

DELEGATE HANDBOOK

NEICS WINTER MEETING
NEWCASTLE CIVIC CENTRE 12th NOVEMBER 2019





Welcome to the North of England Intensive Care Society Winter 2019 Meeting

We extend a warm welcome to all delegates joining us for our Winter Meeting at Newcastle Civic Centre. As ever our society remains completely reliant on its members. Your continued support allows us to further develop the society as a platform for furthering high quality clinical practice and research in the North. The Spring and Winter Meetings are now well established events and the introduction of an additional Summer Evening Symposium at Lumley Castle was a great success.

This year's programme promises to be most exciting. We are privileged to have some of the leading clinicians and academics in critical care sharing their latest work with us. Today we are also proud to exhibit the high caliber quality improvement and research achievements of our trainees and medical students here in the North East through the oral poster presentation competition. We continue to be strongly supported by our industry sponsors. Please take time to visit the trade stands during the breaks.

During the meeting please feel free to tweet us (@NEICS14; #NEICSWM19) and also visit our growing website (www.neics.org). We will be using the app Slido again to help ask questions after the success in previous meetings.

We hope you enjoy the meeting.

Winter 2019 Meeting Organising Committee:

Dr Suzanne O'Neil	Dr Ian Nesbitt
Committee Member	President

With special thanks to:

Leena Pardeshi (Consultant Cardiothoracic Anaesthetist Freeman Hospital) and
Sarah Round (Consultant Cardiothoracic Anaesthetist James Cook University Hospital)





Programme of Events

08:15 - 09:25	Registration, Tea, Coffee and Trade Stands	Banqueting Hall
09:25 - 09:30	Welcome and Introduction	Dr Ian Nesbit NEICS President
09:30 - 10:00	Cardiac Cath Lab Essentials for Intensivists	Dr David Austin
10:00 - 10:30	What's Wrong with ALS Guidelines	Dr Andy Turley
10:30 - 10:40	Questions and Discussion	
10:40 - 11:10	Refreshments and Trade Stands	Banqueting Hall
11:10 - 11:40	ECMO for Drowning and Respiratory Failure	Professor Stephen Clark
11:40 - 12:10	Top 5 Cardiology Papers You Should Know	Dr David Pye
12:10 - 12:20	Questions and Discussion	
12:20 - 13:20	Lunch and Trade Stands	Banqueting Hall
13:20 - 13:50	Endocarditis: an update	Dr Jeet Thambyrajah
13:50 - 14:50	Trainee and AHP Presentations	Various
14:50 - 15:00	Questions and Discussion	
15:00 - 15:30	Refreshments and Trade Stands	Banqueting Hall
15:30 - 16:00	Advanced Management of Heart Failure	Dr Denis O'Leary
16:00 - 16:30	Adults with Congenital Heart Disease in Your DGH	Dr Katrijn Jansen
16:30 - 16:40	Questions and Discussion	
16:40 - 16:50	Trainee Prize Giving and Meeting Close	Dr Uwe Franke Incoming President





Speaker Biographies & Abstracts

DR DAVID AUSTIN

Dr David Austin is a Consultant Cardiologist, with sub specialty interest in coronary intervention at The James Cook University Hospital, Middlesbrough. He holds an NIHR grant for the PROACT trial in the field of cardio-oncology, is Cardiovascular Research Lead at JCUH, and Cardiovascular Specialty group lead for NIHR LCRN North East and North Cumbria.

Dr Austin trained as an undergraduate at the University of Aberdeen, before moving to Glasgow to complete early professional training and a research MD (University of Glasgow). Dr Austin moved to the North East in 2008, completing Cardiology specialist training, before finally an Interventional Cardiology Fellowship in Halifax, Canada in 2013-14. Dr Austin is a Fellow of the Royal College of Physicians and Surgeons of Glasgow.

Summary:

This presentation will focus on decision making in Interventional Cardiology. Coronary angioplasty is more than 40 years old, and has evolved to become one of the most common medical interventions. Deployed appropriately, coronary angioplasty – also known as Percutaneous Coronary Intervention (PCI) - is a highly effective and often life-saving procedure. Due to advances in training, technique and equipment, it is technically possible in almost all clinical situations (ranging from the asymptomatic patient through to cardiac arrest) to perform a coronary angiogram, and in the event of establishing coronary artery disease, PCI. The strength of the evidence of benefit, varies significantly across the clinical spectrum; it does not always follow that "stent" is the correct answer, no matter the question. Indeed the clinical context is the key determinant of decision making prior to the cath lab, and on the interpretation of the coronary anatomy. Fortunately, there is a great deal of evidence to guide appropriate coronary interventions although areas of controversy still exist. This presentation will focus on decision making in real clinical cases relevant to the Intensive Care practitioner, integrated with the evidence base.





