NIAA

National Institute of Academic Anaesthesia

The National Institute of Academic Anaesthesia

Comprehensive Review 2014–2015

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Contact us

We hope you enjoy reading this report. If you have any further queries about anything you read or if you are looking for help and advice with anaesthetic research, please contact us:

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National Institute of Academic Anaesthesia

Professor Monty Mythen
NIAA Board Chair

Professor Rob Sneyd
NIAA Research Council Chair

The National Institute of Academic Anaesthesia (NIAA) has gone from strength to strength, and we are delighted to showcase these achievements in this Comprehensive Review for 2014–15.

Grant activity continues to flourish, and £6.6million has now been awarded through the NIAA-coordinated funding rounds. This is a great tribute to the continued generosity of the NIAA founding and funding partners and the relentless hard work of the grant awards team led by Professor David Lambert. Professor Lambert has served as the Grants Officer of the NIAA since its inception. He has established systems and processes that have ensured the timely and robust award of millions of pounds of grants to a standard that satisfies the National Institute of Heath Research (NIHR). This has guaranteed 'portfolio status' and enabled grantees recruiting patients to trials to secure additional funds from the NIHR. Sadly for us, David is retiring from this role. We thank him for his outstanding contribution.

2015 saw the appointment of Professor Rupert Pearse as the inaugural Director of the NIAA Perioperative Medicine Clinical Trials Network. The aim of the Network is to build infrastructure to support patient recruitment into large clinical trials, and generate new evidence to inform the care of more than 300 million patients undergoing surgery worldwide each year. In keeping with the collaborative ethos of the NIAA, the Network will create an environment which allows everyone with an interest in perioperative care to make a meaningful but realistic contribution to clinical trials and observational studies. The Network officially launched at our Annual Scientific Meeting on 14th April, and new members are able to join now.

The NIAA continues to support the development of future leaders in academic anaesthesia. In addition to the award of NIAA grants and fellowships, it runs and supports a number of courses for trainees who want to engage with research. Trainee research networks are now up, running and flourishing in most parts of the UK and Ireland. The development of the umbrella Research and Audit Federation for Trainees, led initially by Dr Tom Clark with support and mentorship from Dr Gary Minto, is bringing together trainees from across the country to deliver high quality research and improvement projects. An increasing number of posts which offer part-time research experience are developing, and the NIAA is developing guidelines for quality assuring these placements.

The John Snow Intercalated BSc for undergraduate students continues to be popular and has allowed the NIAA to help budding researchers in the early stages of their career as well as more established colleagues looking to take that important next step.

The NIAA-HSRC's Quality Audit and Research Coordinator network is in its third year and is maturing as a means of delivering health services research in perioperative care

throughout the NHS. A notable success was the first Sprint National Anaesthesia Project which took place in 2014, and recruited over 15,000 consenting patients in two days from 97% of eligible NHS organisations. This makes SNAP-1 the largest ever research study in anaesthesia, perioperative medicine or pain on the NIHR portfolio, and this achievement was due to the hard work of the QuARCs, trainees and other investigators (1,400 in total). SNAP-2 is in preparation and the HSRC is working with the QuARCs to develop the potential of this important network.

The NIAA's Health Services Research Centre continues to grow with the on-going success of the National Emergency Laparotomy Audit, the sixth National Audit Project, and the development of the Perioperative Quality Improvement Programme – our third national clinical audit. The James Lind Alliance Research Priority Setting Partnership was completed and published in 2015, and we commenced the international collaborative Core Outcomes Measures in Anaesthesia and Perioperative Care – Standardised Endpoints in Perioperative Care (COMPAC-StEP) initiative. Dr Ramani Moonesinghe was appointed as the second Director of the HSRC, and took up this role when Professor Mike Grocott completed his term in spring 2016. Professor Grocott has been appointed as NIHR Clinical Research Network National Specialty Lead for Anaesthesia, Perioperative Medicine and Pain. The National Specialty Group will continue to focus on delivering portfolio studies to time and target, as well as increasingly taking on a more strategic role within the NIHR.

The NIAA continues to enjoy a strong relationship with military anaesthesia. Colonel Peter Mahoney has retired as Defence Professor of Military Anaesthesia and Critical Care, leaving a great legacy and pipeline of thriving clinical academics, and Professor Tom Woolley has taken over the role. Professor Woolley researches acute trauma coagulopathy in seriously injured casualties.

Collaboration is the key to the NIAA's success and we would like to thank all of our founding and funding partners for helping to make the achievements on the following pages possible.

Ninth year, £6.6 million, and time for change!

Professor David Lambert
NIAA Grants Officer

In previous NIAA Comprehensive Reviews I ended by saying "we have ambitious plans and there is much still to do" – we are now at the point where the Grants Officer is to change but the ambition remains. This piece will update you on the significant changes and new initiatives developed over the last two years.

Our updated funding portfolio is shown in Table 1; 220 awards worth approximately £6.6m in eight full years of activity. Our process continues to be fast and efficient with much positive feedback from applicants. Our turnaround time is still around ten weeks from submissions: the success rate depends on funding partner category but on average is around 1:3. We lobbied hard for NIAA to become a member of AMRC, but this was declined as we were classed as 'multiple' charities. That said *BJA*/RCoA applied as a single charity and were accepted; the processes required have been adopted as a baseline for NIAA activity. Grant Committee dates are now fixed in advance and advertised as is the composition of the Grants Committee.

Since the last report, we have added British Society of Orthopaedic Anaesthesia (BSOA) to the list of funding partners and AAGBI-Anaesthesia have trialled an interim-round to increase the frequency of application to three months.

The majority of our activity remains focused on project grants and this funding stream works well for most. Following on from the success of the clinical career development award offered by *BJA*/RCoA, a similar competition was run for non-clinicians with a further two awards made to Dr Gareth Ackland and Dr Daqing Ma. A further achievement spearheaded by Prof P Hopkins for the *BJA*/RCoA is the agreement to joint fund Clinical Research Training Fellowships (CRTFs) with the MRC. This is a fantastic win for Anaesthesia as a speciality with our funding leveraging an equal amount from MRC. There are currently six fellows worth about £1.3 million (half from *BJA*/RCoA and half from MRC). Leveraging is an excellent way to make the most of our funding and already occurs for NIAA funded NIHR portfolio studies. We need to think beyond the boundaries of single funders.

In June 2015, a funders' forum was convened at AAGBI headquarters where joint funding was discussed. NIAA partners already joint fund; for example *BJA*/AAGBI, AAGBI/SEA(UK) and ACTA/VASGBI/*BJA* but this has generally been ad hoc. At the funders forum meeting there was general agreement that working together was something to explore further, and a 'statement of intent to explore collaborative research funding models' was signed. I sincerely hope that our collective financial muscle, possibly aimed at priority areas/pilot-enabling work, can convince major external funders that we have a serious research agenda.

When I set up this process and wrote some of the associated governance material my term of office was five years with renewal for a further five. I am now coming to the end of that second term, and a process for appointing my replacement has been agreed to start in 2016. There have been some ups and downs on this journey but for the most part it has been a fun ride. I hope that we can find someone willing to give up their time for the common good; it's now time for a change.

For more information on the application process go to **www.niaa.org.uk/CurrentOpportunities**.

If you have any questions regarding the application process, please email **info@niaa.org.uk** – we would rather answer simple queries prior to submission. We look forward to receiving your applications.

