Contents

The Royal College of Anaesthetists

Educating, Training and Setting Standards in Anaesthesia, Critical Care and Pain Management

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Dr H Butterfield
Cons Anaesthetist
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Thursday 30 October 2008

Dear Dr Butterfield

Recognition of CPD Events

I am pleased to confirm that the following event has been recognised for CPD purposes:

Event title:	**NeuroAnaestheic Society of Great Britain & Iceland (NASGBI) Annual Scientific Meeting**
Organisation:	**NASGBI and Local Organisers**
Date of event:	**7 May 2009**
RCoA points awarded:	**Ten**

Delegates may claim **10 CPD points** for attending. These points should be claimed as External CPD. Events are scored on the basis of one point per hour of educational content and are capped at five points per day (excluding coffee breaks, lunches, etc). **Please note that individual participants may only claim the number of hours that they attend.**

The College requests that all organisers of events must provide some kind of certificate of attendance to delegates (at least a letter on headed paper) and maintain an attendance register. The register should be retained for five years so that if necessary, verifications can be made.

I hope the event proves to be a success.

Yours sincerely,

pp. Ekaterina Boyd

Prof Chris Dodds
CPD Chairman

PROGRAMME

Thursday 7th May

08.00 – 09.00	REGISTRATION FOR MORNING SESSION	
09.10 – 09.15	Welcome to Liverpool	**Dr Ian Tweedie, WCNN Liverpool**
09.15 – 12.30	**Regional Update Session**	**Chair: Dr Peter Enevoldson, WCNN**
09.15 – 09.45	**Stroke Update** Dr R White, Consultant Neurologist WCNN	
09.45 – 10.15	**Surgical Management Cerebral Ischemia** Mr P Eldridge, Consultant Neurosurgeon WCNN	
10.15-10.45	**Clearing the Cervical Spine** Mr R Pillay, Consultant Neurosurgeon WCNN	
10.45-11.15	**ADAM Aintree Difficult Airway Management and the Cervical Spine** Dr P Groom, Consultant Anaesthetist Aintree Hospital Liverpool	
11.15 – 11.45	REFRESHMENTS AND TRADE EXHIBITION	
11.45 – 12.25	**Guest Speaker: Monitoring the Brain beyond ICP** Prof. D Menon, Cambridge	
12.25 – 12.30	Q & A / discussion	
12.30 – 13.15	LUNCH & REGISTRATION FOR MAIN MEETING	
13.15 – 14.00	**WELCOME FROM NASGBI PRESIDENT** **Dr Basil Matta** **NASGBI ANNUAL GENERAL/BUSINESS MEETING**	
14.00 – 15.00	**SESSION 1: Clinical Debate**	**Chair: Prof. Jenny Hunter, Liverpool**
14.00 – 14.40	**LUND PROTOCOL VS CPP MANAGEMEMT** **"This house believes that there is no advantage of using the Lund concept over CPP directed management in the treatment of severe traumatic brain injury"** **Prof. Carl-Henrick Nordström** Lund Sweden vs. **Prof. Martin Smith** National Hospital for Neurology & Neurosurgery	
14.40 – 15.00	Discussion and vote	
15.00 – 15.30	REFRESHMENTS POSTERS AND TRADE EXHIBITION	

15.30 – 17.30	**SESSION 2: Update In Neuro Critical Care** **Chair: Dr David Gray, Liverpool**
15.30 – 16.10	**BIS Monitoring In Neuro-Anaesthesia And Critical Care** Dr J Andrzejowski, Consultant Neuroanaesthetist Royal Hallamshire Hospital Sheffield
16.10 – 16.35	**Update on NIV in NITU** Dr A Bentley, Consultant Intensivist South Manchester University Hospital
16.35 – 17.10	**ICNARC/NCCNET/RAIN** Dr D Harrison, Senior Statistician ICNARC
17.10 – 17.20	**NPSA report - Update on Wrong Site Surgery** Dr S Shinde, Consultant Neuroanaesthetist Bristol
17.20 – 17.30	Q & A/Discussion
17:30- 17.50	**Extra Session: Training** **Neuroanaesthesia training and the CCT curriculum, have we got it right?** Dr A Tomlinson, North Staffs Hospital
19.00	**President's Reception at the Mersey Maritime Museum** **All delegates welcome**
	Followed by:
for 20.00	**Conference Dinner** **Ticket Holders only**

Friday 8th May

08.00	NASGBI Council Meeting
08.15 – 09.00	Registration for day delegates / refreshments/trade exhibition
09.00-10.15	**SESSION 3 PAIN & PAEDIATRICS** **Chair: Prof. Martin Leuwer, Liverpool**
09.00 – 09.25	**Anaesthesia for Paediatric Craniofacial Surgery** Dr F Potter, Consultant Paediatric Anaesthetist Alder Hey Hospital Liverpool
09.25 – 09.50	**Anaesthetic Implications of Functional Neurosurgery** Dr J Dunnet, Consultant Neuroanaesthetist Bristol
09.50 – 10.15	**Vertebroplasty** Dr K Das, Consultant Neuroradiologist WCNN
10.15– 10.40	REFRESHMENTS POSTER JUDGING AND TRADE EXHIBITION
10.40 – 12.10	**SESSION 4 : Free Papers** **Chair: Dr Peter Charters, Liverpool** Each presentation has 7 minutes, with up to 2 minutes questioning to follow.
12.10– 13.10	**SESSION 5: Keynote Presentation** **Chair: Dr Ed Moss, Leeds**
12.10 – 12.20	**Professor Gordon McDowall** **Dr E. Moss**
12.20 – 13.10	**The McDowall Biennial Lecture -** "The Triumph of Evil" **Dr Ian Calder,** The National Hospital for Neurology & Neurosurgery
13.10 – 14.00	LUNCH, TRADE EXHIBITION AND POSTER JUDGING
14.10 – 15.30	**SESSION 6: Neurovascular Update** **Chair: Dr Hans Nahser WCNN**
14.10 - 14.45	**Neuroradiology Update- coiling/treatment SAH inc poor grade** Dr S Niven, Consultant Neuroradiologist WCNN
14.45 – 15.20	**Neurovascular Update** GALA/STACH Trials Mr M Javadpour, Consultant Neurosurgeon WCNN
15.20 – 15.30	**Presentation of Registrars' prizes for best free papers & poster by a Trainee - President of NASGBI**
15.30 – 15.45	**Presentation by Nottingham 2010 followed by closing remarks**

Speakers

Dr Richard White has been a Neurology Consultant in Liverpool since 2002. He graduated from Leeds and completed his higher specialist training in North West London. A research fellow at Kings College and Hammersmith, he developed interests in human cerebral blood flow physiology and pathophysiology. He has subspecialty interests in acute stroke management including thrombolysis and medical aspects of intracranial vascular malformations.

Mr Paul Eldridge is a Consultant Neurosurgeon at the Walton Centre for Neurology and Neurosurgery. His main areas of clinical interest are neurovascular and functional neurosurgery.

Mr Robin Pillay is a consultant Neurosurgeon at the Walton Centre for Neurology and Neurosurgery and the Royal Liverpool University Hospital. His early training was in South Africa, but after a spinal fellowship at Walton he took up his post with a major interest in spinal surgery.

Dr Peter Groom. I was born, grew up and went to school in Anfield, Liverpool before going on to study medicine at the University of Newcastle Upon Tyne. Qualifications B.Med.Sci, MBBS, FRCA. I have been a Consultant Anaesthetist at University Hospital Aintree NHS trust since 2003. My interests include the difficult airway, anaesthesia for liver surgery and carcinoid syndrome. My current project is the ADAM (Aintree Difficult Airway management) website and course dealing with the anticipated difficult airway.

Professor David Menon has the Chair of Anaesthesia at Cambridge University, where his research interests lie mainly within Neurocritical Care.

Professor Carl Henrik Nordström is Professor in Neurosurgery, Lund University Hospital, since 2001. Born in Malmö, Sweden 1944. M.D. Lund (1971), Ph.D. Lund 1977 (Neurosurgery: Effects of phenobarbital in cerebral ischemia.) Specialist in Neurosurgery (1980) Docent 1980 (Neurosurgery) Consultant in neurosurgery, Department o Neurosurgery, Lund University Hospital.1994. About 200 publications mainly within the areas of cerebral metabolism and neuro-intensive care.

Dr Martin Smith is a Consultant in Neuroanaesthesia and Neurocritical Care at the National Hospital for Neurology and Neurosurgery, University College Hospitals London, UK and director of neurosurgical critical care. He is also honorary Professor in Anaesthesia and Critical Care at University College London. He has a clinical and research interest in the management and monitoring of acute brain injury. Dr Smith is the immediate Past President of the Neuroanaesthesia Society of Great Britain and Ireland, a Director at large of the Society of Neuroanesthesia and Critical Care, chair of the Neurocritical Care Stakeholder Forum and a member of the editorial board of the Journal of Neurosurgical Anesthesiology.

Dr John Andrzejowski is a Consultant Neuroanaesthetist and Intensivist at Sheffield University Hospitals (Royal Hallamshire). Qualified, MBChB, Sheffield University 1989. SHO jobs in Australia & post FRCA fellowships in New Zealand & Canada. After some early experience & research with Bispectral Index monitoring, I have been a longstanding advocate of depth of anaesthesia monitoring. I have organised seminars on this subject at the AAGBI. My other research interests include strategies of avoiding IPH, and I was a member of the GDG that issued the Inadvertent Perioperative Hypothermia (IPH) guidelines released by NICE in April 2008. I am on the NASGBI Council and am developing and administering the on-line survey system.

Dr Andrew Bentley is consultant physician in respiratory medicine and critical care at University Hospital of South Manchester. He trained in Respiratory, General Medicine and Intensive Care in London, Stoke and Oxford before moving to Manchester where he was Respiratory & Critical Care Physician at North Manchester General Hospital for 8 years.

His clinical interests include the role of Non Invasive Ventilation in ICU and weaning from invasive ventilation. In 2004 he moved to University Hospital of South Manchester as clinical lead for ventilatory support services developing regional home non-invasive and invasive ventilation services. He is currently co-chair of a regional North West commissioning task & finish group for long term ventilation and weaning and also clinical director of the acute intensive care unit.