DR ANDREW TURLEY

I was appointed consultant cardiologist South Tees NHS Foundation Trust 2010 and now work split site between The Friarage Hospital, Northallerton and The James Cook University Hospital, Middlesbrough.

I have a sub-specialty interest in heart failure and Cardiac Implantable Electronic Devices (CIEDs) including permanent pacemakers, ICDs, cardiac resynchronisation therapy and implantable loop recorders plus. I hold British Heart Rhythm Society accreditation in pacing and devices. I also have a keen interest in medical education (certificate in clinical education, Newcastle University).

I am chair of British Heart Rhythm Society certification committee, faculty member for Heart Rhythm Congress and Chair of the North East Strategic Clinical Network – cardiac rhythm management sub group.

I have been involved in the research of CIEDs since my consultant appointment

Summary:

I will discuss what's wrong with ALS guidelines from the cardiologist's perspective; and challenge the evidence base for peri-arrest arrhythmia management!





PROFESSOR STEPHEN CLARK

Stephen Clark is a Consultant Cardiothoracic and Transplant Surgeon at Freeman Hospital, Newcastle upon Tyne and is the Director of Cardiopulmonary Transplantation.

He was appointed in 2000 after training in Newcastle, London, Cambridge and Toronto. He is Chairman of the European Board of Cardiothoracic Surgery, is a Fellow of the Faculty of Surgical Trainers and sits on the Executive of the Society for Cardiothoracic Surgery in Great Britain and Ireland.

He has an ongoing commitment to setting up heart and lung transplant programs in Asia, especially Sri Lanka where he guided the first heart transplant there last year.

Summary:

The utility of urgent extracorporeal membrane oxygenation (ECMO) in cases of drowning and hypothermia will be illustrated by a recent case.

Studies report a survival rate of only 1.7% in 1,669 adult drowning patients who were in cardiac arrest when the emergency services arrived. Only 0.7% survived with a favourable neurological outcome at 1-month. Water exposure is frequently associated with primary hypothermia. Stage 4 hypothermia (temperature <28°C) and absent vital signs are an indication to consider ECMO.

ECMO has been widely used for patients with cardiopulmonary failure. It provides full circulatory support and restores perfusion. Lung rest permits reduced ventilator pressure and decreased concentration of inspired oxygen. It can facilitate rapid rewarming up to 33 °C with subsequent slower rewarming to normothermia.

Rapid deployment of ECMO is now possible because of recent technological advances in circuit design with small priming volume and minimal sites of stasis and turbulence. To reduce both the risk of clot formation and the inflammatory response due to contact of blood with a nonbiological surface centrifugal pumps are used but can lead to haemolysis and complications related to the negative pressure they generate.

A report from Boston demonstrated that a rapid response team could achieve cannulation and initiate ECMO within 15 min from call-out with improved survival to 64 %. Studies from Norway however show that the mean time between arrival at the ED and ECMO (door-to-ECMO time) was 187mins.

The type of cannulation strategy is determined by many factors, but is almost always V-A, and the goal is partial support with cannulae that are easy to insert, rather than the largest available size. Peripheral cannulation generally remains the best modality.

Development of new resuscitative strategies with ECMO are important to counter the exceedingly low survival rate of patients after drowning. Nevertheless, there are very few case reports on the use of ECMO for resuscitation of drowning victims. However survival then relies also on minimizing the complications of





ECMO such as bleeding, embolism, cannulation site complications and infection. Renal dysfunction post-ECMO CPR has been linked to poor outcome and stems from more prolonged periods of inadequate end-organ perfusion and poor oxygen delivery.

In the 2013 report of the American Heart Association, ECMO CPR was used in 10.5 % of the patients with a reported survival rate of 34%. Risk factors for poor outcomes included the location/duration of cardiac arrest, potassium level and acidosis. Longer duration of CPR before ECMO was associated with worse survival and neurological outcome. This is not a consistent observation suggesting that the quality of CPR rather than its duration is important.

In drowning victims, important predictors for survival were water temperature, submersion time, adequacy of bystander CPR, and EMS response time. There is no clear cut-off value for the submersion time, although more than 10 min is considered the threshold for non-survival. Non-reactive pupils and a GCS score < 5 on arrival at the ICU were the best independent predictors of a poor neurological outcome.

ECMO can be used as a successful resuscitative strategy for near-drowning and hypothermic patients to improve on dismal outcomes. Early application is recommended to improve clinical results.