GRANT ACTIVITY FROM 2008-2015 ENCOMPASSING THE MAIN NIAA 2008(R1) – 2015(R2), 16 ROUNDS

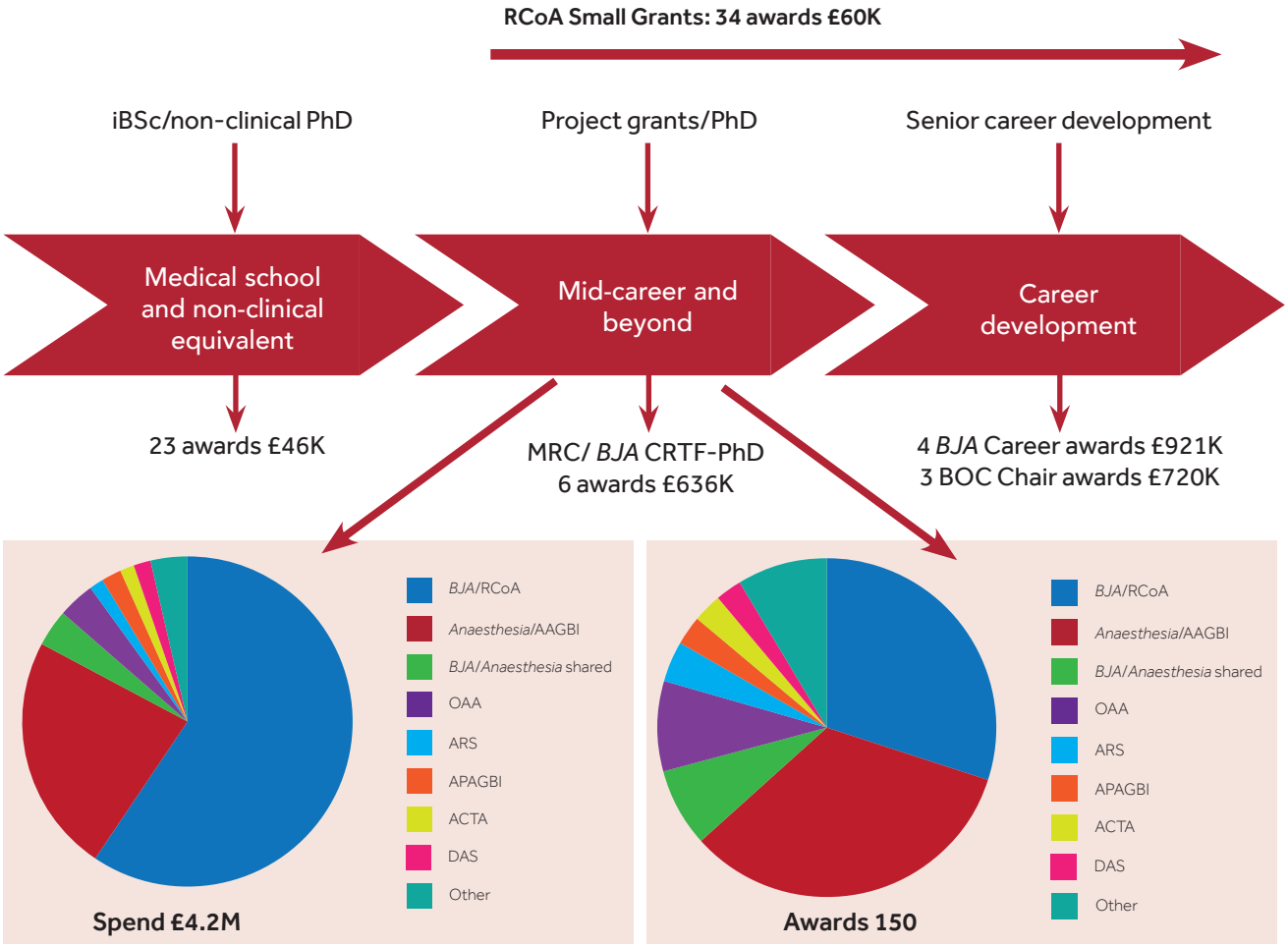

Table 1: Funding by partner

Data from 16 rounds: 2008 (R1) – 2015 (R2)		
Funding Partner	**Number of Awards**	**Spend**
BJA/RCoA	45	£2,433,533
AAGBI/*Anaesthesia*	50	£958,196
BJA/*Anaesthesia* Shared	11	£149,388
OAA	13	£281,175
ARS	6	£63,023
APAGBI	4	£73,290
ACTA	4	£54,232
DAS	4	£76,629
SEA UK	3	£15,046
NASGBI/NACCSGBI	3	£39,826
RA UK	2	£13,514
BSOA	1	£3,500
VASGBI	1	£17,415
ACTA/ VASGBI/*BJA*/RCoA	1	£39,552
AAGBI/SEA UK	1	£3,000
APAGBI/*BJA*/RCoA	1	£18,005
	150	£4,239,324

Anaesthesia and Perioperative Care Research Priority Setting Partnership (PSP)

Dr Oliver Boney
Steering Group coordinator / NIAA HSRC research fellow

James Lind Alliance
Priority Setting Partnerships

The NIAA's Anaesthesia and Perioperative Care Priority Setting Partnership concluded in 2015. Its headline research priorities were finalised and disseminated to partner organisations in May 2015; the full results were then published in *BMJ Open* in December 2015. The results have been widely reported in the RCoA *Bulletin*, *Anaesthesia News*, and at several national and international anaesthetic meetings and conferences.

Top ten research priorities
What can we do to stop patients developing **chronic pain** after surgery?
How can patient care around the time of **emergency surgery** be improved?
What **long-term harm** may result from anaesthesia, particularly following repeated anaesthetics?
What **outcomes** should we use to measure the 'success' of anaesthesia and perioperative care?
How can we improve recovery from surgery for **elderly patients**?
For which patients does **regional anaesthesia** give better outcomes than general anaesthesia?
What are the effects of anaesthesia on the **developing brain**?
Do **enhanced recovery programmes** (fast-track surgery to speed up patient recovery) improve short- and long-term outcomes?
How can **pre-operative exercise** or fitness training, including physiotherapy, improve outcomes after surgery?
How can we improve **communication between the teams** looking after patients throughout their surgical journey?

This initiative was funded by the NIAA's funding partners and guided by the James Lind Alliance, a branch of the National Institute for Health Research whose founding principle is 'Patients and clinicians tackling treatment uncertainties together'. The PSP had two objectives: to identify unanswered questions ('what we still don't know') in anaesthesia and perioperative medicine, and to prioritise those questions for future research. The underlying ethos of collaboration between patients, carers and clinicians echoed the growing recognition of the importance of involving patients in shaping the medical research agenda.

A wide range of stakeholders – i.e. anyone with an interest in anaesthesia and perioperative care, whether as a 'provider' or a 'service user' – participated in the PSP, and 25 professional organisations and 20 patient groups enrolled as partner organisations. Almost 2,000 individuals (around 700 patients and carers, and over 1,200 anaesthetists and other healthcare professionals) responded to our online surveys, whether to submit ideas and suggestions for future anaesthesia research or to choose the most important topics from those submitted.