Dr David Harrison is Senior Statistician at the Intensive Care National Audit & Research Centre (ICNARC). David graduated from the University of Cambridge with an MA in mathematics and a PhD in mathematical modelling of disease progression. He has worked for ICNARC since 2002. His main interests are risk prediction modelling, health technology assessment and evaluation of service delivery and organisation in critical care. David is Chief Investigator of the ongoing Fungal Infection Risk Evaluation (FIRE) and Risk Adjustment In Neurocritical care (RAIN) research studies. David is a Fellow of the Royal Statistical Society and an Honorary Senior Lecturer in the Medical Statistics Unit of the London School of Hygiene & Tropical Medicine.

Dr Samantha Shinde is a Consultant Neuroanaesthetist at Frenchay Hospital, Bristol. She has been on NASGBI Council since 2006 and has a keen interest in Risk Management and Patient Safety. She was involved in the AAGBI Working Party on Risk Management and has been Deputy Chair of North Bristol Clinical Risk Committee. She is presently Lead Clinician at North Bristol Trust for the Implementation of the Safer Surgery Checklist. Following her work on Correct Site Neurosurgery, she has advised the NPSA on the Rapid Response Alert on 'Avoiding wrong site burrholes/craniotomies'.

Dr Frank Potter qualified from the University of Manchester in 1983. He did his anaesthesia training in Merseyside and has been a Consultant Paediatric Anaesthetist at Alder Hey, working in theatres and PICU, since 1996.

Dr Judith Dunnet is a Consultant Neuroanesthetist from Frenchay Hospital in Bristol

Dr Kumar Das is a Consultant Neuroradiologist at the Walton Centre for Neurology and Neurosurgery.

Dr Ian Calder is a Consultant Anaesthetist at The National Hospital, Queen Square and The Royal Free Hospital in London, UK. Born in Campbeltown in 1948, he spent five years in Sudan, before returning to Scotland and eventually England. An interest in Anaesthesia was assured by contact with such outstanding characters as Norton Williams, Cecil Gray, Gordon Bush and Gordon Jackson-Rees, whilst an undergraduate and junior doctor in Liverpool. He was a registrar at St Thomas' Hospital before being appointed at The National and The Royal Free. He ran the Clinical Viva and was Vice-Chair of the Final FRCA till 2009.

Dr Sacha Niven is a Consultant Neuroradiologist at the Walton Centre for Neurology and Neurosurgery with a major interest in neuroendovascular interventional work.

Mr Mohsen Javadpour I am a consultant neurosurgeon at the Walton Centre for Neurology and Neurosurgery in Liverpool. I went to medical school in Trinity College Dublin. Subsequently I obtained my neurosurgical training in the UK, followed by a fellowship in neurovascular surgery in Toronto with Prof. Christopher Wallace and Prof. Michael Tymianski. I was appointed as a consultant neurosurgeon in the Walton Centre in December 2004. My subspecialist interests are neurovascular and skull base surgery, and stereotactic radiosurgery. I am an honorary clinical tutor at the University of Liverpool. I have an active research profile and have published 23 papers and 3 book chapters. I am the local principal investigator for 4 randomised clinical trials. I am currently secretary of the British Vascular Neurosurgery Group.

Chair People

Dr Peter Enevoldeson is a Consultant Neurologist at and Medical Director of the Walton Centre for Neurology and Neurosurgery. He qualified from Oxford University and his special area of interest is neurovascular disease.

Professor Jennifer Hunter is Professor of Anaesthesia (Personal Chair) University of Liverpool.

MB,ChB University of St. Andrews, 1971, FRCA England, 1975 and PhD, University of Liverpool, 1993, entitled "Pharmacodynamics and pharmacokinetics of neuromuscular blocking drugs in health and disease". Gold Medal, The Royal College of Anaesthetists, 2004. Featherstone Award, The Association of Anaesthetists of GB and Ireland, 2005. Manchester Medal from Manchester Medical Society, May 2007, for outstanding contribution to UK anaesthesia. Irish College of Anaesthetists, Silver Medal, November 2008.

I have also held numerous honorary appointments including Honorary Secretary, Anaesthetic Research Society, 1991-96, Honorary Secretary, Board of the British Journal of Anaesthesia, 1991-96, Editor-in-Chief, British Journal of Anaesthesia, 1997-2005.

From 2005, Honorary Chairman and Trustee of the Board of British Journal of Anaesthesia, and from 2006, Chairman of the Scientific Programme Committee of the ESA. President, Liverpool Society of Anaesthetists from October 2008.

My research interests are pharmacodynamics and pharmacokinetics of neuromuscular blocking drugs in health and disease, including chronic renal failure and cirrhotic patients, patients with neuromuscular disorders, and the critically ill.

Dr David Gray is now retired from clinical practice but continues to take an active role in postgraduate teaching. He qualified from Liverpool University. Consultant Anaesthetist British Medical Team, Saigon, South Vietnam 1968 – 69. Consultant Anaesthetist 1st Australian Field Hospital, Vung Tau, South Vietnam 1969. Director Anaesthesia, Childrens Medical Relief International, Saigon, South Vietnam 1969 – 73. Anaesthetist International Medical Relief Team, Lebanon, 1982. Administrator Medical Relief Team, Lebanon, 1982 -83. Consultant Anaesthetist University Hospital Aintree 1989 – 2006. Appointed Director of the Mersey School of Anaesthesia 1997. Director of Education & Clinical Sub-Dean 1998 – 2006.

Professor Martin Leuwer is Professor and Chair of Anaesthesia, and head of the Critical Care

Research Unit, University of Liverpool. I graduated from the Johann Wolfgang Goethe University in Frankfurt/Main in 1979 and began my career in anaesthesia and intensive care medicine in Giessen. From 1982-1993, I worked at the University Hospital in Frankfurt/Main and from 1993-2000, at the Medizinische Hochschule Hannover where I was appointed to a Personal Chair in Anaesthesia and Critical Care Medicine in 1999. I gained my MD from the Johann Wolfgang University, Frankfurt/Main in 1982 and my PhD (Pharmacodynamics of Neuromuscular Blocking Agents in Neonates and Infants) from the Medizinische Hochschule Hannover in 1994. In June 2000, I was appointed to the Chair of Anaesthesia at the University of Liverpool.

My interests span from the interactions of drugs with voltage- and transmitter-gated ion channels aiming at the development of novel approaches to treating chronic pain to the pathophysiology of sepsis, with a particular focus on the role of white adipose tissue in sepsis.

Dr Peter Charters is a Consultant Anaesthetist and Intensivist at University Hospital Aintree. His particular area of interest is airway research and management of the difficult airway.

Dr Ed Moss was a Consultant Anaesthetist with a special interest in neuroanaesthesia at the General

Infirmary at Leeds from 1979 to 2008 (retired October 2008). Several publications of original work in peer-reviewed journals as well as review articles and book chapters on subjects relevant to neuroanaesthesia. Honorary Secretary of the Neuroanaesthesia Society from 1993 to 1998 and President from 1999 to 2001. Member of the specialist advisory working group on assessment of performance in Anaesthesia at the GMC from June 1994 to 1997. Regional Adviser for Anaesthesia in Yorkshire from 1998 to 2002 and member of the panel of College Visitors until 2004. FRCA examiner from 1990 to 2002. Chairman of the Central MCQ Core Group from August 1996 to July 2002. Member of the Examinations Committee at the Royal College of Anaesthetists from 1996 to 2002.

Dr Hans Nahser is a Consultant Neuroradiologist at the Walton Centre for Neurology and Neurosurgery. He is also a trained Neurosurgeon, but now specialises in neuroendovascular interventional work.

Scientific Programme Abstracts

Aintree Difficult Airway Management (ADAM) and Cervical Spine injury.

Dr Peter Groom, Liverpool

ADAM represents the world's first comprehensive guidelines for the management of the anticipated difficult airway, its genesis drawing heavily from the aviation industry's approach to crisis management. It is a web-based tool free to use by all anaesthetists [1] and aims to collate the published (and unpublished) problems associated with airway management for a wide range of pathologies (scenarios). Clinicians are required to feedback their experiences so any new, previously unrecognised problems are fed back into the system quickly. In this way, the likelihood of subsequent users avoiding preventable problems is enhanced as the database is constantly being updated.

ADAM achieves safe airway management by:

1. Stressing attention to detail.

2. Avoiding preventable problems.

3. Encouraging the clinician to mentally rehearse in advance what to do in a 'worst-case scenario'.

The approach requires the user to brief colleagues (ODA, surgeon, nurse) as to the nature of the likely airway problems, when they may occur and what will be needed to correct them or salvage the situation should they arise (everybody's role being clearly defined). Because everyone understands the problem the patient is managed optimally in a true team approach that obviously compliments the Safe Surgery Saves Lives campaign launched by the World Health Organization. [2]

The keystone of ADAM is the Contingency Table; a checklist describing the stepwise use of a device. For each step, the table highlights the generic problems associated with that piece of equipment (mastery denoting competence). The table also includes the problems identified during the patient's preoperative assessment. These, patient related problems, are highlighted at the step they are likely to cause trouble and are graded in terms of their hazardousness.

ADAM guides the user through the following steps:

PATIENT ASSESSMENT

Problem lists identify all the potential hazards associated with particular scenarios. The website allows scenarios to be combined to provide an accurate representation of the patient.

BEST PLAN SELECTION

Some techniques are better than others for dealing with a patient's unique problems. ADAM highlights the advantages and disadvantages of all plans helping the user to objectively select the 'best plan' for that patient.

FLAWLESS EXECUTION OF THE BEST PLAN

The plan's hazards are highlighted preoperatively in a Contingency Table enabling the anaesthetist to avoid them altogether, decide how to deal with effectively should they arise and /or seek more experienced help at an early stage.

The ADAM approach will be discussed in terms of the airway management of a patient with a cervical spine injury.

(Aintree Hospital runs difficult airway management courses three times a year based on the use of its website.)

1. Aintree Difficult Airway Management. 2009. http://adam.liv.ac.uk/adam7/login.aspx

2. World Health Organization. Safe surgery saves lives. 2008. www.who.int/patientsafety/safesurgery/en/.

Monitoring the brain: beyond ICP

Professor David K Menon, Cambridge

Intracranial pressure (ICP) and cerebral perfusion pressure (CPP) have formed the bedrock of neurocritical care monitoring and therapy targeting for the last two decades. While most retrospective analyses of the use of such clinical paradigms suggest clear benefit, there are occasional studies that suggest harm from these approaches. Further, there are no Class I clinical trial data supporting the use of this approach in the context of traumatic brain injury (TBI). Even amongst enthusiasts of CPP based management of TBI, there is a growing realization that physiological targets that are developed based on population averages may not provide the ideal context in which to plan the optimal management of TBI in individuals.