DR DAVID PYE

David Pye is an Anaesthesia and Intensive Care registrar (ST6) based in the North East of England. He is currently working at the Royal Victoria Infirmary, Newcastle Upon Tyne. A software engineer prior to requalifying as a doctor, his particular interests are in technology and how it can help (or hinder) those delivering healthcare.

Summary:

I will be presenting five papers with relevance to cardiology and cardiac intensive care medicine, and how they have influenced my thinking about common intensive care decisions.

- 1) Timing of angiography post out-of-hospital cardiac arrest
- 2) Effectiveness of extracorporeal CPR vs 'traditional' CPR
- 3) The role of IABP therapy in treatment of MI with cardiogenic shock
- 4) Supplemental oxygen in MI
- 5) Thromboprophylaxis in trauma patients and the role of IVC filters

Paper references:

- 1) Coronary Angiography after Cardiac Arrest without ST-Segment Elevation, Lemkes et al, April 11, 2019
N Engl J Med 2019; 380:1397-1407
DOI: 10.1056/NEJMoa1816897
- 2) A systematic literature review and meta-analysis of the effectiveness of extracorporeal-CPR versus conventional-CPR for adult patients in cardiac arrest, Twohig et al, March 4, 2019
DOI: 10.1177/1751143719832162
- 3) Intraaortic Balloon Support for Myocardial Infarction with Cardiogenic Shock, Thiele et al. October 4, 2012
N Engl J Med 2012; 367:1287-1296
DOI: 10.1056/NEJMoa1208410
- 4) Oxygen Therapy in Suspected Acute Myocardial Infarction, Hoffman et al.
September 28, 2017
N Engl J Med 2017; 377:1240-1249
DOI: 10.1056/NEJMoa1706222
- 5) A Multicenter Trial of Vena Cava Filters in Severely Injured Patients, Ho et Al. July 25, 2019
N Engl J Med 2019; 381:328-337
DOI: 10.1056/NEJMoa1806515





DR JEET THAMBYRAJAH

Consultant cardiologist and TPD cardiology HEE-NE James Cook University Hospital

After graduating from Nottingham, Jeet completed his medical training in Yorkshire before moving to Birmingham to acquire a MD. Concerned over the accent his eldest was developing, he relocated to the Northeast where he was eventually successful in gaining a CCT in cardiology. He has been a consultant at The James Cook University Hospital for 13 years where he leads the echo and heart failure services as well as chairing the complex valve MDT. When he is not refereeing bun fights between cardiac surgeons and TAVI implanters, he is training to achieve his deadlift target before his 50th.

Summary:

Infective endocarditis is a rare condition but with a rising incidence and an appreciable mortality. Increased awareness and better imaging has shortened diagnostic pathways. This together with experienced MDTs using more standardised antibiotic regimes, aggressive surgical techniques and anaesthetic support have improved outcomes. However, it still remains a deadly disease. This talk focuses on the many presentations of endocarditis, the varied complications, the role of imaging and indications for TOE as well as antibiotic therapy and the indications for surgical intervention.





DR DENIS O'LEARY

After qualifying and working in Liverpool, I finished my training in Newcastle. I did a fellowship in cardiothoracic anaesthesia and intensive care, and have worked as a consultant in cardiothoracic anaesthesia and intensive care since 2005 at Freeman Hospital. I've a long standing subspecialty interest in the management of advanced heart failure, mechanical assist devices and more recently ECMO. I have helped develop both the Left ventricular assist device programme and adult ECMO service provision in Newcastle.

Summary:

'Heart failure for the general intensivist': It's obviously impossible to cover the whole of heart failure so I've selected a few areas of interest and pointers of where to find more advice information. I will cover some aspects of chronic heart failure management, acute heart failure and mechanical support.





DR KATRIJN JANSEN

Dr Katrijn Jansen consultant adult congenital heart disease cardiologist Freeman Hospital

I have been based at the Freeman Hospital since April 2016 working as a consultant ACHD cardiologist. I'm from Belgium, studied in UZ Leuven and UCL Brussels and did a fellowship ACHD in Toronto, Canada.

Summary:

This talk will focus on adults with congenital heart disease. I will be discussing challenges that are associated with these complex patients who may present to local district general hospitals or accident and emergency departments; and provide guidance for clinicians working out a with tertiary centre.





ACCEPTED ABSTRACTS FOR PRESENTATION AT THE NORTH OF ENGLAND INTENSIVE CARE SOCIETY WINTER MEETING 12TH NOVEMBER 2019

An Audit of Oxygen Prescription and Management of Hyperoxia in Out of Hospital Cardiac Arrest Patients on a Cardiac ICU

Sophie Risbridger Intercalating medical student Newcastle Medical School

Background:

Research has suggested hyperoxia can be harmful to patients following cardiac arrest and can increase mortality (1). Hyperoxia is always a non-physiological event and has been shown to damage tissues through cellular apoptosis, stimulate inflammatory responses in the lungs, and reduce capillary perfusion (2).