In total, the PSP received nearly 1,500 suggestions for future anaesthesia or perioperative research. These were condensed into 92 'summary' research questions, from which the ten

most important were eventually selected. This involved a two-stage process of elimination: an online prioritisation survey to identify the 25 most popular questions, followed by a workshop at which 23 partner organisation representatives agreed the final 'Top Ten research priorities'.

The methods and all results are accessible via the NIAA website **www.niaa.org.uk/PSP** and the full report can be found here: **http://bit.ly/1XWKiC2**

The future

The PSP's aim is to inform the research agenda going forward. The challenge now is therefore to publicise the research priorities within the anaesthetic and perioperative medicine research communities, and to collaborate with research funders to use these priorities in ensuring that future research efforts target truly 'important' research questions. To that end, the NIAA funding partners and Research Council have pledged to consider the PSP's priorities in their funding decisions; the NIAA is working with the NIHR to develop research questions for commissioned research based on the PSP priorities; and the brand new UK Perioperative Clinical Trials Network will similarly take note of the identified research priorities when designing and implementing large scale pragmatic clinical effectiveness trials.

Alongside its role in informing the research agenda, the PSP yielded two other benefits. First, it represents the most wide-ranging example to date of engaging patients and the public in setting the anaesthetic research agenda. Secondly, it afforded all anaesthetists – not just those already plugged into academic circles – a say in shaping future research. Many thanks to all those who participated, and finally to the PSP's Steering Committee for their endless patience and enthusiasm!

Anaesthesia, Perioperative Medicine and Pain Management

Professor Martin Leuwer
National Chair, NIHR CRN Specialty Group Anaesthesia, Perioperative Medicine and Pain Management 2010–2015

This update outlines key targets which have been achieved with regard to the NIHR Clinical Research Network's High-Level Objectives:

Increase the number of participants recruited into NIHR CRN portfolio studies	
2010/11	1,580
2011/12	3,175
2012/13	7,898
2014/15	> 15,000

As revealed by these metrics, we have again been very effective in increasing recruitment to NIHR portfolio studies substantively.

It should be emphasised here that this year's recruitment success was a first convincing showcase for the efficacy of our new trainee network, RAFT, as it was mainly due to RAFT's enthusiastic commitment and contribution to SNAP-1 led by Dr SR Moonesinghe *et al.*

Our Specialty Group considers this type of nationwide collaborative research as the ideal approach to utilising and exploiting the strength of our established interdisciplinary clinical network. Consequently, we plan to establish this approach as a key component of our future strategy.

The SNAP-1 data have already been published: Moonesinghe SR, Walker EM, Bell M. SNAP-1 Investigator Group. *Perioperative Medicine* 2015 Apr 17;4:4.

Last but not least, recruitment to SNAP-1 was instrumental in helping NIHR CRN Clinical Research Division 6 to meet its metric targets.

Additional one year targets

Following a successful meeting with stakeholders and funding bodies hosted by the Royal College of Anaesthetists in February 2013, we proposed the following one year targets to NIHR CRN:

1. Attract at least two new industry-led studies – **Achieved**.
2. Organise at least one meeting with each of our partner Specialty Groups in the new theme structure – **Achieved**.
3. Organise launch-meeting of a nationwide SpR networks in support of recruitment to NIHR portfolio studies, facilitate constitution/terms of engagement and establish e-learning modules addressing clinical research issues – **Achieved.**
4. Networks should actively recruit to portfolio studies in 25% of the regions – **Achieved**.
5. Organise second industry liaison meeting – **will be held September/October 2016**.

NIAA Perioperative Medicine Clinical Trials Network

Professor Rupert Pearse
CTN Director

In 2015, the board of the National Institute of Academic Anaesthesia decided to form a Perioperative Medicine Clinical Trials Network (CTN) to develop, support and co-ordinate world class multi-centre clinical trials in the UK.

The core purpose of the CTN is a simple one: to support the generation of new evidence to inform the care of more than 300 million patients undergoing surgery worldwide each year. It is now well recognised that complications after surgery result in significant delays in patient recovery and return of functional independence. Patients who develop postoperative complications experience a higher mortality risk, which persists for many years after surgery. Improvements in perioperative care may therefore have a substantial impact on wider public health, and the Royal College of Anaesthetists has responded to this challenge by launching the Perioperative Medicine Programme.

Such large scale changes in healthcare policy require a robust evidence base which has traditionally been lacking in perioperative care. Comparisons with other medical specialities suggest that large clinical effectiveness trials remain a primary source of the evidence which defines the optimal approach to patient care. At present, few major trials are conducted in anaesthesia and perioperative medicine, either in the UK or worldwide. The CTN will help to change this, primarily by building infrastructure to facilitate patient recruitment into clinical trials.

What will the Clinical Trials Network do?

The CTN will create an environment which allows everyone with an interest in perioperative care to make a meaningful but realistic contribution to clinical trials and observational studies. The CTN will organise the many and varied contributors into an effective collaborative team, with a shared belief in the importance of our work, and a shared sense of ownership of our projects. The CTN will promote and facilitate an effective working relationship between trial organisers and investigators in individual hospitals. This in turn will ensure strong engagement with the research and with implementation of the research findings. We will achieve this by developing an inclusive culture, creating recognisable roles for every member of the group, even though the CTN projects will be large collaborations. The CTN will also build relationships with clinical trials units which have expertise in trial design and management with major public research funders and with other trials groups in related specialties in the UK and internationally.

Progress so far

The director of the CTN was appointed in June 2015 after competitive interview, and a working group has been established to develop the project. The CTN launched at the NIAA Annual Scientific Meeting on 14th April 2016, with a half-day session to explain how the Network will be organised. Potential new members are now able to apply to join either the Local Investigator scheme, or the Principal Investigator scheme through the CTN website **www.pomctn.org.uk**. The core members of the CTN Board have been selected, and will include representation from the Royal College of Surgeons of England, trainee research networks, and other key stakeholder roles and groups. Plans for the Chief Investigator scheme are almost complete and this will launch in the autumn of 2016.

Ultimately, new CTN projects will be selected from proposals made by the Network membership. Investigators would be free to join and then propose a new trial, but a track record of contribution to Network activities will be one of the criteria considered in the adoption process. We will also have separate processes to handle requests for adoption of established trial proposals from outside the CTN membership, and tendering for commissioned research calls. We have an interim process for study adoption within the first 24 months of the CTN, and the first trial proposal to be adopted under this process is the COMMAS trial, a pragmatic trial of chlorhexidine mouthwash to prevent postoperative pneumonia.

Supporting Academic Anaesthesia

Dr Ramani Moonsinghe
NIAA Academic Training Coordinator

Academic anaesthesia goes from strength to strength, in part due to the continued development of important infrastructure, in particular training and education, networks and collaborative research studies

Training and education

The joint NIAA and Pan-London Academic Anaesthesia Training Advisory Group two-day 'Introduction to Academic Anaesthesia' has continued, and is flourishing. Over 100 delegates assembled last year to hear two days of high-quality education about research methods and options for getting involved, which was delivered by trainees with experience of undertaking research and a number of internationally renowned experts.