Several approaches have been described to refine CPP targets in individual subjects. One has been to use signal processing techniques to derive relationships amongst monitored variables that characterize the physiological status of the patient. A second, growing approach has been to use data provided by several ancillary monitoring techniques (such as brain oximetry, transcranial Doppler ultrasound, and microdialysis) to better understand the specific pathophysiological events that are responsible for worse outcomes. Finally, some centres have used physiological imaging to understand variations in pathophysiology between subjects, over time, and within different parts of the injured brain.

This talk will explore the ways in which we might use these approaches to individualise management and improve outcome after TBI.

BIS monitoring in neuro-anaesthesia and critical care.

Dr John Andrzejowski, Sheffield.

The main points of the lecture will cover:

- How BIS works: EEG of sleep

- General principles of BIS monitoring;
    - Awareness avoidance
    - Economic cost-benefit arguments

- Practicalities of regular BIS use;
    - How to put it on, and keep it on, in neurosurgery.
    - How to set up the monitor properly
    - When to believe the output.... or not!
        - How misinterpretation can make it a bad monitor.

- Some particular advantages of its use in neuro-anaesthesia;
    - TIVA & Barbiturate coma
    - Facilitating early assessment
    - Some examples of how BIS may have changed outcome in my own practice

- The use of BIS in intensive care is far more contentious even than its use in the operating theatre environment. I have some experience of using it in a neuro-ICU environment, so will describe where I consider it can be utilised to good and practical effect. I will also look at some of the evidence for the following:
    - How does BIS relate to other ICU sedation scoring systems? Could it affect post discharge ICU recall?
    - Can BIS score help predict outcome?
        - Following traumatic brain injury
        - Following cardiac arrest and therapeutic hypothermia
    - Is there any evidence for sedation pattern changes or cost savings
    - How much of the evidence from GITUs is applicable to our own neuro-ICUs?

Risk Adjustment in Neurocritical care: the RAIN Study

Dr David Harrison, ICNARC, London

Traumatic brain injury (TBI) is a leading cause of death and disability worldwide, and is the major cause in those aged under 40. While the NHS has clear guidelines that patients with TBI should be transferred to a neuroscience centre, many patients with TBI continue to be treated in general critical care outside a neuroscience centre, due to a variety of reasons including bed availability and clinical assessment of prognosis.

To support clinical decision-making for patients with TBI, we are recruiting both adult, general critical care units and neurocritical care units to a research study, funded by the National Institute for Health Research, Health Technology Assessment Programme, to test available risk prediction models for TBI.

The RAIN Study aims to provide an accurate risk prediction model for TBI to aid clinicians in evaluating: outcome at six months post-admission to hospital; effectiveness of care; transfer to a neuroscience centre; best time to transfer; and the cost-effectiveness of treatment and transfer.

NPSA report - Update on Wrong Site Surgery

Dr Samantha Shinde, Bristol

In 2005 the National Patient Safety Agency (NPSA) published a Patient Safety Alert on Correct Site Surgery (1). This Alert made specific recommendations for the pre-operative marking of the proposed site of surgery, and advised that if their recommendations were not followed, alternative robust mechanisms should be in place. At the time it was recognised that neurosurgery posed additional risks for wrong site surgery as confusion may arise from various causes. We undertook an audit of wrong site surgery in the 36 hospitals providing neurosurgery in Great Britain and Ireland in 2005, just before the Patient Safety Alert was published (2). The same neurosurgical units were contacted in 2008 to re-audit the reported incidence of wrong site neurosurgery in the two years after the introduction of the Patient Safety Alert. These results will be presented today.

During the period of our re-audit, 14 incidents of operation on the wrong side of the head were also reported to the NPSA through the National Reporting and Learning System. The NPSA responded to this continuation of incidences of wrong site neurosurgery, despite their 2005 guidelines, by issuing a Rapid Response Report on 'Avoiding wrong side surgery burr holes/craniotomies' (3). Inconsistent policies and practices related to pre-operative marking and checking undoubtedly contributed to further cases of wrong side neurosurgery. Evidence suggests that a "time-out" immediately before surgery, involving all theatre staff, with identification of the patient, reference to the consent, clinical notes, imaging and, where appropriate, marking, is the most efficient, practical and robust means of reducing the risk of wrong site surgery (4).

Last year has seen the WHO "Safe Surgery Saves Lives" initiative and in January 2009 the launch of the WHO Surgical Safety Checklist (5). This Alert now replaces the Correct Site Surgery Alert (2005)

1. Patient Safety Alert 06. National Patient Safety Agency. 2 March 2005

2. National Audit of "Wrong-Site" Neurosurgery. Wimbush S, Shinde S, Carter JA. Journal of Neurosurgical Anaesthesiology. 17, 3, (2005) 160-161

3. www.npsa.nhs.uk/nrls/alerts-and-directives/rapidrr/

4. A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. Atul Gawande et al. N Engl J Med 2009; 360:491-9

5. www.npsa.nhs.uk/nrls/alerts-and-directives/alerts/safer-surgery-alert/

Anaesthesia for Paediatric Craniofacial Surgery

Dr Frank Potter, Liverpool

Most syndromic craniofacial surgery in children is performed in supra regional centres.The bulk of this surgery is performed for forms of craniosynostosis. In the UK, this generally means that major cranial vault expansions are doe in the first two years of life, with mid-face and jaw work done at a much later stage. Anaesthetic considerations are as follows:

Small patients

Long procedures

Relatively large blood loss

Limitation of autologous transfusion

Fluid management

Potential for air embolus

Post operative care

There are also a number of 'one off' challenges, mainly related to airway problems in older children.

Anaesthetic Implications of Functional Neurosurgery

Dr Judith Dunnet, Bristol

There is a long history of a neurosurgical approach to the treatment of movement disorders, particularly those seen in Parkinson's Disease. In our Unit, this initially involved the creation of a stereotactically guided lesion in the globus pallidus and has now moved on to the placing of Deep Brain Stimulating (DBS) electrodes in and around the thalamus .This has been shown to control the symptoms of a variety of movement disorders, and has gained increasing acceptance as an effective technique. Most of the studies have been performed in patients with Parkinsons Disease, but the procedure has also been carried out for essential tremor, dystonia and multiple sclerosis. More recently, there is interest in the effectiveness of stimulators for the treatment of severe chronic pain and therapy- resistant depression.

The patients and the surgical technique used at Frenchay present some interesting anaesthetic challenges which will be discussed in the presentation. The implications of the presence of these devices in patients who present for other surgical procedures will also be described.

NOTES

Oral Presentation Abstracts

A United Kingdom Evaluation of Possum and P-Possum Scoring Systems for Predicting the Mortality of Neurosurgical Patients Undergoing Craniotomy

SJ Mercer[1], VJ Ramesh[2], A Guha[3]

[1] Specialist Registrar in Anaesthesia and Intensive Care, Mersey Deanery, UK.

[2] Consultant Anaesthetist, National Institute of Mental Health and Neurosciences, Bangalore, India.

[3] Consultant in Neurointensive Care and Anaesthesia, Walton Centre for Neurology & Neurosurgery, Liverpool [currently Consultant in Intensive Care, Royal Liverpool University Hospital, Liverpool, UK]

Correspondence to: A Guha, E-mail: arpan1@yahoo.com

Introduction

The POSSUM and P-POSSUM scoring systems have been used to evaluate morbidity and mortality in surgical patients. [1,2]. We evaluated the scores in patients undergoing craniotomies in a tertiary neurosurgical referral centre in the United Kingdom and compared results with our study in an Indian population [3].

Methods

Neurosurgical patients undergoing craniotomy over one year had physiological data collected before and after surgery. Using POSSUM and P-POSSUM systems, observed to expected ratios were calculated. Differences between expected and actual observed mortality were assessed by Chi-square test.

Results

A total of 145 patients were included. The mean [SD] calculated physiologic score was 18.83 [5.07] and mean [SD] operative score was 18.09 [3.75]. The overall observed mortality was 15 patients (10.3%), identical to the P-POSSUM prediction. The difference between expected and observed frequencies over different predicted mortality range was not significant with P-POSSUM score (p = 0.122). Overall prediction of mortality by P-POSSUM was very good with an observed/ predicted mortality ratio of 1.0. Overall prediction of mortality with POSSUM score was poor with an expected mortality of 28 patients (19.3%).

Conclusions

P-POSSUM was an accurate and reliable tool for estimating in-hospital mortality in different healthcare systems and populations. There may be scope to further modify P-POSSUM for the neurosurgical population by removing some of the constant physiological parameters. However, it may be simpler to adopt the P-POSSUM score into neurosurgical practice.

References

1. Copeland GP, Jones D, Walters M. POSSUM: a scoring system for surgical audit. *Br J Surg* 1991; **78**: 355 – 60.
2. Prytherch DR, Whiteley MS, Higgins B, et al. POSSUM and Portsmouth POSSUM for predicting mortality. Physiological and Operative Severity Score for the Enumeration of Mortality and morbidity. *Br J Surg* 1998; **85**: 1217 – 20.
3. Ramesh VJ, Umamaheswara Rao GS, Guha A et al. Evaluation of POSSUM and P-POSSUM scoring systems for predicting the mortality in elective neurosurgical patients. *Br J Neurosurg* 2008; **22(2):** 275 – 278

A Retrospective Clinical Study to Investigate the Epidemiology of Ventilator Associated Pneumonia (VAP) in a Neuro Intensive Care unit

SK Gowthaman[1], D Turnbull[1], J Andrejowski[1]

[1] Royal Hallamshire Hospital, Sheffield, UK.

Introduction

Ventilator associated pneumonia (VAP) is the most common nosocomial infection in intensive care[1]. The incidence in general intensive care (GICU) patients ventilated for more than 2 days is 25% -70%, but VAP is less well described in neurosurgical intensive care (NICU). The objective of this audit was to record the infective pathogens responsible for all VAP in our NICU over a 6-month period.

Methods

Of 123 consecutive admissions, data was collected only on patients who were ventilated for more than 2 days (VAP criteria). We retrospectively collated all positive sputum cultures and recorded contemporaneous white cell count and chest X-ray report.