We aim to compare our practice to the British Thoracic Society guidelines (3):

- Target saturations should be written in the daily plans on CICU charts, and appropriate for the patient's hypercapnic risk status.
- To establish a baseline to identify how many OOHCA patients are hyperoxic on admission to CICU.
- To establish whether normoxia can be reached within 24 of admission.

Methods:

All OOHCA patient's CICU charts were retrospectively accessed from the previous 18 months. The clinical, oxygen delivery, and saturations data were measured every 6 hours from admission to 72 hours.

SaO₂ hyperoxic defined at >97%, normoxia as 95-97%, hypoxia as <95%. PaO₂ severely hyperoxic as >39kpa, moderately hyperoxic as 13.5-39kpa, normoxic as 8-13.5kpa, and hypoxic as <8kpa (4). Normoxia recorded if 3 consecutive results are within the normoxia range, with the earliest normal value recorded as time achieved.

Results:

34 charts were identified for the 18-month period, four were unavailable and so 30 (88.2%) were analysed. No daily plans had target oxygen saturations, therefore, it was impossible to determine appropriateness for the patient's risk status.

All patients had been admitted to CICU following OOHCA with varying levels of intervention prior to admission. All had been intubated and ventilated by the time of arrival on CICU. Only 20% (n=12) achieved normoxia in either category within 24 hours of admission, with one achieving in both categories. All the patients at risk of hypercapnic respiratory failure ended the 72-hour period hyperoxic.





	Admission Saturations	Patients %(n)	Normoxic Within 24 Hours %(n)	Never Achieving Normoxia %(n)
SaO ₂	>97% (Hyperoxic)	65.5 (19)	10.2 (2)	63.2 (12)
	95-97% (Normoxic)	20.7 (6)		
	<94% (Hypoxic)	13.8 (4)	75 (3)	25 (1)
PaO ₂	>39kpa (Severely Hyperoxic)	6.7 (2)	50 (1)	50 (1)
	13.6-39kpa (Moderately Hyperoxic)	66.7 (20)	30 (6)	55 (11)
	8-13.5kpa (Normoxic)	20 (6)		
	<8kpa (Hypoxic)	6.7 (2)	0 (0)	100 (2)

Discussion:

Oxygen saturations were titrated towards hyperoxia and patients rarely achieved normoxia. This could be attributed to the lack of target saturations, meaning FiO₂ is titrated to limit hypoxia without considering over-oxygenation. To improve outcomes, CICU consultants should reach a consensus about acceptable oxygen levels for their unique patient group.

Limitations:

- Retrospective review meant that not all charts were available at the time of audit.
- Since oxygen targets were not recorded, assessing if saturations were appropriate was unachievable.

Acknowledgements:

I would like to thank the staff in the CICU at James Cook University Hospital, in particular, Dr Jonathan Brand and Dr Adrian Mellor.

References:

1. Association between intra- and post-arrest hyperoxia on mortality in adults with cardiac arrest: A systematic review and meta-analysis. J.Patel, A.Kataya, P.Parikh: Resuscitation, 2018: 127, pg 83-88.
2. Harmful effects of hyperoxia in postcardiac arrest, sepsis, traumatic brain injury, or stroke: The importance of individualised oxygen therapy in critically ill patients. J-L.Vincent, F.S.Taccone, X.He: Canadian Respiratory Journal, 2017.
3. BTS Guideline for Oxygen Use in Adults in Healthcare and Emergency Settings. British Thoracic Society: Thorax, 2017: 72.
4. The Association between hyperoxia and patient outcomes after cardiac arrest: analysis of a high-resolution database. J.Elmer, M.Scutella, R.Pullalarevu, et al. Intensive Care Medicine, 2015: 41, pg 49-57.





An audit on reduction of unplanned surgical admission to ITU and HDU

Myra Khan (clinical fellow anaesthesia and ITU North Tees University Hospital) and Farooq Brohi

BACKGROUND:

Anticipation of postoperative admission to critical care in advance of surgery helps in resource allocation and adequate staffing levels. Unplanned admission can create a risk of premature discharges to create bed spaces and difficulty in staffing. This leads to a significant impact on the efficient running of a critical care unit.

METHODS:

Data collection from Intensive Care National Audit and Research Centre (ICNARC) database at UHNT.