A short-life working group was assembled to discuss the issues around supporting trainees in developing research skills. The aspiration that all trainees should at least have some exposure to research during their training is being supported by the development of the trainee-led research networks, and the implementation of the HSRC-led Sprint National Anaesthesia Projects, and Perioperative Quality Improvement Programme. It has been acknowledged that the Annex G part of the curriculum might benefit from a "refresh" and simplification, so that it is easier to use. A key aspiration of the NIAA and the NIHR Clinical Research Network is to continue to build opportunities for research training which can be supported by research-active consultants across the UK, and linked to NIHR portfolio studies and/or trainee research networks. Creation of such opportunities is being supported by the development of updated NIAA guidelines to quality-assure part-time research posts.

Quality Audit and Research Coordinator network (QuARCs)

The QuARCs are the backbone of the HSRC's activity across the country. We now have QuARCs in >90% of NHS anaesthetic departments, and they have been invaluable in supporting clinically meaningful and generalisable health services research. The RCoA has now generously supported three annual QuARC days to facilitate networking and continuing professional development relating to delivering health services research and quality improvement.

Trainee Research Networks

Trainee networks are flourishing, with the over-arching Research and Audit Federation of Trainees (RAFT) organisation supporting the development of links between regional networks. Each trainee network is supported by 'light-touch' consultant mentoring, but their abiding principle is very much to support trainees in developing and implementing their own research, as well as to support collaborative national projects such as the SNAPs.

The past three years have seen the trainee networks pass a number of significant milestones. First, it is remarkable that

there are now TRNs covering every part of the UK and Ireland. Second, the SWARM (South West) network were successful in an NIAA grant application to support a trainee led and delivered randomised controlled trial, and at the time of writing, have nearly completed patient recruitment to time and target. Finally, RAFT has selected its first collaborative national project, iHYPE (Intraoperative Hypotension in the Elderly), which will look at incidence and outcome associated with perioperative hypotension. While the nature of the trainee networks is collaborative, it is still important to note the specific contribution of Tom Clark, the first RAFT chair, who has just stepped down following his consultant appointment. The support offered by consultant mentors across the networks, and in particular Gary Minto from Plymouth, is also worthy of mention. With continued support from these key individuals, the trainees themselves and the AAGBI and RCoA (who are supporting national meetings), we are confident that RAFT will continue to thrive and play an important and enduring role in facilitating trainee-led (and all other) collaborative research.

Sprint National Anaesthesia Projects (SNAPs)

In May 2014, the HSRC supported the delivery of SNAP-1. The aim of this new programme of work was threefold:

- To answer clinically important questions in a representative UK sample.
- To facilitate trainee led and delivered research.
- To bring the whole anaesthetic community into the delivery of health services research.

SNAP-1 achieved all these goals. The topic of SNAP-1 was patient-reported outcome from anaesthesia in adult non-obstetric patients – specifically, patient satisfaction, anaesthesia-related adverse outcomes and accidental awareness during general anaesthesia. It recruited 15,000 consenting patients in two days, with participation from 97% of eligible trusts. This was a huge community effort, with over 1,800 registered investigators, of whom approximately 800 were trainees; medical students, research nurses and consultants all also contributed.

The main results are analysed and have been submitted for publication – all contributors will be listed as such in manuscripts and on publication databases. SNAP-2 will follow in 2016/17, and will explore the epidemiology of critical care provision after surgery – specifically it will try to develop a better understanding of the issues around why it appears that so many high-risk patients do not receive postoperative critical care, despite national recommendations that they should. Secondary aims will be to explore clinicians' views about postoperative resource utilisation, and to test the accuracy of some of the more commonly-used methods of risk prediction in a comprehensive sample of UK patients. SNAP-2 will present a greater challenge, as data collection will be required for a longer (one week) period – but we remain optimistic for a similar level of engagement to SNAP-1 and are grateful for the community's continued support for these studies.

Military Anaesthesia

Col Tom Woolley MD RAMC
Defence Professor of Anaesthesia and Critical Care

In February of this year I took over as Defence Professor of Military Anaesthesia and Critical Care from Col Peter Mahoney. Since its inception, the department has grown from a virtual department with honorary appointments into a department with formally appointed academics with dedicated academic time in their job plans. This has resulted in senior military clinicians developing an academic portfolio in line with meeting the research priorities of UK Defence.

Research remains focused on conflict and clinical delivery, however, the nature of that conflict has now changed. We are no longer in a fixed military base delivering care from an advanced trauma hospital with robust logistical support. Future conflict will be in more austere environments, with an emphasis on medical care delivered from light, agile units. There will be prolonged timelines, both in front of the hospital, and backwards to the UK. Not only that, there is likely to be an increase in delivering humanitarian assistance, as demonstrated by the recent support to Sierra Leone with the Ebola virus outbreak.

Military academic research will need to innovate and collaborate in order to meet future demands, whilst at the same time looking back and consolidating what we have learnt over the recent conflicts.

A key objective over the last few years has been to cement the clinical knowledge gained from the conflicts in Iraq and Afghanistan, and this has culminated in the publication of a the joint UK/ US textbook *Combat Anaesthesia: The first 24 Hours*. This is freely available at the following link:
http://1.usa.gov/21t8nCP

Although it is focused on a military environment, many of the lessons and skills are applicable in civilian trauma.

Since the last review there have been some additional major changes to the department as follows:

COL PETER MAHONEY – EMERITUS PROFESSOR

Col Peter Mahoney CBE TD QHS RAMC moves to the role of Emeritus Defence Professor of Anaesthesia. He will be undertaking research into ballistic injury mitigation at Cranfield University.

SURG CDR ADRIAN MELLOR MD – SENIOR LECTURER

Adrian has recently been appointed a visiting Professor at Leeds Beckett University, and is a consultant anaesthetist at the James Cook University Hospital in Middlesborough. He is the one of the lead researchers on the British Services Dhaulagiri Medical Research Expedition, investigating changes in physiology at altitude.

LT COL ANDY JOHNSTON – LECTURER

Andy is a Consultant in Respiratory and Intensive Care Medicine at the Royal Centre for Defence Medicine based at Queen Elizabeth Hospital, Birmingham. He is studying critical care outcomes of military polytrauma patients and has interests in blast and ballistic trauma as well as CBRN.

LT COL DAMO KEENE – LECTURER

Damian is a Consultant in Anaesthesia and Pre-Hospital Emergency Medicine based at the Queen Elizabeth Hospital, Birmingham. He has a research interest in the pre-hospital phase of damage control resuscitation. He recently completed work examining the cause of death in battlefield casualties.

SURG CDR TIM SCOTT – LECTURER

Tim is a Consultant anaesthetist, Intensive Care and Pre-Hospital physician working at the Royal Stoke University Hospital. He is also the clinical lead for Intensive Care on the Navy's primary casualty receiving ship. His current research interest is in modelling blast lung injury in collaboration with Nottingham University and the Defence Science and Technology Laboratories.

MAJ JEY JEYANATHAN – LECTURER

Jeyasankar is interested in the development of Medicine in the Resource-Limited and Austere Environment for both civilian and military organisations. He has been working closely with NGOs, particularly in collaborative work between ADMACC and the ICRC developing a Handbook of anaesthesia for the resource limited environment and now coordinating an anaesthesia workshop as part of the ICRC War Surgery Seminar hosted in Geneva. He has been involved in development projects looking to engage charities and non-governmental organisations in the professionalisation of disaster relief medicine and incorporating military knowledge into humanitarian assistance.

