leave requests and resulting incorporation into the on-call rota. 100% believed that rostering in this manner would reduce stress, improve work/life balance, improve moral and improve retention of doctors.

Conclusion

Technological solutions, such as this computational algorithm, can be employed to both improve compliance with nationally agreed guidelines and improve doctor wellbeing. Future works involving the creation of more complex rotas in a tertiary teaching hospital for both anaesthetics and ICU have already commenced involving 120 doctors and more than a thousand requests within Wessex.

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So, you want to be a fellow?

Jennifer Goddard

There are unique opportunities to work in a non-clinical fellow role within Health Education England. These roles offer trainees dedicated time to develop and enhance a wide range of skills including leadership, management and quality improvement.

My experience

I will present my experience to date as a Quality improvement fellow for the Supported Return To Training (SuppoRTT) programme. SuppoRTT is a national programme that was developed to enable trainees to have a safe and supported return to work when they have had time out of training.

I will briefly describe the application process, which gave me a good insight into what a consultant application would entail. It provided me the opportunity to answer the same white space questions that we will all need to complete one day!

Challenges

I will consider the difficulties of working within a complex organisation such as HEE, as well as the juggles of working LTFT, managing the non-clinical role, whilst maintaining my clinical skills.

It is a very different way of working to what we are used to clinically as anaesthetists:

- Working in the virtual world
- The reality of this role which involves lots of meetings!
- Peaks and troughs of a varied workload. Flurry of activity followed by the long wait for responses….and results not immediate

Outcomes

I organise and coordinate a comprehensive programme of events for returning trainees, including webinars, productivity sessions and mentor training.

I have established and coordinate a network of specialty RTT representatives within the Wessex deanery. We plan to develop further specialty RTT refresher days and events for educators.

Moving forwards, I plan to develop trust roadshows where I can educate trainers about the programme with an aim to improve awareness and engagement. I will elaborate on these outcomes.

Central line securement – what does 'four-point fixation' actually mean?

Christine Garner, Nina Sardar, Bethany Parnell, Benjamin Harris

Central venous catheter (CVC) dislodgement and accidental removal can be associated with a variety of complications[1,2]. 'Four-point fixation' is a widely used term to describe adequate securement of CVCs to surrounding skin and is a specific requirement on our local safety standard for invasive procedures (LocSSIP) checklist for CVC insertion. A variety of differing methods of securing CVCs has been observed and this led to exploration of whether there is a standardised definition of four-point fixation.

Methods

A survey was designed that showed four different images/methods of securing CVCs (see below). This was electronically distributed to staff with experience of inserting CVCs. The survey asked whether each image represented 'four-point fixation' and whether it was adequately sutured. Free-space for comments was provided.

Images
1: CVC with catheter clip, 1 suture thorough each hole on hub and clip (4 sutures)
2: CVC without catheter clip, 2 sutures through each hole on hub (4 sutures total)
3: CVC without catheter clip, 1 suture through each hole on hub (2 sutures total)
4: CVC with catheter clip, 1 suture through each hole on clip with additional suture passing through both holes on hub and clip (3 sutures total)

Results

73 responses were received. Results showed there was no unanimous response to any image (Table 1). Free space answers demonstrated a wide variety of opinions and reasoning behind different methods of securing CVCs.

Table 1:

Image	This image represents four-point fixation?	Adequately sutured?	NOT adequately sutured?
1	98%	81%	19%
2	21%	38%	62%
3	0%	21%	79%
4	3%	6%	94%

Conclusion

Our results suggest that 'four-point fixation' may not be a helpful term and free space answers suggested the focus should move away from number of fixation points and that importance should instead be placed upon optimal suture material and technique.

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Wave 2 COVID-19 data from Portsmouth RSU

Christopher O Hagan

Background

The second wave of the COVID-19 pandemic caused significant demand for beds capable of delivering enhanced respiratory support. NHS England recommended the use of CPAP for patients with COVID-19 respiratory failure, a treatment which can be offered outside of a critical care facility, and on a respiratory high care/support unit (RSU).

In contrast to a number of trusts who did not have a respiratory high care unit, Portsmouth grew its unit, and provided CPAP/NIV for patients with respiratory failure as a result of COVID-19 infection. With our intensive care facilities at 300% their normal capacity, this greatly alleviated bed pressures on critical care.

Portsmouth has a very dense population living in various levels of deprivation. Deprivation has an impact on overall health, but how one's postcode affects outcomes for people needing respiratory support, is largely unknown.