RESULTS:

In the first cycle Elective surgical unplanned admissions were **12.9%** of all surgical admissions, reduced to **7.14%** in second cycle. Reduction by **44.6%**

DISCUSSION:

Unplanned elective surgical admissions can have an adverse impact on effective and efficient working of a critical care unit¹. Bulk of the admissions cannot be anticipated which come from A&E and emergency surgery. However elective surgery can be made predictable in terms of resource allocation and staffing planning. The number of unplanned elective surgical admissions should be less than 5% of all surgical admissions. However; it is essential to first audit the current data of the critical care unit and then set up a realistic goal. Our data collection quoted similar values to other references².

The first cycle took data from ICNARC database from 2016-17. The data collection helped to identify the type of surgery and type of patient population prone to unplanned admissions. It also highlighted the possible reasons for admission to critical care unit and how to anticipate these in advance to avoid unplanned admissions. An action plan was generated and presented to the department which included key changes at different stages. At pre-assessment to identify the at-risk patient population, on day of surgery rechecking for any changes since preassessment and discussion with surgeons in briefing regarding possible complications and possible need for ITU care; involving the ITU consultants at earlier stage. A follow up data collection 2018-19 showed a positive impact by considerable reduction in unplanned admissions by 44.7%

ACKNOWLEDGEMENTS:

Staff at North Tees and Hartlepool hospital and ITU

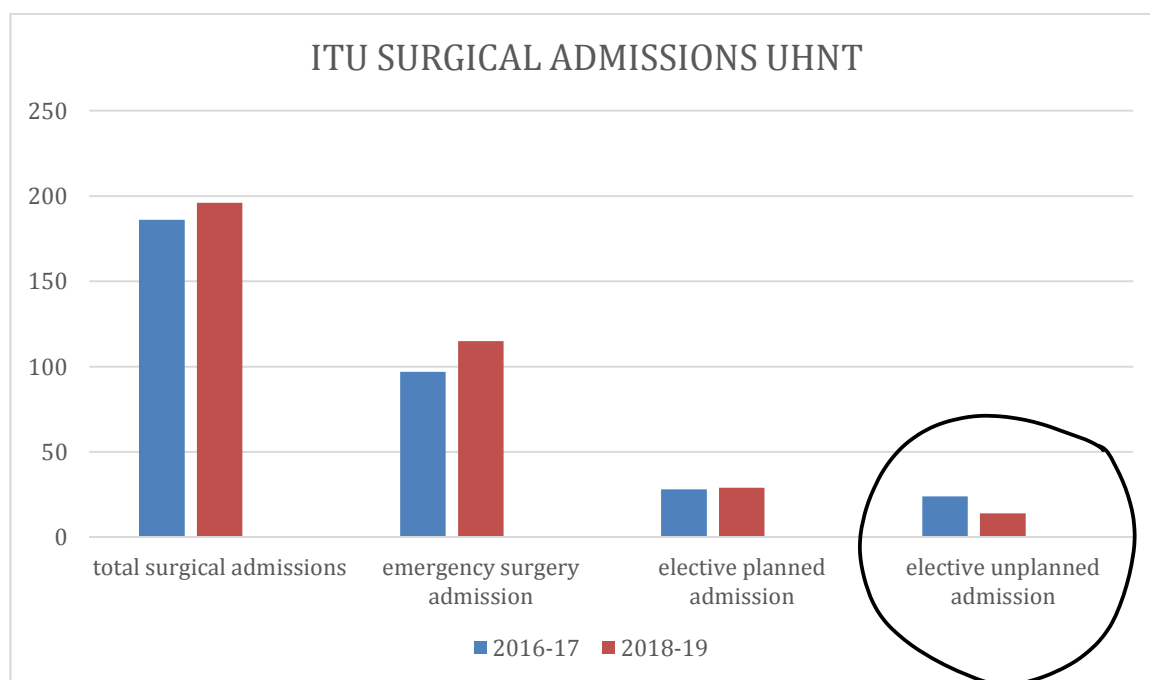
REFERENCES:

1. Colvin JR, Peden CJ, ed, Raising the Standard: a compendium of audit recipes, The Royal College of Anaesthetists for continuous quality improvement in anaesthesia, 3rd Ed, London: RCoA, 2012.
2. Meziane M, El Jaouhari SD, ElKoundi A, et al. Unplanned Intensive Care Unit Admission following Elective Surgical Adverse Events: Incidence, Patient Characteristics, Preventability, and





Outcome. *Indian Journal of Critical Care Medicine*. 2017;21(3):127–130.
doi:10.4103/ijccm.IJCCM_428_16





Case report NSAID enteropathy

Jamie McPherson CT3 ACCS anaesthetics Darlington Memorial Hospital

We present a patient with enteropathy from concealed chronic NSAID abuse resulting in multisystem disease, repeated critical care admissions and severe respiratory failure requiring invasive ventilation. He initially presented with severe refractory hypokalaemia and peripheral oedema with hypoalbuminaemia, following investigation in the community after several months of vomiting, anaemia and weight loss. Potassium was replaced on HDU, and following a brief admission he was discharged with a working differential of IBD versus malignancy. A week later he returned with increasingly severe generalised oedema, acute kidney injury, rising inflammatory markers and right basal consolidation. He was re-admitted to HDU and treated for pneumonia.