Figure 1: Pathogens isolated from the lower respiratory tract

Organism isolated from sputum	Number and % of cases in NICU	% of cases in GICU[1]
Staph Aureus	12 (30%)	21%
Pseudomonas	7 (18%)	24%
Klebsiella	5 (13%)	<1%
Escherichia coli	4(10%)	<1%
Haemophilus	3(8%)	10%
Candida	2(5%)	<1%
Moraxella	2(5%)	<1%
Enterobactor	1(3%)	14.1%
Serratia	1(3%)	<1%
Proteus	1(3%)	<1%
Stenotrophomonas	1(3%)	1.7%
Streptococcus	1(3%)	1%

Results

81 patients fulfilled the data collection criteria. 48 (59%) of these had a positive sputum culture with one or more organisms *(figure 1*). 25 (31%) had radiological evidence of consolidation and 52 (64%) had an elevated white cell count (>10.4 $x10^9$/l). The triad of chest X-ray changes, positive sputum culture and elevated WCC was present in 14 (17%).

Conclusion

Our data demonstrates that colonisation of tracheal secretions is common. The spectrum of responsible organisms appears different to that reported nationally in GICU patients[2] (Fig 1). We now intend to carry out a prospective audit to compare these results with those obtained from a local GICU.

Previous reports have identified that early tracheal colonisation predicts the onset of pneumonia[2].We are developing a prospective surveillance to identify and develop strategies to prevent VAP[3].

Reference

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3. NICE: Technical patient safety solutions for ventilator-associated pneumonia in adults. 2008

Audit of Patient Transfer to a Neurological Intensive Care Unit (ICU)

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Introduction

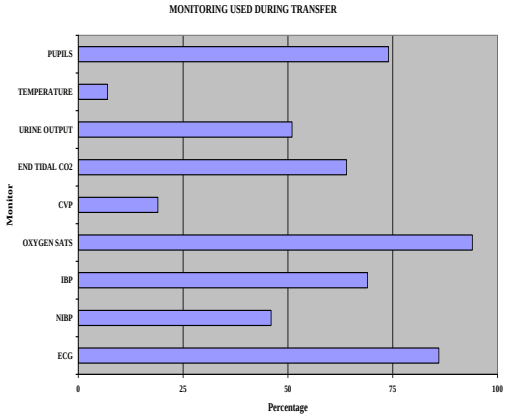
Outcome following primary brain injury can be improved by timely measures to prevent secondary brain injury. Guidelines for the transfer of brain injured patients were updated by the AAGBI in 20061,2. The purpose of this audit was to assess awareness and compliance with these guidelines, and to identify areas for improvement.

Method

The audit was carried out between December 2006 and 2008. A questionnaire was completed by the transfer team on arrival to the neurological ICU.

Results

Information was collected for 72 patients. 40% were traumatic head injuries. 33% had a non-traumatic subarachnoid/intracerebral haemorrhage. Other diagnoses included hydrocephalus and mass lesions. 54 of the patients were intubated. 1 had a tracheostomy. 17 were spontaneously ventilating. 35% of transferring teams were not aware of guidelines for transferring brain injured patients. 14 patients were transferred by ambulance crew only. 58 patients were transferred by an anaesthetist. 42% of these had less than 2 years anaesthetic experience. 57% of these were not involved in treating their patient prior to transfer. 67% of these were transfer trained. 71% carried a mobile phone. Monitor use is shown in the figure. 85% of intubated patients had their pupils checked.



Discussion

Despite the existence of specific guidelines aimed at preventing secondary brain injury, awareness and implementation is unsatisfactory. The transferring consultant is responsible for communication and for providing an experienced, informed and timely transfer team to expedite definitive management.

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Pain Relief for Craniotomies with Oxycodone : The Winning Balance on the Tightrope Walk?

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Introduction

Craniotomy is associated with moderate to severe pain[1]. Commonly used opiates such as morphine are associated with a significant side effect profile including post-operative nausea and vomiting (PONV) and sedation. This recognition and a subsequent change to a different opiate as first line has prompted us to audit our new analgesia protocol for paediatric craniotomies.

Method

In our regional paediatric neurosurgical service, oxycodone is used for postoperative analgesia in craniotomies as infusion or as patient controlled analgesia. All patients also receive intravenous paracetamol. We retrospectively reviewed the dose, mode of administration and side effects of oxycodone in these children.

Results

Data was obtained for 39 consecutive patients over a 15 month period. Five patients with preoperative

vomiting/swallowing difficulties were excluded. No patient had evidence of hypoxaemia or undue sedation. Four patients had one episode of vomiting or nausea. Four patients experienced more than one episode of vomiting requiring regular antiemetic therapy. One patient had pruritis and 17 patients required laxative therapy after 48 hours. All patients had good analgesia assessed with our normal pain scoring methods.

Conclusions

Although we did not directly compare morphine with oxycodone, other studies have shown that morphine is associated with side effects including PONV (36.7%), hypoxaemia (26.8%)[2] and pruritis3. Our previous experience of these adverse effects led us to change to oxycodone. Our audit has shown that oxycodone provides good analgesia with a low incidence of side effects compared to the literature thus proving to be a safe opiate for use after craniotomy in children.

References

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Transfer of Patients Requiring Surgery for Traumatic Brain Injuries – an Audit

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Background

Current national guidelines stipulate a maximum of 4 hours (hrs) from time-of-injury to surgery for patients with a traumatic extra-dural ("EDH"), sub-dural ("ASDH") or acute-on-chronic ("ACSDH") haematoma.

To improve these patients' outcomes, our institution initiated multidisciplinary "outreach-teaching" to our seven main-referring hospitals in 2005.

This retrospective audit aims to investigate adherence to national guidelines and examine if "outreach-teaching" improves compliance.

Methods

Information was collected from records of 32 patients admitted with an EDH/ASDH/ACSDH to Surgical Intensive Care between June 2007 and September 2008. Data included demographics, Accident & Emergency ("AED") admissions and transfers. Results were compared with past data.

Results

68.75% admissions were from our 7 main-referring hospitals.

Mean transfer-times from arrival in AED to neurosurgical admission:

All Hospitals: (standard deviation ±4.29 hrs) 29% < 4 hrs.	6.6 hrs
Main-Referring Hospitals: (standard deviation ±4.80 hrs) 41% < 4 hrs.	5.93 hrs
Other Hospitals: (standard deviation ±2.12 hrs 0% < 4 hrs	8.23 hrs

Past results

Jan-June 2007:	4.8 hrs (Range: 3-7 hrs; 62% < 4 hrs)
Aug-Dec 2005:	4.7 hrs (Range: 2.45 – 7.5 hrs)
2004 -2005:	5.4 hrs (25% < 4hrs)
2000-2001:	8.4 hrs (Range: 4 – 19 hrs)

Conclusion

The majority of transfers are not compliant despite availability of guidelines and teaching. Delays are multifactorial and it may not be possible to achieve this 4–hour target.

Outreach teaching may have increased compliance with neurosurgical transfer guidelines. Further education of staff and feedback of audit results to hospitals would be of benefit.

References

Recommendations for the Safe Transfer of Patients with Brain Injury AAGBI, 2006

NICE: Head injury: triage, assessment, investigation and early management of head injury in infants, children and adults: www.nice.org.uk, September 2007

Are we meeting the guidelines for patients with intracranial haemorrhage with disordered coagulation?

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Introduction

Our unit is a tertiary referral centre for neurosurgical admissions. Consensus in the management of patients with intracranial haemorrhage (ICH) on anticoagulants and antithrombotics is lacking. We therefore sought to evaluate current practice in our region.

Method

We conducted a prospective study of all patients admitted to our neurosurgical centre with ICH over a 4 month

period. We examined notes from both the referring hospital and our hospital.

Results

131 patients were admitted to our centre over the 4 month period. 27 were on aspirin, 23 were on warfarin, and 1 was on dipyridamole. Also, 3 patients received clopidogrel and clexane on admission to their referring hospital, prior to diagnosis. Warfarin was reversed as shown in the table. Vitamin K was always given intravenously, the dose varying from 0.5 mg to 10 mg. Patients on aspirin, clopidogrel or clexane did not receive specific reversal.

Table: Methods used to reverse warfarin anticoagulation

(FFP = Fresh Frozen Plasma; PCC = Prothrombin Complex Concentrate; IV vit K = Intravenous Vitamin K)

Methods of Reversal	No. of patients (Total: 23)
IV Vit K alone	2
FFP alone	0
FFP plus IV Vit K	2
Prothrombin Complex Concentrate alone	1
PCCs plus IV Vit K	12
PCC plus FFP	1
PCCs plus FFP plus IV Vit K	2
None	3

Conclusion

With the increasing number of people on antithrombotic agents, and an ageing population, ICH is becoming increasingly common. Early reversal of warfarin reduces haematoma expansion, enables early surgery, and improves outcome [1]. National guidelines for the reversal of warfarin recommend using factor concentrate with intravenous vitamin K [2]. A recent national survey showed considerable variation in practice [3]. Our results indicate less than 100% compliance in our region. Guidelines must be readily available to Emergency department doctors who are likely to make the initial decisions. Early consultation with the neurosurgeons and haematologists is essential.

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Audit of enteral feed delivery in Neurointensive Care

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Introduction

Nutritional support improves outcome and decreases morbidity and mortality in brain-injured patients.1 Patients with neurological injury often have significant increases in energy expenditure, up to 160% above predicted levels.2 Published reports consistently describe incomplete delivery of prescribed enteral nutrition. Our aim was to review our practice in the Neurosurgical Intensive Care Unit (NICU) and to assess the impact of delays in initiation and interruption of feeding on total caloric intake.

Methods

A retrospective audit of patients admitted to NICU over a one month period was carried out. Patients discharged within three days were excluded. Ethical approval was not required. We reviewed patients' and dieticians' notes and ICU charts. We compared the amount of feed delivered with the daily requirements over a seven-day period.

Results: 17 patients for a total of 87 patient-days were included. Patients received only 52% of their prescribed caloric needs throughout the audit period (Table 1). Feeding was limited mainly by transfer (11.5%), pre-procedure fasting (10.3%) or gastrointestinal dysfunction (3.4%). Prokinetic agents were used only in 3 patients.