Methods

Retrospective cohort analysis of consecutive patients admitted to RSU, from 02/11/2020 to 31/01/2021. 227 patients were included in the study with 8 removed due to incomplete data, all of the patients received respiratory support in the form of CPAP/NIV. We collected multivariate data including biochemical markers, demographics, oxygenation status, co-morbidities and outcomes. Outcomes measured were: 1)Death in RSU, 2)Discharge from RSU or 3)Intubation.

To measure deprivation, we link a person's postcode to an area called an LSOA. These are small areas of similar population size, each of which has a deprivation score. This is measured using the 'index of multiple deprivation'.

We're currently analysing outcomes from the RSU in relation to these deprivation scores.

Results

A significant number of patients were discharged from RSU, without needing invasive mechanical ventilation.

A number of biochemical inflammatory marker levels strongly correlated with various outcome groups.

The analysis of deprivation scores with outcomes is not yet complete.

Conclusion

CPAP/NIV can effectively be used in an RSU during a spike of COVID-19, to minimise demand on critical care services.

Deprivation may have an impact on outcome in patients needing respiratory support related to COVID-19, the analysis of this data is ongoing.

Multiple biochemical markers may be of prognostic value in COVID-19.

Not a Waste of Time, an environmental quality improvement project on items disposed of in anaesthetic clinical waste

Katie Swalwell, Jaco De Beurs

Introduction

Annually, operating theatres produce approximately 2300kg of anaesthetic waste.[1] Waste is segregated according to exposure level with varying cost and environmental impact of disposal.[2] The initial audit aim was to review items in anaesthetic orange clinical waste bags against the local waste segregation policy at Royal Hampshire County Hospital.

Method

19.4kg of anaesthetic orange clinical waste was collected from elective theatres in June 2021. All waste items were sorted and re-weighed, as per the trust's policy, into clinical, pharmaceutical, and domestic categories. The audit results drove a trust policy change and replacement of the everyday orange clinical waste bags with cheaper, lower environmental impact "tiger" waste bags, named after their striped appearance. We delivered practical and educational interventions with a new simplified five question waste flow chart; signs on each bin and improved access to bins. We re-audited 6 months later collecting 31.7kg of tiger clinical waste bags from elective theatres in January 2022.

Results

The initial audit found only 44% of the clinical items were true clinical waste, with 33% pharmaceutical and 23% domestic materials. We re-audited 6 months later, following improvement interventions. All elective theatres were using the new tiger waste bags. 64% of the items were true clinical waste, with 28% pharmaceutical and 7% domestic items.

Discussion / Conclusion

The initial audit showed 44% of the waste items were true clinical waste. Whereas, re-audit at 6 months shows improvement with a 20-percentage point increase to 64% true clinical waste. Although improvement is still needed, this simple multi-disciplinary project has provoked lasting change on segregation of anaesthetic waste with both environmental and financial benefit to the trust.

Take Home Messages

We hope this project will provoke Wessex trainees to review what they put in clinical waste and promote the use of the tiger stream as the everyday waste bag in their department.

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Correct positioning of central venous catheters in CRS and HIPEC patients

Ayesha Shajpal, Ben Harris

Introduction

Patients undergoing cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) require a central venous catheter (CVC) for their peri and post-operative management [(1)]. These patients receive total parenteral nutrition (TPN), which requires the CVC tip to be located between the "lower third of the superior vena cava, or in the upper portion of the right atrium"[(2)]. Our quality improvement project reviewed the local practice of CVC insertions, following implementation of an e-learning module and introduction of Hampshire Hospital Foundation Trust (HHFT) guidelines in 2019.

Methods

58 patients underwent elective CRS and HIPEC between 1/03/2021 and 31/05/2021 at HHFT compared to 59 patients over a similar period in 2019 [(3)]. A retrospective review of the CVC tip position was compared to results from the first cycle of auditing in 2019. The correct CVC tip position was declared when the "tip was parallel to the wall of the SVC"[(4,5)].

Results

84% of CVC's were in the correct position - an improvement from 63%. The right subclavian vein remains the most common access point at 72% but this a reduction from 88%. 9 CVC tips in our audit were incorrectly positioned; only 2 of which were placed too distally. Interestingly none of the CVC's with a tip position that was too short were inserted into a left sided vein.

Conclusion

Our cohort has an intensive recovery period and reducing the need for further invasive interventions such as changing CVC's, are beneficial. Following educational interventions, updates in local guidelines and the increased awareness of the need for 20cm CVC's has resulted in better placement and reduced need for repositioning of CVC's. A future iteration can investigate the mode of insertion– ultrasound guided is recommended for internal jugular access and advised for other central access [(5)] – which may further improve practice and successful first pass insertions.

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