A CT scan was performed at this point to exclude malignancy, which showed an abnormal thickening of small bowel. The syndrome of hypoalbuminaemia, anorexia, malnutrition and abnormal small bowel was recognised as in keeping with protein losing enteropathy. Causes of enteropathy were discussed with him, and at this point he disclosed long-term codeine abuse, bought in combination with ibuprofen. The following day he deteriorated with progressive bilateral pulmonary infiltrates, and required intubation. The next day he was extubated and treated with TPN and diuretics/CVVH, with ongoing high oxygen requirement. A week later he deteriorated again, and despite transient improvement on NIV required re-intubation for 72 hours. Following the second extubation he made slow gradual improvement with enteral feeding, high flow oxygen, diuretic therapy and intermittent spells on NIV. He was stepped down to ward after 20 days on critical care, and subsequently discharged home where his slow improvement continued.

Discussion

This case illustrates severe and systemic complications of NSAID enteropathy - hypoalbuminaemia and pulmonary oedema, precipitating respiratory failure and invasive ventilation, which has not previously been reported as a sequelae of enteropathy. Severe pulmonary oedema developed rapidly following cautious rehydration. Respiratory failure was exacerbated by weakness following chronic malnutrition, but responded well to bilevel NIV.

NSAID-induced enteropathy is characterised by typical endoscopic findings associated with NSAID use, excluding other causes of small bowel lesions, that resolve on cessation (Hayashi et al. 2005). Symptoms can range from subtle to severe and acute, and include indigestion, bleeding, diarrhoea, vomiting, weight loss and abdominal pain. Patients may present with chronic complications, such as hypoalbuminaemia, anaemia, or acute symptoms of obstruction, bleeding or perforation. The differential for protein losing enteropathy is wide and includes IBD, malignancy, infections, TB, amyloidosis, sarcoidosis, vasculitis, and collagenous sprue (Murray et al 2013).





NSAID enteropathy should be considered in patients presenting with severe complications of malnutrition, and may be concealed by patients addicted to combination products. The diagnosis should be actively considered and excluded in patients presenting with severe malnutrition without other clear cause.

Acknowledgements

Thanks to Dr Rob Whittle for his helpful comments on the longer manuscript.

References

Hayashi , Y., Yamamoto, H., Kita, H., et al. Non-steroidal anti-inflammatory drug-induced small bowel injuries identified by double-balloon enteroscopy. *World J. Gastroenterol.* 2005; 11(31), 4861-4864.

Murray, J.A. and Rubio-Tapia, A. Diarrhoea due to small bowel diseases. *Best Practice Res.Clin.Gastroenterol.* 2013; 26(5), 581-600.





Endo-tracheal intubation outside theatres

Ginty D (foundation year 2 Sunderland Royal Infirmary) and Brandwood M dual ICM and anaesthesia specialty trainee

Background

The 4th National Audit Project suggested at least 1 in 4 major airway events in hospital are likely to occur in critical care or the emergency department(1). DAS ICU guidelines released in 2017 provided new guidance for intubation in critically ill adults(2).

This audit was undertaken prior to planned review of local intubation guidelines in light of the DAS publication. Our intention was to audit the use of capnography and preoxygenation (100% compliance), the incidence of failed intubation (1% incidence) and also to gather local baseline data on timing of intubation, laryngoscopy grade, seniority of intubating clinician and presence of supervision.

Methods

All patients intubated in Sunderland ICCU who were not intubated in main theatres have intubation data recorded on the electronic health record. These records were collated for all intubations during the period 25th May 2013 and 1st August 2018. Data were reviewed to remove duplicate entries and clear data errors. BMI data at time of intubation from the health record was added where available. Patients below the age of 18 were excluded as the majority of these intubations were not documented on the electronic health record.

Results

There were 817 intubations with ages ranging from 18 years to 89 years. Of these 494 patients were male and 323 female. BMI ranged from 12.5 to 78.3. 75% of intubations happened outside of Monday-Friday 0800-1730. 97% of intubations had documented capnography. 97% had documented pre-oxygenation. 89% of intubations had a grade 1 or 2 laryngoscopy, 7% grade 3 and 3% grade 4. There was 1 episode of failed intubation requiring a surgical emergency airway. 86% of intubations had an operator or supervisor ST5 or higher present and overall 45% of intubations were performed with a consultant directly present.