LT CDR ELSPETH HULSE – LECTURER

Elspeth is a Navy ST6 anaesthetic trainee and is completing her PhD in toxicology at the University of Edinburgh. She has been investigating the type and severity of lung injury created through aspiration of both gastric contents and organophosphorus pesticide as a result of self-poisoning. This involves work in the UK and in Sri Lanka. She is also investigating blast lung injury and testing potential mRNA markers.

NIAA Health Services Research Centre

Professor Mike Grocott
Director, NIAA Health Services Research Centre, 2010–2016

The NIAA Health Services Research Centre (HSRC) has continued to develop audit and quality improvement capacity and expertise.

The first patient report of the National Emergency Laparotomy Audit (NELA) was launched in June 2015, the sixth National Audit Project (NAP) on Perioperative Anaphylaxis commenced in November 2015, and planning for the second Sprint National Anaesthesia Project (SNAP-2) is well underway following the extraordinary success of SNAP-1. The award of Health Foundation funding to support the Perioperative Quality Improvement Programme (PQIP) is a major success that will shape the future direction of the HSRC. PQIP becomes the third national clinical audit overseen by the HSRC. The methods work-stream has continued to expand with an ongoing systematic review programme, an increasing focus on developing risk prediction and case-mix adjustment tools, and the launch of a core-outcomes initiative in anaesthesia and perioperative medicine. The HSRC provided important support to the launch of the UK Perioperative Medicine Clinical Trials Network (CTN) and oversaw the development and conduct of the James Lind Priority Setting Partnership, underpinning our goal of building research for patient benefit within our specialty. The leadership of the HSRC will change in 2016, with a new Director and Deputy Director recently appointed.

Audit and Quality Improvement: The National Emergency Laparotomy Audit published its second annual report in July 2015. Building on the 2014 organisational report, this report described for the first time processes and outcomes at an individual patient level. The report presented data from all 192 Hospitals in England and Wales where emergency laparotomies take place. The collection of full datasets on more than 20,000 patients (case ascertainment rate >70%) is testament to the hard work and engagement of anaesthetists, surgeons and audit professionals in hospitals across the country. The report highlighted the critical importance of risk assessment and documentation in driving care in this group of patients, as well as important issues around the involvement of senior staff, critical care utilisation and seven-day working. In recognition of the achievements of the audit, the Health Quality Improvement Partnership (HQIP) confirmed extension of NHS England funding for a further two years through to November 2017. The major challenges in 2015-16 will be to continue to improve case ascertainment as the audit matures, and to continue development of the on-line quality improvement dashboard providing 'live' data to local sites and thereby delivering on the promise of "national data for local quality improvement".

The National Audit Project (NAP) programme, delivering case-series of rare but potentially catastrophic complications of anaesthesia, continues to thrive. NAP-6 (perioperative anaphylaxis) commenced in 2015, and scoping for NAP-7 is expected in early 2017.

The first SNAP research study measured patient-reported outcome from anaesthesia, and took place over two days in May 2014. It was adopted onto the NIHR portfolio, and, as it was a consenting study, it counted towards local trusts' target accruals to NIHR studies. SNAP-1 recruited more than 15,000 patients, making it the largest consenting study in anaesthesia and perioperative care in the history of the NIHR portfolio, and this huge success was down to the extraordinary support provided nationally by the 1,800 investigators drawn from the QuARCs and trainee community. Manuscripts are in

submission /preparation and patient information leaflets will be informed by the results – a real example of health services research leading to practice change.

Following on is the AAGBI and RCoA funded SNAP-2 study exploring perioperative critical care provision, and scheduled to recruit participants in late 2016. We are continuing the model of appointing a trainee lead to support the delivery and analysis of the study and are delighted that Dr Danny Wong, an ST5 anaesthesia trainee from the King's rotation, was appointed to this role via a national process. Discussions are under way to secure ongoing funding for this important programme using 'snap-shot' short-duration, high-volume data collection to address important research questions in anaesthesia and perioperative care. An important aspiration is to establish a funding stream to enable continued trainee leadership, and also the appointment of future Chief Investigators from the broader community of research-active NHS anaesthetists.

A major development in 2015 has been the success of Dr Ramani Moonesinghe in securing funding from the Health Foundation to support the development and evaluation of the Perioperative Quality Improvement Programme (PQIP). The scope of work on this important project is growing rapidly, and takes us a step closer to the goal of a comprehensive perioperative data-gathering and quality-improvement framework. PQIP has been approved as a National Clinical Audit, and work on evaluating the quality improvement initiatives overlaying the data collection has begun in earnest. The Royal College of Anaesthetists is supporting the essential infrastructure required to deliver this important new initiative.

Development of methods: A substantial suite of systematic reviews of process and outcome measures, as well as candidate interventions, are being undertaken as part of the development work underpinning PQIP. A similar review has guided the selection of risk models for NELA. Moving forward this programme of work will increasingly focus on developing novel-risk prediction models for the national clinical audits, NELA and PQIP.

The Core Outcome Measures in Perioperative and Anaesthesia Care / Standardised Endpoints in Perioperative care (COMPAC-StEP) initiative was jointly launched in 2015 by the HSRC and Monash University in Australia. The aim is to define outcome measures for clinical trials but the outputs will be of value across the spectrum of observational studies, audits and quality improvement initiatives. The StEP element will focus on defining precise criteria for a variety of measures in a spectrum of domains of perioperative outcome, while the COMPAC process is about identifying which are the most important domains to record from a partnership composed of patient and professional representatives.

Enabling research for patient benefit: The QuARC network continues to thrive and has collected data on several important surveys of practice during 2014-15, as well as coordinating delivery of the SNAPs and other studies. The annual QuARC day at the Royal College of Anaesthetists was again a great success. The partnership of the HSRC and the UK Perioperative Medicine Clinical Trials Network as the operational arms of the NIAA will be a major driver for developing clinical research in anaesthesia and perioperative care in the coming years.

An important piece of work was the development and delivery of the James Lind Priority Setting Partnership (PSP). Almost 2,000 stakeholders drawn from patients, professionals and the public contributed their views to the largest example to date of patient and public involvement in shaping anaesthetic and perioperative research. The results were widely disseminated during summer 2015 including a publication in *BMJ Open*. A key priority moving forward is to achieve traction with the major funders in support of the identified priorities.

Infrastructure: The HSRC has recently appointed a statistician, who is working with us part-time and will be helping to support key projects such as SNAP-2 and PQIP. Importantly, a key part of HSRC activity is supporting the future of academic anaesthesia, and the names of the fellows who are supporting current and past HSRC projects are listed below. We are delighted to have recently appointed our tenth and eleventh anaesthesia research fellows in a competitive national process to support PQIP and a new workstream related to developing our capability in non-adult research. We are grateful for the continued support we get from University College Hospital, the London Clinic and the Princess Grace Hospital for these posts.

Finally, the governance of the HSRC is evolving. Dr Ramani Moonesinghe has been appointed as the second Director of the HSRC. Professor Mike Grocott stepped down following his second term as inaugural Director at the end of March 2016. Dr Iain Moppett was appointed as the next Deputy Director in May 2016. The HSRC will be undergoing an internal and external review to help re-focus and redefine strategy and we look forward to continuing our relationship with team Anaesthesia-UK over the forthcoming years.