Table 1

	Mean	SD
Total calculated requirements (Kcal)	8496	3826
Total Intake (Kcal)	4423	2976
Delay in starting feed (hours)	19.2	13.9
Hours of interruption/pt/day	6.21	2.03
Seen by a dietitian in 48 hours	(2/17) 11%	
Number of patient-days interrupted	(57/87) 66.5%	
Started NG feed within 24 hours	(11/17) 64.7%	
Started NG feed within 48 hours	100%	

Conclusion

Critical evaluation of the nutritional practice in NICU revealed practices embedded in the daily care of patients that cause interruptions in the delivery of enteral nutrition. Our audit should raise awareness of these practices so that focused actions to correct them can be implemented. Strategies to optimize delivery of nutrients (earlier starting, higher starting rates, accepting higher residual volumes and minimizing interruptions) should be also considered.

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How to collect Air Miles in the Intensive Care Unit

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Introduction

Radiation is known to adversely affect living cells and is part of our environment (1). There are no recommendations on radiological investigations in Intensive Care Units (ICU) or how often they should be preformed (2). Medical radiation has increased over the last 2 decades from 5 to 15 % of our annual exposure. CT gives the highest dose; 47% of all medical radiation dose (3).

Methods

A retrospective audit compared 3 month admissions to a District General Hospital (DGH) ICU and Neurocritical Care Unit (NCCU). The medical investigation radiation dose was converted to equivalent cosmic radiation dose received on long haul flights.

Results

Table 1: ICU Patient Admission Details

	DGH	NCCU
No Admissions	150	196
Emergency	138	179
Elective	12	17
Age Range (years)	17-93	17-81
Unit Stay (days)	1-42	1-41
Average Stay (days)	6	6
No Pts ≥1 Investigation	114	81
No Pts ≥1 CXR	61	78
No Pts ≥10 CXR	7	6
Max No CXR	16	14
No Pts ≥1 CT Scan	22	51

District General Hospital (DGH); Neurocritical Care Unit (NCCU); Patients (Pts)

All patients having two or more CXR could fly to Moscow. The average cosmic radiation dose equated to a return flight to Sydney 20 times: this was doubled in NCCU. The furthest equivalent radiation dose was 313 return flights to Sydney.

Conclusions

Only 2% of clinical deterioration is picked up by daily CXR (2) so radiological investigation in ICU should be based on clinical need.

References

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Poster Presentation Abstracts

Why Anaesthetise Adults for MRI Scans?

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Introduction

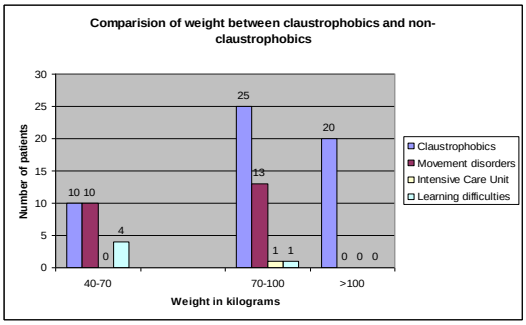
Magnetic Resonance Imaging (MRI) has become a gold standard investigation for many diseases. The patient needs to lie very still for many minutes for which some people require general anaesthesia. Over the last 10–12 years we have seen an increase in the number of adults requiring general anaesthesia (GA).
Two deaths due to co-morbidities occurred in the MRI scanner in one year in patients requiring (GA). Thus a prospective audit was conducted to look at the indications for general anaesthesia, and the potential for alternative imaging not requiring a GA.

Method

Patients requiring GA for MRI were collected over an 11 month period. The request forms were reviewed by an experienced radiologist to see if alternative-imaging modalities could be considered.

Results
6373 patients were listed for MRI scan. Of these 84 patients (1.3%) required a GA. 55 patients (1%) were re-booked due to claustrophobia, 23 patients (28%) had movement disorders and 5 patients (6%) had a learning disability. A statistically significant tendency was seen for the claustrophobia group to be heavier patients (p<0.001, Graph 1). 37% of the GA patients could have undergone alternative imaging.
Graph 1: Combining Movement Disorders and Learning Difficulties

Chi square for the 3 weight ranges (Claustrophobics *vs* Non-Claustrophobics) =16,
p< 0.001 for 2 degrees of freedom.



Conclusion

The proportion having GA scans because of claustrophobia is high, and these patients are heavier. MRI under GA or re-booking due to claustrophobia consumes significant staff and time resources.

We recommend that other imaging modalities should be considered where possible especially in overweight patients. If MRI is needed, consider initially booking all obese patients (BMI >30) into an open scanner to reduce unnecessary cancellations due to anxiety/claustrophobia.

A Survey of Patients Admitted to Neurointensive Care Following Acute Ischaemic Stroke

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Introduction

Ischaemic stroke is the second most common cause of death and a major cause of adult disability worldwide.[1] There is some evidence that decompressive craniectomy following massive cerebral infarction lowers mortality and improves functional recovery.[2] The majority of patients with ischaemic strokes are not admitted to Neuro-intensive Care Units. We investigated the number of patients with an acute ischaemic stroke admitted to our Neuro-intensive Care Unit over a four-year period, their clinical course, and outcome.

Methods

A survey of patients admitted to the Neuro-intensive Care Unit at the Institute of Neurological Sciences, Southern General Hospital, Glasgow, between 1st January 2004 and 31st December 2007, with a diagnosis of ischaemic stroke was done by a retrospective case note review. The incidence of neurosurgical intervention and rate of survival were measured. Patients were followed up to hospital discharge.

Results

Eighteen patients were admitted to the Neurosurgical ICU over the four-year period of study, and thirteen patients (72%) survived to hospital discharge (see table). Twelve patients underwent decompressive craniectomy and four had intra-arterial thrombolysis.

Table: Overall Results

Patient Group	Number (%)	Age (yr)(Median, Range)	Decompressive Craniectomy (number, %)	Intra-arterial thrombolysis (number, %)
All patients	18	52(28-70)	12	4
Survived	13(72%)	49(28-65)	9(75%)	2(50%)
Died	5(28%)	58(53-70)	3(25%)	2(50%)

Conclusions

Relatively few patients were admitted to our neuro-intensive care unit following ischaemic stroke over the

four-year period, but of the patients admitted more than seventy percent survived to hospital discharge, and of the patients that underwent decompressive craniectomy there was a survival rate of seventy-five percent.

References and Acknowledgements

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2. Fraser JF, Hartl R. Decompressive craniectomy as a therapeutic option in the treatment of hemispheric stroke (Review). *Current Atherosclerosis Reports* 2005; **7**: 296-304.

No ethical approval was required as this was a retrospective survey.

Case Report: Sudden Decrease of Bispectral Index during Endoscopic Neurosurgery

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Introduction

Bispectral Index (BIS) has been suggested to be an indicator of inadequate cerebral perfusion[1, 2]. We report a sudden intraoperative fall of BIS to 0 during endoscopic neurosurgery.

Case Report

A 54 year old woman, with a mass lesion causing hydrocephalus, was listed for a third ventriculostomy and biopsy, to establish a diagnosis and relieve neurological symptoms. The procedure was carried out under target controlled infusion (TCI) regime. Routine non-invasive patient monitoring was instituted and propofol and remifentanil infusions were adjusted to keep BIS between 40-60. Surgery was hampered by blood in the surgical field. It was halted after attempts to access the third ventricle with an endoscope resulted in a sudden decrease of BIS from 41 to 0. This was followed 30 seconds later by cardiovascular instability (tachycardia and hypertension). The endoscope was removed and irrigation discontinued, resulting in BIS returning to normal and the patient regaining haemodynamic stability. Intraventricular bleeding from a tumour was visualised on reinsertion of the endoscope and a third ventriculostomy performed without further complications. CT imaging confirmed intraventricular bleed and an external ventricular drain was inserted to further relieve pressure symptoms. A stereotactic biopsy performed later established a Grade 4 glioma.

Discussion

We postulate two possible causes for the sudden fall in BIS.

1. Intraventricular bleeding resulted in increased intracranial pressure leading to decreased cerebral perfusion.
2. Vasospasm may have caused transient cerebral ischaemia.

Monitoring of BIS may give early warning of cerebral hypo-perfusion and lead to timely intervention, preventing further ischaemia.

References

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Census of Oral Healthcare Practices on Neurointensive Care Units in the United Kingdom and Ireland.

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Introduction

Ventilator associated pneumonia is linked with poor neurological outcome.1 Level 1a evidence demonstrates the importance of oral health care in reducing ventilator associated pneumonia incidence.2 Nice guidelines recommend an antiseptic is included in mouthcare protocols. We wished to determine current oral health care practices on all 38 neuro-intensive care units in the United Kingdom and Ireland.

Methods

A senior nurse was contacted from each unit and a convenient time arranged to answer a questionnaire via telephone. Closed questions were used to reduce ambiguity and bias.

Results

76% of units have an oral hygiene protocol; 11% of those without have oral hygiene guidelines. Units use toothbrushes (95%), sponge toothettes (87%), toothpaste (86%), chlorhexidine mouthwash or gel (89%), hetadine mouthwash (5%) and adjuncts to facilitate mouth opening (16%). Oral healthcare is provided on average for 2.5 minutes 8 times a day. Although all units record unpleasant oral odour, fungal infection and bleeding gums, only 49% use a formal oral health assessment tool. In addition, only 30% record excessive plaque build up. Exploring the perceived benefits of oral healthcare on intubated patients, 62% of nurses surveyed think that prevention of pneumonia was paramount. The remainder thought that patient comfort and hygiene was more important. Patient nurse bonding was universally felt to be the least important reason to provide good oral healthcare.

Conclusions

Further work is required to harmonise oral healthcare provision on neurointensive care and achieve universal good practice.

References

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Throat pack use in neurosurgery: results of an online survey of members of the Neuroanaesthesia Society of Great Britain and Ireland (NASGBI)

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Introduction

31 years following the death of a child from a retained throat pack[1], the NPSA still receive notification of critical incidents as a consequence of their use. The value of throat packs, where oral soiling is unlikely, is uncertain. The objective of this survey was to establish the pattern of throat pack use in neurosurgical procedures where oral soiling is unlikely.

Methods

208 members of the NASGBI were successfully contacted via email to complete an online survey *(www.surveygalaxy.com), Table 1)*. One reminder was sent to non-responders.

Table 1. Examples of some of the main questions asked in the online questionnaire.

Do you ever use a throat pack in neurosurgery?
Why do you use throat packs?
What type of pack do you use?
During which procedures do you insert packs? (craniotomy or spinal in prone/supine)
How do you manage packs after insertion? (e.g. leave end protruding)
What methods do you have in place to prevent inadvertent pack retention?
Are you aware of any local incidents of retained throat packs in the last five years?
What may have contributed to the retention of the throat pack?
Why don't you use a throat pack?