There was a 4% rate of documented complications including aspiration, desaturation, oral injury and cardiac arrest.

Discussion

Results were comparable to a Scottish emergency department study which quoted a 91% incidence of grade 1 or 2 intubation and a less than 1% incidence of surgical airway (3). Compliance with audit standards of capnography and pre-oxygenation was 97% - reasons for failing to achieve 100% are conjectural but could include lack of access to ETCO₂ on wards and inability to pre-oxygenate agitated patients. Documented complication rates were much lower than expected and it is possible that complications of intubation are being recorded elsewhere or failing to be recorded at all.





Future study possibilities at Sunderland include analyzing the use of videolaryngoscopy in this group as well as examining the incidence of severe hypoxaemia (defined as $SpO_2 < 80\%$ by DAS) to guide further improvements in local intubation guidelines and training.

Acknowledgements

We thank the IT support team at Sunderland Royal for collating the information from the electronic documentation and all the intubating clinicians for their contributions.

References

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2. Difficult Airway Society. DAS ICU intubation guidellines [Internet]. [cited 10th October 2019]. Available from: https://das.uk.com/guidelines/icu_guidelines2017
3. Graham CA et al. Rapid sequence intubation in Scottish urban emergency departments. Emerg Med Journal 2003; **20**: 3–5





Implementing a new, mixed, general anaesthetist and intensivist intensive care rota model: A qualitative assessment and quantitative review of patient outcomes

Victoria Craig ST3 anaesthetics North Tees University Hospital

Background

In December 2018, as a result of a workforce necessity, a new intensive care unit (ICU) rota was implemented in a district general hospital in the Northern deanery. North Tees University Hospital has a dedicated 17-bedded intensive care and high dependency unit⁽¹⁾ which is traditionally managed, at a consultant level, by consultants with a special interest, and regular sessions of, intensive care work. Due to a changing and diminishing workforce and ever increasing demand it became necessary to amalgamate the general and intensive consultant anaesthetist rota. In light of this major shift in hospital routine and culture it was felt an assessment of patient outcomes and workforce opinion was needed.

Methods

This review looked at both the qualitative and quantitative aspects of implementing a new rota. In June 2019, 6 months following implementation, a staff survey was sent out using the 'Survey Monkey' website. Consultants, general and ICU, and senior nursing staff were included and their responses collated using this website. Quantitative data focussed on Standardised Mortality Rate (SMR) and ICU admission rates, this was analysed from Dec 2018 to May 2019 and compared to data collected in Dec 2017 to May 2018.

Results

The survey received 28 responses: consultants(14)/senior nurses(14). There was a consensus from those who returned the survey that patient care had not been affected, and initial anxieties about the rota had decreased since its introduction. Previous ICU consultants remaining on the rota felt that their work load has decreased and 80% of respondents were happy to continue as planned for the proposed 2 year period. Quantitative data showed no clinically significant change in ICU admission rates or SMR during the time period analysed; 2018-19: 414 admissions, SMR 0.74 as compared to 2017-18: 408 admissions SMR 0.76.

Discussion

This new rota model was introduced as a short-term necessity and is currently projected to be in situ for 2 years from implementation. The results are reassuring with no identifiable deterioration in mortality; admission rates; and perceived safety or satisfaction. What remains to be addressed is the sustainability of this rota when demand continues to climb and workforce decreases. Ideally, new ICU consultants will be appointed. However other avenues may also have sustainable benefit: middle grade support, medical training initiative doctors, advanced clinical care practitioners and locum consultants have all been considered. There are obvious limitations to these options, which surround a balance of cost versus experience. This is an important issue to address both locally and nationally as the RCOA workforce planning projects an escalating consultant shortage across all areas⁽²⁾.





It is clear that, despite the initial success of the new rota, this is a complex, long-term, issue which requires further planning and development to provide a safe and sustainable future for all ICU rotas.

Acknowledgements

I would like to acknowledge Dr H. Mohan, Dr M. Baciú and Dr E. Kothmann for their invaluable involvement and for the consultant and senior ICU nursing staff bodies for their assistance in completing the qualitative aspect of this project.

References

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2. Rcoa.ac.uk. (2019). RCoA response to NHS Improvement's Interim Workforce Implementation Plan | The Royal College of Anaesthetists. [online] Available at: <https://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/rcoa-response-nhs-improvement's-interim-workforce> [Accessed 27 Oct. 2019].