HSRC research fellows and schools of anaesthesia:
(in order of appointment)

Matt Oliver – (NELA) – London, St. Georges'
Olly Boney (James Lind, COMET and StEP initiatives) – London, North-East
Ellie Walker (SNAP-1) – London, North Central
Maria Chazapis (Darzi fellow and PQIP) – London, North Central
Mike Bassett (NELA) – North West
Tom Poulton (NELA) – North East
David Gilhooly (PQIP) – Post-CCT, Ireland
Danny Wong (SNAP-2) – London, South East
Duncan Wagstaff (PQIP) – London, North Central

Anaesthesia Sprint Audit of Practice (ASAP) Proximal Femoral Fracture

Dr Richard Griffiths
ASAP Collaboration Team

The ASAP project was conducted almost three years ago, with the report published almost two years ago.[1] It was a remarkable collaboration between the anaesthesia community and the National Hip Fracture Database (NHFD).

The standards for the audit were taken from the Association of Anaesthetists of Great Britain & Ireland (AAGBI) 2011 guideline, *Management of Proximal Femoral Fractures*.[2] One of the standards was to be vigilant for the occurrence of bone cement implantation syndrome (BCIS). ASAP revealed that BCIS was a problem in England, Wales and Northern Ireland, with an incidence of cardiovascular collapse happening once in every 200 cemented hemiarthroplasties. A significant safety guideline[3] has followed from ASAP, which was produced with input from anaesthetists, orthogeriatricians and orthopaedic surgeons. It is hoped that this guidance may help departments reduce the incidence of this often catastrophic complication.

Although it is two years since the report, the outcome data and an analysis of risk assessment tools have only recently been accepted for publication. These will shortly be appearing in *Anaesthesia*. They do highlight the effect that a low blood pressure has on outcome following hip fracture surgery. The causes of the hypotension are multifactorial, but it was truly remarkable that over one-third of all cases in the ASAP data set had a mean arterial blood pressure of less than 55 mm Hg at some stage during their anaesthetic.

I am personally a little disappointed at the level of progress that has been made since the audit results were published. There is a lot of work to do in the fields of perioperative medicine around proximal femoral fractures. Anaesthesia has a large role to play in the care of these patients, and it is pleasing that some studies are starting to be funded, which include a pilot study into the effects of tight blood pressure control during surgery for hip fracture.

Another interesting feature of the ASAP project was the diversity of techniques employed by anaesthetists. Despite very good evidence for using nerve blocks, only 50 % of patients currently get one. Translation of good research and evidence into clinical practice does appear to be quite slow in this field. A case has been made for the standardisation of anaesthesia for hip fracture; it would be interesting to know if this would improve outcomes.

The current 30-day mortality rate is 7.5% [4] and there is no real time audit of anaesthesia or perioperative care for these patients. Anaesthesia data is entered into the NHFD on a voluntary basis. The accuracy of the data, when not put in by anaesthetists, has been questioned. Following ASAP, and the outcomes from the audit (which are soon to be published) there is an urgent need for the ASAP dataset to be used permanently and in real time. I hope that the institutions responsible for national audit in perioperative medicine can push this further up the agenda with those responsible for commissioning. As the baby-boomer generation approach their eighth decade, it is likely that the demand for acute hip fracture services will increase in the NHS. ASAP was a start but we must now kick on try and deliver high quality research and audit projects to answer the many questions that ASAP posed.

References

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Quality Measures Advisory Group

Dr Ramani Moonsinghe
Chair

The Quality Measures Advisory Group was previously established by the Health Services Research Centre and the RCoA to support the work led by the HSRC on developing and implementing quality metrics in perioperative care. Over the past year, it has developed considerably thanks to the expertise and enthusiasm of its members, and hence has morphed into the Quality Working Group.

Quality improvement (QI) is finally being acknowledged as a core part of the work of NHS clinicians. Training in QI methodology is now embedded in the Foundation training programme, and will soon be in undergraduate curricula; the Academy of Medical Royal Colleges has recently published a report with recommendations for the delivery of QI training at both under- and post-graduate level. Annex G of *The CCT in Anaesthetics* includes Quality Improvement within it, and this has been brought to life by the new PRISM (PeriopeRative Improvement Science and Management) website, funded by the London Academy of Anaesthesia: www.prism-ed.com. The learning module within it has been developed by a group of trainees and consultants in anaesthesia with an interest in QI, led by Maria Chazapis and Carolyn Johnston. This is an excellent resource which will form the backbone of training in QI methods for PQIP (see below), and we are delighted that the RCoA has decided to support the adoption of the learning module into the e-Learning platform.

Perhaps the most significant development over the past 18 months has been the evolution of the Perioperative Quality Improvement Programme (PQIP). At the time of writing for the last NIAA Comprehensive Review, we were just scoping the feasibility of developing a comprehensive measurement system for perioperative care. We are now in the final stages of planning for launch of this exciting new initiative. PQIP will measure complications and patient-reported outcome, as well as process measures and mortality, in a sample of patients undergoing major non-cardiac surgery in any NHS hospital which is interested in participation. By collecting a comprehensive dataset on a sample of patients, we hope to maximise the opportunity for quality improvement, while not over-burdening local data collectors. PQIP is now registered as a national clinical audit and will begin data collection in late 2016. The Health Foundation has supported an Improvement Science Fellowship to develop PQIP and evaluate its quality improvement methodology. This importantly means that the pilot phase of this project will be eligible for adoption onto the NIHR portfolio, and, therefore that local hospitals should be able to get support for patient recruitment. The RCoA are supporting the costs of essential infrastructure, and the HSRC have appointed a number of research fellows to support the set-up and delivery.

The support offered to PQIP by a broad church of Royal Colleges, Faculties, Specialist Societies and, importantly, patients, gives us confidence that this will be a landmark initiative for the HSRC and for the anaesthesia and perioperative community as a whole. Importantly, as well as providing a vehicle for quality improvement in perioperative care (the main priority) we hope that the data collected will also support important generalisable research into what aspects of care delivery support the best patient outcomes.

Patient, Carer and Public Involvement and Engagement (PCPIE) in Research

Dr Mark Edwards
Chair, PCPIE Working Group

Public involvement in research is defined as research being carried out 'with' or 'by' members of the public rather than 'to', 'about' or 'for' them. The term 'public' encompasses patients, potential patients and carers who use healthcare services, and members of groups that represent those service users.

Public involvement is increasingly recognised as a central part of the research process. Most broadly it can include research policy and co-ordination, or prioritisation of research topics, as seen in the recent National Institute for Academic Anaesthesia and James Lind Alliance Priority Setting Partnership. More direct involvement in a research project may see lay members or patients acting through a focus group or as a trial group member to help shape the research question, acting as a champion for participants, reviewing patient-facing documentation and giving a non-medical perspective on trial decisions. Importantly for researchers, meaningful public involvement has become a requirement of major research funders, is queried during Research Ethics applications, and is becoming increasingly interesting to medical journals.

Public involvement may bring research questions and outcomes with greater relevance to patients, and studies with a more acceptable participant experience, leading to improved recruitment. Yet despite these potential benefits, in some areas the push for greater public involvement has happened at a faster pace than the introduction of resources to support researchers in undertaking this activity. Involving patients and the public in anaesthesia and perioperative research may be more challenging than in other areas of medicine. This particularly relates to the lack of a large well-defined patient group to engage, in contrast to many chronic disease states.