Results

67% replied to the survey. 49% use a throat pack in neurosurgery. The main reasons were for ET tube stabilisation (58%) and/or to prevent tracheal soiling from oral secretions (38%). 88% used ribbon gauze. 44% and 63% of respondents used throat packs during surgery in both the supine and prone position respectively. 97% identified systems in place to avoid throat pack retention. 29% of respondents were able to recall a critical incident involved throat pack retention in the last 5 years. In 97% of cases the throat pack was forgotten, and in 47% of those it was a result of a change of anaesthetist. 20% of all *respondents have stopped using throat packs within the last 5 years*

Conclusions

The use of throat packs, although decreasing, is still commonplace. Despite the application of risk management strategies to prevent pack retention[2], complications do occur. Clinicians still inserting throat packs in neurosurgery where pharyngeal soiling is not expected, need to consider a risk-benefit analysis.

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Audit of temperature control during lumbar spine surgery

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Introduction

Hypothermia occurs commonly in the perioperative period, and is associated with a poor outcome, especially in some groups of patients[1]. This audit investigated whether patients with a core temperature of less than 36ºC were being actively warmed intraoperatively, which warming methods were being used, and whether a core temperature of greater than 36ºC was achieved by the end of surgery.

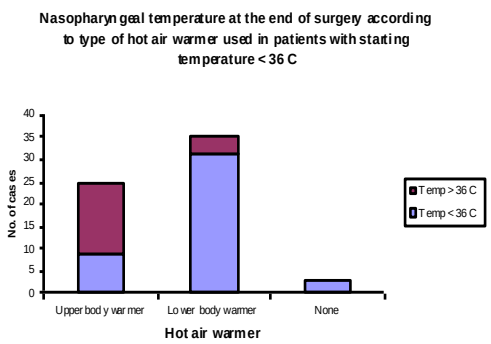
Methods

Anaesthetists completed a form detailing nasopharyngeal temperature and warming methods used during lumbar spine surgery.

Results

97 cases were collected. 63 (65%) had nasopharyngeal temperature of less than 36ºC at the start of surgery, of which 60 (95%) were actively warmed during surgery.

[Figure 1]



Ambient theatre temperature ranged from 20 to 23.3ºC,and was less than 21ºC in 7 cases.

Conclusions

All patients with a core temperature of less than 36ºC should be actively warmed intraoperatively and all

operating theatres should have an ambient temperature greater than 21ºC [2]. These standards were not met.

Upper body hot air warmers were found to be more effective than lower body warmers. This would warrant further study. These findings will be presented to the department with a suggested change in practice, and the audit repeated after six months.

References

1. National Institute for Health and Clinical Excellence April 2008 Guideline: The management of inadvertent perioperative hypothermia in adults
2. The Royal College of Anaesthetists Audit Recipe Book: Section 2.7: Intraoperative Care; Temperature Management

Percutaneous Dilational Tracheostomy (PDT) in Neurointensive Care Patients

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Introduction

Neurointensive care patients require tracheostomy for prolonged ventilatory support, control of intracranial pressure as sedation is weaned and for impaired bulbar reflexes. The possibility of raised intracranial pressure worsened by patient positioning and intraprocedural occult hypercarbia makes it a higher risk procedure(1).

Methods

Data was obtained and analysed retrospectively on 54 patients who had percutaneous tracheostomy done over a period of one year in our unit. This included date of admission, date of PDT, level of operator, supervision and periprocedural complications. We also looked at use of post procedure chest radiography (CXR).

Results

54 patients were included, median age 56 years (range 20–79). In 40% of patients the procedure was carried out by 2 trainees with a consultant supervising and in 57% by a consultant and a trainee. 2 patients who had difficult anatomical approach had the procedure done by 2 consultants. The timing of PDT ranged from one day to 22 days with a mean of 7.69 days and a std. deviation of 4.29 days. There were 3 minor complications (5%). CXR was requested in 68% of cases.

Conclusions

In spite of recommendations that CXR is unnecessary following uncomplicated PDT most operators still request one, a habit that leads to unnecessary patient and staff exposure to radiation. PDT in neurointensive care patients carries a higher risk but with proper patient selection and senior input the procedure is as safe as in general intensive care patients.

Reference

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Anaesthetic Management for Surgical Excision of Metastatic Paraganglioma.

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Introduction

Familial paraganglionoma syndrome is a very rare genetic condition and thoracic spinal canal paragangliomas are particularly uncommon[1,2]. Paraganglioma are neuroendocrine tumours with similar histological features to pheochromocytoma. Hypersecretion of catecholamines during surgical manipulation may result in severe haemodynamic instability and represent a significant anaesthetic challenge[3]. We present a 49 year old male with a metastatic thoracic paraganglioma requiring surgical excision.

Methods

Observational case report and literature review

Results

A 49 year old gentleman presented with arm weakness during follow up for a sub-pleural paraganglioma. Magnetic resonance imaging revealed recurrence in the brachial plexus and a large epidural mass causing 50% stenosis at the T5/6 level with spinal cord displacement. There was no significant lower limb neurology. It was decided to excise the epidural mass for histological confirmation and prevention of symptom development. Pre-operative work-up involved adrenoreceptor blockade with phenoxybenzamine and propanaolol and pre-operative embolisation. There was no apparent cord compromise following loss of blood supply to the tumour and during the embolisation there was minimal heamodynamic instability. Anaesthesia for excision commenced with midazolam then remifentanil and propofol total intravenous anaesthesia alongside a magnesium sulphate infusion. Haemodynamic stability was maintained throughout. He was extubated uneventfully and discharged from level 3 care the following day. Post-operative hypotension was not encountered, presumably due to distant metastatic deposits.

Conclusions

Paraganglioma of the thoracic spine are extremely rare and are associated with significant morbidity and mortality. Thorough pre-operative work-up and appropriate anaesthetic technique can result in good peri-operative outcome for these potentially challenging patients.

References

1. Houten JK, Babu RP, Miller DC. Thoracic paraganglioma presenting with spinal cord compression and metastases. J Spinal Disord Tech 2002 Aug; **15**(4):319-23.
2. Conti P, Mouchaty H, Spacca B et al. Thoracic extradural paragangliomas: a case report and review of the literature. Spinal Cord. 2006 Feb; **44**(2):120-5.
3. Kobe J. Metastatic Pheochromocytoma of the Thoracic Spinal Extradural Space. Med. Sci 2005; **51**(4): 49-53.

Is it "NICE and Warm" in Neurosurgery?

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Introduction

The National Institute for Clinical Excellence (NICE) published guidelines for the prevention of inadvertent perioperative hypothermia (core temperature <36oC).1 In our unit, forced air warming is routinely used on all patients but fluid warming is not. We undertook an audit project looking at the incidence of perioperative hypothermia and repeated it to assess the impact of giving 500ml of warmed crystalloid.

Method

We undertook a 2 week audit (baseline) of perioperative temperatures of neurosurgical patients in our unit. We then changed our routine practice and gave patients 500ml of crystalloid warmed in a warming cabinet set at 42oC, and re-audited (warm) the temperatures. Both groups received forced air warming intra-operatively.

Results

Preoperative and postoperative hypothermia were rare and there was no significant difference between the groups.

The main difference was in the incidence of intra-operative hypothermia which occurred in 89.7% (baseline) versus 62.1% (warm) of patients, with 48.3% (baseline) and 30.3% (warmed) having maximum intra-operative temperatures of <36oC. The temperature drop from preoperative to minimum intra-operative was 1.2 ± 1.0oC (baseline) versus 1.1 ± 1.2oC (warm) (p= 0.059).

Conclusions

In addition to forced air warming, 500ml fluid taken from a warming cabinet is a cheap and effective way of decreasing intra-operative hypothermia in neurosurgery.

References

1. NICE. Inadvertent perioperative hypothermia: (The management of inadvertent perioperative hypothermia in adults). NICE clinical guideline 65. 2008

Repeat Audit of Intensive Care Unit Protocols for Management of Head Injury

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Introduction

Use of evidence-based protocols is associated with a reduction in mortality in patients with head injury (HI) [1].

In 2005 we audited the adherence to such protocols within our unit; we have now re-assessed our performance.

Methods

A review of 57 consecutive patients admitted to our ICU with head injuries was completed. Data from the initial 24 hours was compared to the protocol targets, with compliance and deviations noted. Data was retrospectively analysed to avoid alteration in practice. Comparison was then made with the 2005 data.

Results

48 case-notes were reviewed (4 sets unavailable / 5 cases excluded). In 2005, there were a total of 155 head injury protocol targets requiring medical intervention, with 30 deviations from described unit protocols (19.4%). In our repeat audit, there are a similar number (168) intervention episodes with significantly fewer (23) deviations (13.7%) (Table 1).

Table 1

Protocol	Protocol Target	Targets requiring intervention (No.) 2005	Deviations 2005	Targets requiring intervention (No.) 2008	Deviations 2008
Oxygenation	PaO2 > 11kPa	7	3	14	1
CPP/MAP	CPP>60/MAP>90	33	3	29	4
Thermo regulation	35-37oC	18	0	26	0
Enteral feeding	Established within 24hrs	43	2	48	0
Glycaemic control	BM 5-7 mmol/L	28	11	26	5
Seizure prophylaxis	For compound skull fractures	24	11	21	4

Protocol targets, interventions and protocol deviations (NB, Not at all targets listed)

Conclusions

The results of our previous audit allowed us to target education towards specific protocols. We have been able to improve compliance, but there remain areas to address further.

References

1. Patel HC et al. Specialist neurocritical care and outcome from head injury. *Intensive Care Med* 2002; **28**: 547-53

A Prospective Audit of Airway Management in Emergency Department Patients Undergoing a Computed Tomographic Scan of the Brain

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Introduction

Following the introduction of NICE guidance on the management of patients with head injury[1], the use of X-ray computed tomography (CT) imaging of the head has increased markedly. The impact on anaesthetic and critical care services is unknown. Guidelines suggest that all brain injured patients with GCS ≤ 8 should have tracheal intubation prior to any transfer[2].

Methods

A case-note analysis was performed in October 2008 of 300 consecutive emergency department (ED) patients who were recorded as having CT head.

Results

Of the 300 cases, 10 did not actually have CT head. Details of the 290 analysed subjects are shown in Table 1.

Table 1.