Outcomes of One Heart™ Cardiac Anaesthesia and ICU Simulation Course
A. Guha (anaesthesia ST7 Freeman Hospital) A. McDonald, J. Brand & S. Law

Background

In 2014, the One Heart™ course was developed in response to the GMC National Training Survey, highlighting that anaesthetic registrars did not feel appropriately equipped for their cardiac rotations. Aims of the course were to improve confidence in managing situations unique to cardiac anaesthesia and ICU, as well as providing knowledge supporting the training curriculums^{1, 2}.

In 2016, a team at James Cook University Hospital, Middlesbrough, established a local course. One Heart™ runs as a free one-day course for anaesthetic registrars beginning their rotation in cardiac anaesthesia, as well as cardiac ICU nurses of various experience. There is pre-course reading material, supported by workshops, focused lectures and high-fidelity simulations.

Methods

Between December 2018 and August 2019 candidates completed a pre-course survey, regarding confidence in managing cardiac anaesthesia/ICU issues. They also completed a multiple-choice quiz, on principles of cardiac anaesthesia, pharmacology and data interpretation. They repeated the survey and quiz following the course. Confidence was measured on a 10-point scale. The quiz consisted of 60 true-false statements and 8 single-best-answer questions.

Results

Over the study period, 36 candidates attended the One Heart™ course; 20 anaesthetic registrars, 13 Cardiac ICU nurses and 2 surgical staff.

Amongst the anaesthetic group, 50% had not sat the final FRCA examination, and had <2 weeks experience in cardiac anaesthesia/ICU.

The post-course survey demonstrated improvement in confidence in all areas, with average improvement ranging from 30% to 97% in the anaesthetic group, and 12% to 125% in the nursing group.

Scores for the quiz showed improvement across all groups. Average pre-course scores for anaesthetists and nurses was 70.7% and 58.6%, respectively. Average post-course scores were 80.8% and 69.3%, respectively.

Discussion

These results show that this unique course significantly improves registrars' and nurses' confidence in managing issues in cardiac theatre and ICU and improves knowledge prior to commencing cardiac rotations.





Feedback has also shown that 100% of candidates would recommend the course to other trainees. It appears that, following the course, 75% candidates would consider a career in cardiac anaesthesia. A survey by the Association of Cardiothoracic Anaesthesia (ACTA) showed that only 37.5% registrars would consider a cardiothoracic career³. Given that there are 40 cardiothoracic centres nationally, and recruitment of consultant anaesthetists over recent years has been low, the One Heart™ course may help in sparking enthusiasm in the field.

Acknowledgements

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Local audit: Sleep quality in intensive care

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Background

Sleep in the critical care setting is traditionally poor, while its importance in patient recovery is increasingly evident [1]. Lack of sleep is associated with delirium and increased mortality [2, 3], but can be improved with simple measures, such as those outlined in local trust guidance [4]. This audit assessed sleep quality and implementation of sleep aids against trust standards, with suggestions for further sleep-improving measures and closing of the audit loop.

Methods

Randomly selected patients admitted to a 20 bed intensive care and high dependency unit in Newcastle completed the internationally validated Richards-Campbell Sleep Questionnaire [5], as well as a survey on sleep-disruptive factors and sleep aids offered. Patients receiving sedation, GCS <15 or those with cognitive impairment were excluded.

Results

Initial findings from 50 patients show a mean RCSQ score of 48 out of 100mm on the linear visual analog scale. Noise and pain were the most disruptive factors. Trust-recommended sleep aids were not always offered to patients.

RCSQ parameter	Mean +/- SD (mm)
Sleep depth	41 +/- 36
Sleep latency	49 +/- 34
Awakenings	54 +/- 35
Returning to sleep	52 +/- 36
Sleep quality	49 +/- 37
Total RCSQ score (mean of 5 parameters)	48 +/- 31
Sleep-disrupting factors	Mean +/- SD (mm)
Noise	41 +/- 32
Pain	34 +/- 34
Light	16 +/- 23
Equipment alarms	32 +/- 34
Staff interventions	29 +/- 30
Other patients	26 +/- 35
Sleep aids offered	Number of patients
Earplugs	13 (26%)
Eyemask	13 (26%)





Sleeping tablet	4 (8%)
Nothing offered	24 (48%)

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Tom Doris (supervisor) and nursing staff of ward 38 ICU at Royal Victoria Infirmary, Newcastle upon Tyne

Discussion

Sleep in this critical care unit could be improved, with a focus on reducing noise and ensuring good analgesia. Simple measures such as disposable earplugs should be offered to all patients. 'Lights-out' policies and plastic soft-close bins may also help. In the absence of national guidance on sleep optimisation in the critical care setting, regular review of local practices should be encouraged to promote better sleep and thus recovery for our patients.

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