The HSRC PCPIE working group was established in 2013 to help address these challenges. It comprises members of the RCoA's Lay Committee with an interest in clinical research, and has provided a resource accessible to all researchers with proposals in the planning stages. An online form allows researchers to request input from the group and give a summary of their proposal. After review the group gives feedback which may be used to develop the proposal further. This includes commenting on research protocols and participant information from a non-medical perspective. The group may also advise on involving local service users with experience of the relevant healthcare area, if this has not been addressed already. The group prioritises work that is at an early stage of development, to allow time for meaningful integration of feedback into the research proposal. In selected cases the group will offer ongoing support for a research proposal if it progresses.

In the last two years the group has reviewed around 20 research proposals, from translational through to clinical and health services research. The group has refined its operating procedures and has been supported with regular educational sessions covering topics including research methodology and ethics. Feedback from researchers suggests that the group's reviews have been beneficial, with 100% of respondents agreeing that the group's guidance was of a high quality and was useful. 90% state that they modified aspects of their proposal in the light of the group's guidance. At least two applications that we are aware of have gone on to win formal funding. The group is increasingly being recognised as a key stakeholder in perioperative research, and is now represented at the National Institute for Health Research (NIHR) National Specialty Group for Anaesthesia, Perioperative Medicine and Pain Management. Upcoming developments include modifications to our application system to make the group's review process clearer, and working with the NIHR as it implements its public involvement strategy.

For further information visit:
www.niaa-hsrc.org.uk/PCPIE

The National Audit Projects 2014–15

Professor Tim Cook
Director of National Audit Projects

The period since the last report has again been busy for the NAPs. There is ongoing activity for NAP3-6. This article will summarise that activity. Further information is available on the relevant websites.

The present project

NAP6 – Perioperative anaphylaxis
(https://niaa.org.uk/NAP6home)

At the time of writing, this project is well under way. The project focuses on severe perioperative anaphylaxis, and is being ably led by Prof Nigel Harper. The aim is to capture all cases of life-threatening anaphylaxis that occur from the period the anaesthetist first administers drugs to the point of departure from recovery.

Each NAP brings new challenges and opportunities. For NAP6 the anaesthesia and critical care communities are joined by allergists and immunologists whose contributions will be central to the success of the project. After a year's planning NAP6 was launched on 5 November 2015.

There are four phases:

- **Anaesthesia baseline survey (individuals and departments)**. Capturing previous experience and departmental organisations: completed January 2016.
- **Allergist/immunologist baseline survey.** Capturing organisational practices of clinics accepting referrals for investigation of anaesthetic allergy: completed April 2016.
- **Case registry**. A one-year online anonymous registry: accepting new reports occurring until November 2016.
- **Activity/allergen survey**. An activity survey (not repeating the NAP5 survey) to establish the frequency of exposure to common allergens during the anaesthetic process: planned later in 2016.

The Anaesthesia baseline survey received responses from almost every anaesthetist in the UK, and the allergist/immunologist survey is making good progress. Early reports from the registry suggest the project may receive as many as 500 reports, which will make it the largest NAP cohort to date. 2016 and 2017 will involve the review panel in the hard grind of case review and analysis, with the report being due for publication in early 2018.

The past projects

NAP3 – Major complications of central neuraxial block
(https://niaa.org.uk/NAP3_home)

There has been progress in developing a document to aid everyday safe practice in the management of perioperative epidural analgesia. As spinal anaesthesia and some peripheral nerve blocks have replaced many of the indications for epidural analgesia, epidurals are increasingly reserved for elderly and higher-risk patients undergoing open and emergency abdominal or thoracic surgery. The result is that epidural infusions are now relatively infrequent on most wards, and those that are used are thoracic epidurals in higher-risk patients. The document is being produced in collaboration with the Safe Anaesthesia Liaison Group (SALG). Its aims include; (i) adding structure to the decision to use perioperative epidural analgesia; (ii) reducing avoidable risk during placement and management; (iii) emphasising 'red-flags' for the early detection of major complications, and (iv) providing discharge information for patients after routine discharge and after complications such as dural puncture. The document should be released late in 2016, and it is anticipated it will assist hospitals in complying with the new requirements for National and Local Safety Standards for Invasive Procedures (NatSIPPS and LocSIPPS).

NAP4 – Major complications of airway management
(https://niaa.org.uk/NAP4_home)

The network of RCoA-DAS (Difficult Airway Society) Departmental Airway Leads has increased, and now covers around 90% of NHS hospitals. The minority of hospitals that do not have an Airway Lead are encouraged to establish this position as soon as possible. The roles of the job include education on airway matters, ensuring high-quality, consistent

airway equipment provision, and liaison between anaesthesia, intensive care and emergency departments on airway matters. The Airway Leads page is at **http://bit.ly/1Y5Em9Z**.

The NAP4 recommendations have informed GPAS and ACSA initiatives. They have also had a major influence in the recently published DAS extubation and DAS 2015 difficult intubation guidelines. DAS, the intensive care community and the College are currently preparing guidelines for difficult airway management in the critically ill – due to be published in 2017.

NAP4 had a substantial impact on changing airway management in the UK, and a paper detailing that impact has been submitted for publication: it is hoped it will be published later this year.

NAP5 – Accidental Awareness during General Anaesthesia (https://niaa.org.uk/NAP5home).

NAP5 was completed in June 2014 and launched in September. The project was more wide-ranging than previous NAPs, and much of the credit for this goes to Prof Jaideep Pandit and the multidisciplinary steering and review panels he assembled. The project led to a large number of publications published dually in the *British Journal of Anaesthesia* and *Anaesthesia*. Important developments for NAP5 compared to previous NAPs were partnership with the AAGBI and the inclusion of Ireland – both of which were highly successful undertakings.

The project was the most public-facing of all NAPs to date and this was reflected in the interest shown by the public and media at its launch. The NAP5 professional launch was held at the Royal Society of Medicine. The project results were featured on BBC Radio 4 (Today programme), Radio 5-Live, Radio 1, the BBC World Service and twenty regional BBC stations. There was also coverage by Sky News TV, the vast majority of mainstream print media and more than 400 news media websites worldwide. National interest was supported by a 'public launch' which involved lectures and the performance of poetry and music, commissioned specifically for the project and incorporating verbatim reports of AAGA from the project. The public launch was held at the Royal Society of Medicine and was then repeated at Oxford and Birmingham science festivals. This was supported by a grant from the Wellcome Trust, and Dr Andrew Morley and his team are to be hugely congratulated for their efforts in this public engagement with science achievement.

An important output of NAP5 was a pathway for the management of reported cases of AAGA. The pathway guides both patient and clinicians through the stages of interview, analysis and support, and is based on the methods used successfully in NAP5 to analyse hundreds of reports of AAGA. It is downloadable as a pdf or as an editable document from http://bit.ly/1WsR1Fc and is suitable to become a departmental or national guideline.

Since its publication NAP5, has continued to receive attention and to inform both scientific and public debate and publicity around AAGA. The findings of NAP5 have been influential in several AAGBI publications, including their guidance on *Perioperative Management of the Obese Surgical Patient* published in 2015 and, their 2016 *Standards for Minimum Monitoring*. It has also led to the AAGBI forming a working party to examine best practice in TIVA and intravenous infusion anaesthesia. The NAP5 anaesthesia activity survey 'The State of UK Anaesthesia' provided much useful information on anaesthetic practices in the UK, and this dataset is currently being further analysed to elucidate practices in the obese population and in regional anaesthesia.