		Number of subjects	Acute abnormality detected (%)	Mortality at 30 days (%)
Admission GCS	3-12	49	21 (43)	10 (20)
	13-15	241	49 (20)	20 (8)
Age (years)	≤16	34	5 (15)	0
	16-35	72	7 (10)	1 (1)
	36-64	94	22 (23)	4 (4)
	≥65	90	36 (40)	25 (28)

The incidence acute abnormalities detected by CT head and 30 day mortality in emergency department patients, categorised by age and admission Glasgow coma score.

On admission to ED, 23 patients had a GCS of ≤8. In 7 of these patients the GCS subsequently improved to greater than 8 prior to CT. Of the remaining 16 patients, 10 were intubated for transfer and CT. Of the 6 patients who were not intubated, 1 subsequently required intubation following an abnormal scan.

Nine patients with coma scores > 8 were also intubated. Seven of these cases were because the patient was unable to lie still.

All of the patients undergoing general anaesthesia had end-tidal CO_2 monitoring, but only 43% (8/19) were administered an opiate to obtund the stress response to laryngoscopy. 47% (10/19) were subsequently extubated in ED.

Conclusions

The clear majority (>90%) of patients undergoing CT head in ED do not require anaesthetic airway management despite an overall acute scan diagnosis rate of around 25%.

A Review of Central Venous Line Related Sepsis in Neurointensive Care Patients.

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Introduction

Central venous catheterisation is a core component of intensive care management and has documented associated rates of sepsis between 2.5-70%(1). To date there is little information regarding the course of central line sepsis in patients in neurointensive units.

Methods

Following improved infection control measures, a retrospective study was conducted from inpatient notes at Walton Neurological Intensive Care Department over a three month period to ascertain the types of and complications associated with central venous catheters.

Results

Of the 62 central venous catheters identified, 47% (n=29) were femoral, 24% (n=15) internal jugular, 23% (n=14), sub-clavian and 6% (n=4) were unknown. Four point eight percent (4.8%) (n=3) had reported line infections compared with that of 6.8% from the previous 3 months.

Conclusion

Femoral line insertion is often the most appropriate central venous line in patients with unstable head injuries where head positioning is restricted. The results of this study suggest that femoral venous catheters can be effectively managed in neurointensive care patients with minimal complications with appropriate infection control measures.

Reference

S McKinley, A Mackenzie, R Ward and J Penford. Incidence and Predictors of Central Venous Catheter Related Infection in Intensive Care Patients. Anaesthesia and Intensive Care 1999, **27**: 164-169

Survey of Management of Hypertension in Primary Intracerebral Haemorrhage

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Introduction

The rationale for treating hypertension in primary intracerebral haemorrhage is to avoid haematoma expansion. This has to be balanced against the risk of provoking cerebral ischaemia. However, there is little prospective evidence to support a particular threshold. The American Stroke Association has published guidelines for

treating hypertension in intracerebral haemorrhage, based on expert opinion (1). The purpose of this survey was to determine the opinion about management of hypertension and the rationale behind clinicians' decisions.

Methods

Questionnaires were sent to clinicians at a tertiary neurosurgical centre. They were asked for their opinion on factors influencing management, treatment options and blood pressure targets, based on case scenarios.

Results

About 50% of respondents target mean arterial pressure (MAP) whereas the rest target both MAP and systolic blood pressure. Age, premorbid blood pressure and Glasgow coma score often determine pressure targets. Most respondents would target cerebral perfusion pressure of more than 60, if intracranial pressure monitoring is available. There is some consensus about the minimum acceptable MAP (90-110 mm Hg). However, the upper acceptable limits are variable. 25% of responses to case scenarios did not comply with the American Stroke Association guidelines.

Conclusions

There is limited consensus about optimal management of hypertension in intracerebral haemorrhage. The premorbid status often determines treatment targets.

References

1. Broderick J, Connolly S, Feldmann E et al. Guidelines for the management of spontaneous intracerebral hemorrhage in adults: 2007 update. *Stroke* 2007; **38**: 2001-23.

Perioperative Analgesia for Thoracolumbar Surgery

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Introduction

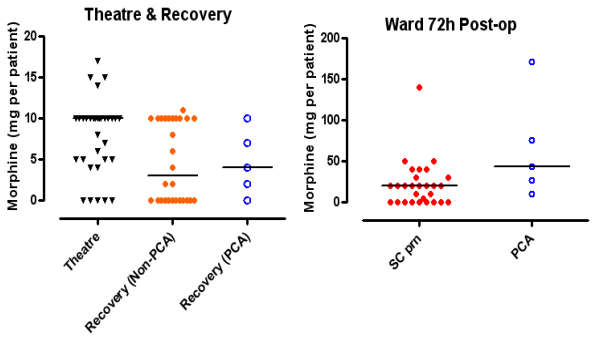
Our institute is performing an increasing number of thoracolumbar spinal surgical procedures. Spinal surgery is associated with significant postoperative pain [1]. Adequate pain assessment is a measure of quality of care [2].

Methods

A prospective survey of intraoperative and postoperative analgesia. Patients were followed up for 3 days by daily visits, and 72h analgesic consumption recorded.

Results

33 patients underwent either laminectomy or discectomy. Male: female ratio was 17:16; mean age 49 years (range 28-78). Of these, 5 received postoperative PCA morphine and the remainder received subcutaneous morphine boluses as required. Fig.1 describes the cumulative doses of morphine consumed in the perioperative and postoperative periods. Other analgesics received included paracetamol (66%), tramadol (27%), co-codamol (36%), dihydrocodeine (60%), and diclofenac (39%). 15 out of 33 patients had pain scores documented on return to the ward; 5 of these were in the PCA group.



Conclusions

Despite a hospital policy of recording pain scores, and a NHS QIS Best Practice Statement, only 45% of patients received any form of pain scoring on return to the wards. Even with this lack of pain scoring, morphine administration (both nurse-led and patient self-administered) was substantial. We intend to reinforce good pain assessment procedures on the wards with a targeted education programme. A further survey of practice will then be undertaken.

Iatrogenic Perioperative Hypothermia at a Tertiary Neurosurgical Centre in the UK: A Prospective Audit

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Introduction

A recent NICE guidelines [1] recommends maintenance of perioperative hypothermia to reduce risks including cardiac events and wound infections.

We audited our current practice regarding temperature measurement and maintenance of normothermia in order to draw up local guidelines and assess what, if any, further teaching, training and equipment would be required to meet the NICE standard.

Method

An audit questionnaire was used to collect prospective information including temperature measurement, type of monitoring, equipment used and use of forced air warming devices over a four week period on all elective patients.

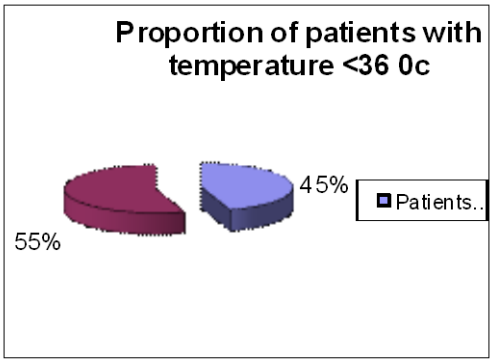
Results

Information collected on 138 patients. 55% of patients had a temperature <36ºC on arrival in theatre reception (measured using Temp Plus II device). No patient had their temperature monitored in the anaesthetic room. A statistically significant number of patients showed a pre-operative temperature of <36ºC using T-test [table 1] ($p<0.05$, 95%CI between –0.461& -0.151)

18% of patients had core temperature recorded intraoperatively. No patients had intravenous warmed fluids despite all having a minimum of one litre.

Only 5% of patients had a temperature <36ºC on first arrival in recovery (measured using the temporal artery scanner).

Table 1: Percentage of Patients with Pre-Operative Temperature <36ºC



Conclusion

More effort should be made actively to keep patients warm before arrival in theatre. Temperature measuring devices should be standardized. A multidisciplinary educational approach maintaining normothermia is needed to comply with NICE guidelines, minimize risk and improve patient-centred quality care.

Reference

1. NICE Clinical guideline 65: Inadvertent periopertive hypothermia: The management of inadvertent perioperative hypothermia in adults. Apr 2008.

The Challenge of Introducing a Checklist to Prevent Wrong Side Surgery

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Introduction

Since 2005 the National Patient Safety Agency (NPSA), Royal College of Surgeons (RCS) and the Neuroanaesthesia Society GB & I (NASGB&I) have sought to highlight the problem of wrong site surgery.

In response to this and actual wrong side surgery within our institution we devised a correct site checklist based on the Patient Safety Alert 06 (ref 1) requiring surgical site confirmation checks by:

1) Surgeon

2) Ward Nurse

3) ODP

4) Theatre Team Timeout

Methods

Compliance with completion of the checklists was audited for all patients having a general anaesthetic. A random period (1-3 weeks) of theatre activity was audited for 4 different months between May 08 and January 09.

Results

May n=39 cases: 64% forms completed

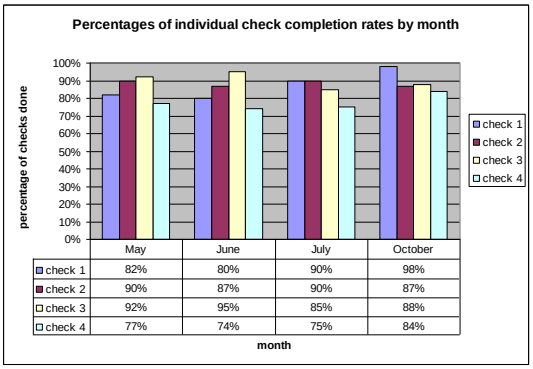
June n=39 cases: 64% forms completed

July n=40 cases: 85% forms completed

October n=188 cases: 70% forms completed

NB: - No actual wrong site surgery was performed during the entire audited period.

Table 1



	May	June	July	October
check 1	82%	80%	90%	98%
check 2	90%	87%	90%	87%
check 3	92%	95%	85%	88%
check 4	77%	74%	75%	84%

Conclusion

This study demonstrates difficulties with introducing a correct site surgery check. Compliance has improved following presentation of the initial audit results at the local governance day. It is hoped that through continued audit and raising awareness of individual surgeon compliance (0-100%), theatre compliance (53-77%) and individual check compliance (84-98%) (Table 1) that rates will eventually approach 100% but achieving this target remains a challenge.

References

1. www.npsa.nhs.uk/nrls/alerts-and-directives/rapidrr

2. Shinde, S.; Carter, J. A. Wrong site neurosurgery - still a problem. (Anaesthesia. 64(1):1-2, January 2009)

Rediscovering Metaraminol

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[2] Consultant, University Hospital of North Staffordshire, Stoke-on-Trent.

Introduction

The use of central venous lines in supratentorial tumour resection craniotomies is not uncommon. The commonest indication used is the use of vasopressors like noradrenaline in order to achieve acceptable intraoperative cerebral perfusion pressure (CPP). The use of metaraminol as a peripheral infusion can achieve the same goal without involving the use of a central line and thus avoiding the complications associated with it.

Method

We conducted a retrospective observational study to assess whether the use of peripheral metaraminol infusion have any impact on the number of CVP lines inserted for supratentorial tumour. The information was collected from the anaesthetic charts and the clinical notes obtained from the medical records department.

Results

Two study periods were selected, March 2007 - August 2007, and Sept.2007 to Feb. 2008.

There were nine missing notes, hence 24 cases pre-August 2007 were compared to 25 thereafter.

Pre August 2007 : 13 central lines inserted out of which only 3 were used for noradrenaline, 8 used for metaraminol infusion and 2 were left unused. Peripheral metaraminol used 6.

Post August 2007 : 7 central lines were inserted out of which 4 were used for noradrenaline, 2 were used for metaraminol and 1 was left unused. Peripheral metaraminol used 14.

Conclusion

Metaraminol as a peripheral infusion is suited very well to maintain CPP during supratentorial tumour resection craniotomies. It avoids the insertion of central line for using vasopressors like noradrenaline thus avoiding complications associated with CVP insertions.

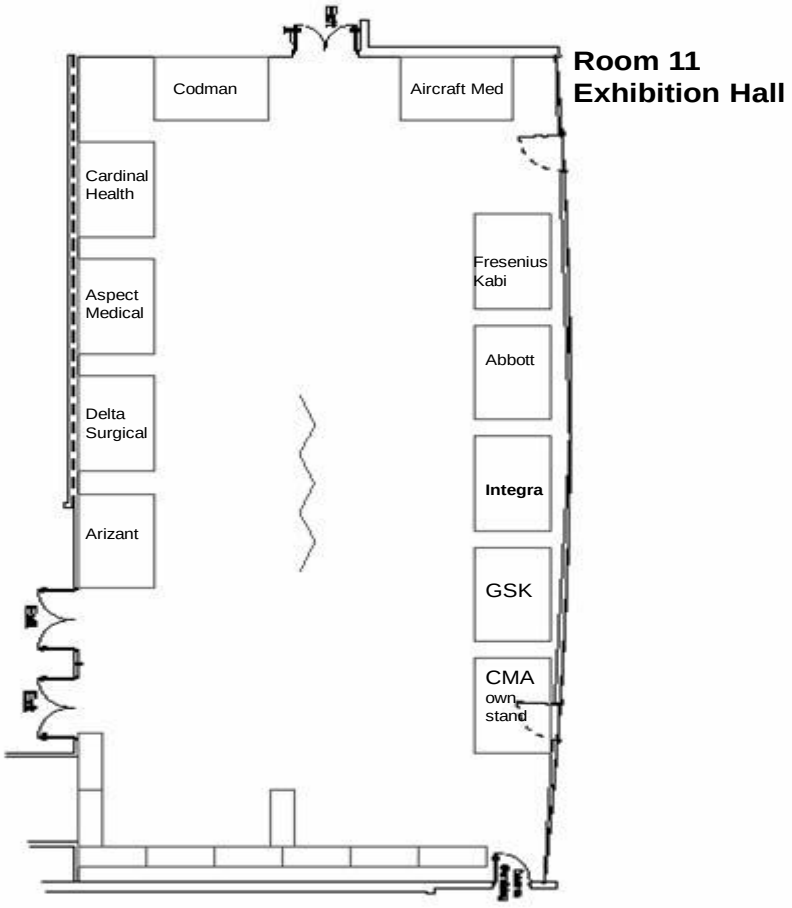
References

1. Mills S, Tomlinson A. The use of central venous cannulae in neuroanaesthesia - A survey of current practice in the UK. *Anaesthesia* 2000; **56**: 465-469.

2. Mills, S. J.; Tomlinson, A. Central lines and cerebral aneurysm surgery. *Anaesthesia*. **57(1)**:90-91, January 2002.

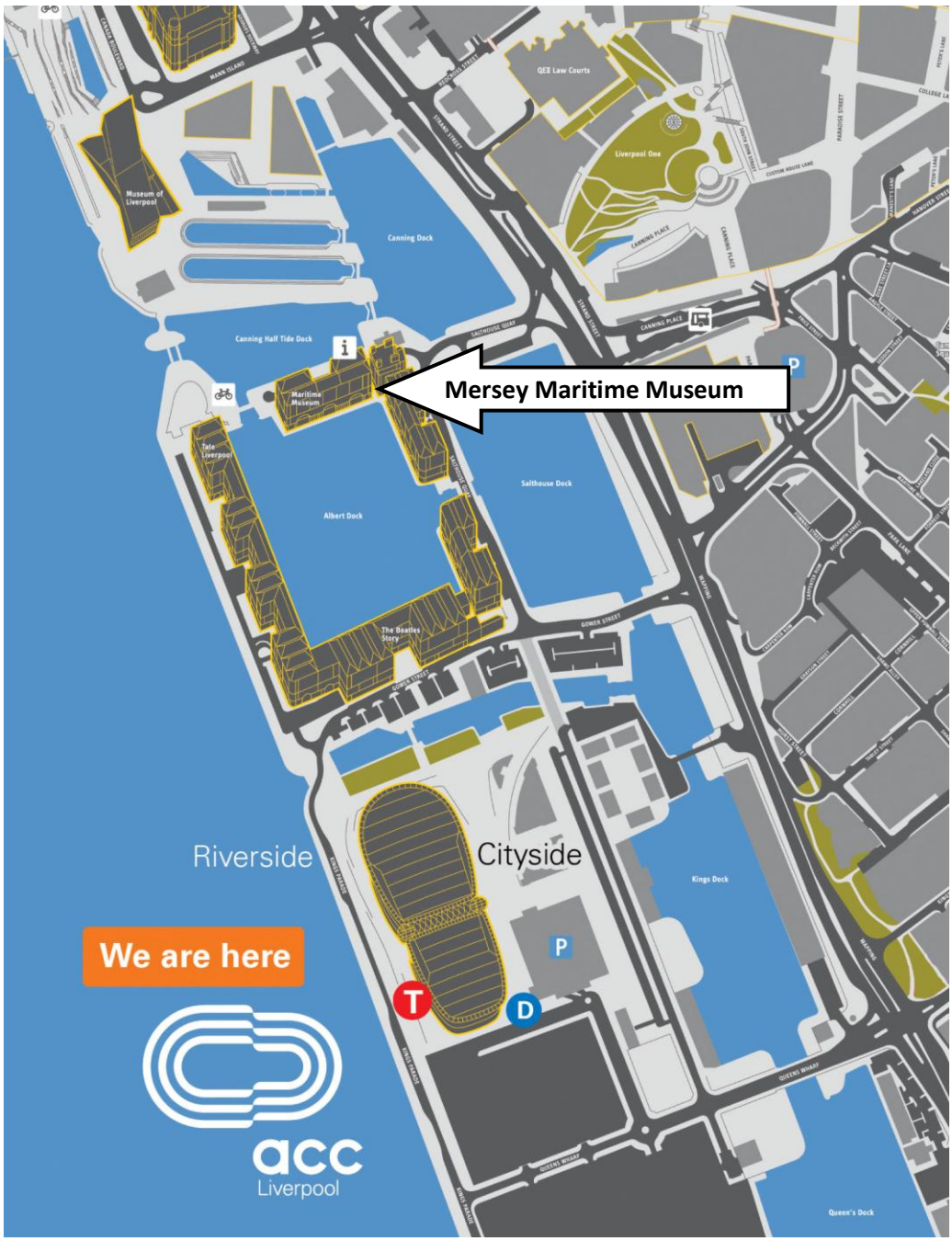
Liverpool Arena and Convention Centre Exhibitor Information

Catering, poster displaying and the trade exhibition will all take place in Hall 11, adjacent to auditorium 1b.



Dinner at the Mersey Maritime Museum

The President's reception and the Conference Dinner are being held at the Museum, which is five minutes walk from the ACC in the Albert Dock. The reception at 19:00 is being held in one of the museum's galleries, which guests are welcome to wander around with their drinks looking at the exhibits. Delegates staying for dinner at 20:00 will then go up to the top floor to dine; this has a great view over the dock.



After dinner there is a good selection of bars around the Albert Dock or the more adventurous can venture into the town to the nightclubs and other bars.

Annual Scientific Meeting
of the
Neuroanaesthesia Society of Great Britain and Ireland
NAS 2009 Liverpool

CONFERENCE EVALUATION FORM

Key: 1 = very poor, 2 = poor, 3 = satisfactory, 4 = good, 5 = very good

PRESENTATION Thursday		**1**	**2**	**3**	**4**	**5**	**Comments**
STROKE UPDATE Dr R White	style						
	content						
SURGICAL Mx CEREBRAL ISCHAEMAIA Mr P Eldridge	style						
	content						
CLEARING THE Cx SPINE Mr R Pillay	style						
	content						
ADAM-DIFFICULT AIRWAY Mx Dr P Groom	style						
	content						
MONITORING BRAIN BEYONG ICP Prof D Mennon	style						
	content						
LUND DEBATE Prof Nordstrom & Dr M Smith	style						
	content						
BIS MONITORING IN NEUROANAESTHESIA Dr J Andrzejowski	style						
	content						
UPDATE IN NIV IN ITU Dr A Bentley	style						
	content						
ICNARC/RAIN/NCCNET D Harrison	style						
	content						
NPSA REPORT Dr S Shinde	style						
	content						
Friday							
PAEDIATRIC CRANIOFACIAL SURGERY Dr F Potter	style						
	content						
ANAESTHESIA FUNCTIONA NEUROSURGERY Dr J Dunnett	style						
	content						
VERTEBROPLASTY Dr K Das	style						
	content						
KEYNOTE PRESENTATION-TRIUMPH OF EVIL Dr I Calder	style						
	content						
NEURORADIOLOGY UPDATE Dr S Niven	style						
	content						
NEUROVASCULAR UPDATE Mr M Javadpour	style						
	content						
CATERING							
CONFERENCE CENTRE FACILITIES							
OVERALL VALUE OF MEETING							

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