Many of the recommendations made in NAP5 were focused on individual practice but some also related to departmental practices. Around the two year anniversary of the NAP5 launch we will be surveying departments of anaesthesia to identify what impact NAP5 has had.

Final thoughts

The NAPs remain an important part of the UK (and now Irish) anaesthesia landscape. In broad terms, over the last decade NAPs 3-6 have had engagement and active participation from every public hospital in the UK (and Ireland for NAP5). The publications remain popular: three academic papers from NAP3 and NAP4 occupy three positions amongst the ten most cited papers in the *BJA* ever, and visits to the NAP websites continue at over 1,000 per month (from up to 30 countries).

The NAPs are funded entirely by anaesthetists (through professional organisations, membership fees) and performed by anaesthetists primarily for the benefit of patients. The projects are supported by huge amounts of work by steering panels, review panels, staff at the college and of course by the project clinical leads (Jaideep Pandit for NAP5 and Nigel Harper for NAP6). However, it is only through the continuing support of individual anaesthetists, their hospitals and particularly the Local Coordinators that the projects can succeed. UK anaesthetists have a long and admirable history of openly discussing complications and morbidity, and the NAPs are an important natural extension of this. Over the last decade, the NAPs have provided an enormous amount of new information about clinically relevant complications of anaesthetic and intensive care practice. The NAPs have acquired a degree of impact and influence internationally, and many countries simply reflect that such work could not be done in their healthcare system.

I congratulate all those involved in any aspect of the NAPs, and I look forward to the projects continuing through NAP6 and beyond.

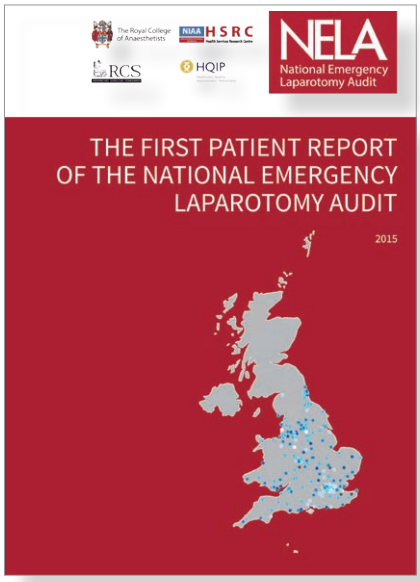
Finally, do look out for the call for topics for NAP7, planned for later this year.

Acknowledgements: Thank you to Prof Jaideep Pandit (Clinical Lead NAP5) and Prof Nigel Harper (Clinical Lead NAP6) for their contributions to this article.

The National Emergency Laparotomy Audit (NELA)

Dr Dave Murray
NELA National Clinical Lead

The National Emergency Laparotomy Audit began on the 1st December 2012, and has now had its funding extended to run until December 2017. The Audit was commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) and funded by NHS England and the Welsh government.



The aim of the Audit is to enable the improvement of the quality of care for patients undergoing emergency laparotomy in England and Wales through the provision of high quality comparative data to hospitals. In addition, the Audit's results also appear in NHS Quality Accounts, and are soon to be incorporated into the basket of metrics that the CQC will use when inspecting hospitals.

Having established the necessary infrastructure and gained ethical and governance approvals to run the Audit, the first phase was to carry out an Organisational Audit looking at the infrastructure at individual hospitals. This Organisational Audit Report was published in May 2014, and found that the provision of facilities required to perform emergency laparotomy varied substantially between hospitals. Many hospitals met several of the key recommended standards of care, but in some cases fell short.

More information and the full report are available here: **www.nela.org.uk/Organisational-Audit-Report**. A second follow-up Organisational Report is due to take place in 2016.

The patient audit began in December 2013, with data collected via an online webtool. *The First Patient Report of the National Emergency Laparotomy Audit* was published in June 2015, and can be found at **www.nela.org.uk/reports**. Data was provided on over 20,000 patients who underwent emergency laparotomy between December 2013 and November 2014, from 192 of the 195 eligible hospitals in England and Wales.

The audit results provide each hospital with an individual breakdown of their own performance against published standards. Best performing centres were identified in order that good practice can be disseminated. It also allowed hospitals to

highlight those areas locally where improvements can be made.

The report revealed a wide variation in the provision of care by hospitals, England and Wales, and offered a series of recommendations to reduce this variation. Comparison was drawn between the resources provided for high-risk emergency surgery, and that provided for high-risk elective surgery. One of the key messages identified was that the preoperative assessment of the risk of death from surgery led to better subsequent standards of care, such as consultant delivered care and admission to critical care.

Patient data collection is ongoing in annual cycles with the second patient report covering data collection from December 2014 to November 2015 due to be published in summer 2016. Thanks to the efforts and commitment of local NELA leads and their colleagues, the Audit has met its case ascertainment targets for the first two years of patient data collection (60% & 70% respectively). Going forwards, we are expected to increase this to 80% for the next year.

As NELA continues, we are moving away from the traditional audit model, towards a Quality Improvement (QI) approach that makes data more readily available to clinicians. A key part of this is an online QI dashboard that allows participating sites to view their local data for a variety of metrics (such as risk assessment, consultant delivered care and critical care admission) in real-time and compare them to national averages.

The NELA database also supports additional collaborative projects with a variety of other stakeholders. This includes research outputs such as the EPOCH (Enhanced Peri-Operative Care for High-risk patients) trial, the Emergency Laparotomy Collaborative, and disease-specific sub-analysis being carried out in conjunction with surgical subspecialty societies.

It is clear from progress so far that there is tremendous commitment from local clinicians and managers to engage with this challenging issue. We are optimistic that NELA will bring about improvements in delivery of care to patients requiring emergency laparotomy.

KEY DATES:

July 2015: Contract extended until Nov 2017.

May 2014: Publication of Organisational Audit.

June 2015: Publication of first patient report

December 2015: Third-year data collection for patient audit commenced.

June 2016: Publication of second patient report.

Spring/Summer 2016: Data collection for Second Organisational Audit

December 2016: Fourth year data collection for patient audit commences.

Early 2017: Retender for secure funding to run NELA for a further five years.

NIAA Grants

A PILOT STUDY INTO THE NON-INVASIVE MEASUREMENT OF OXYGEN DELIVERY AND CONSUMPTION AFTER ELECTIVE MAJOR UPPER ABDOMINAL SURGERY

Award: 2012 Round 2, AAGBI/ *Anaesthesia* small research grant

Principal Investigator: Mr Adam Kimble, Derriford Hospital, Plymouth

Research from the 1980s described an increase in oxygen consumption (VO_2) in patients after major surgery, and presented evidence that the inability to meet this demand (DO_2) was associated with severe postoperative complications and mortality. The pulmonary artery catheter was used to calculate VO_2 and DO_2. This is inconsistent with contemporary practice, which promotes minimal or non-invasive monitoring of patients.

Indirect calorimetry is a non-invasive method of estimating energy expenditure by directly measuring VO_2 and VCO_2. The esCCO monitor is a new non-invasive tool for estimating cardiac output (CO). It derives CO from the pulse wave transit time, estimated from the ECG and plethysmographic wave. The Pronto-7 (Masimo, USA) calculates haemoglobin using pulse co-oximetry. These can be combined to calculate VO_2 and DO_2 non-invasively.

This study validated these non-invasive bedside estimations of VO_2 and DO_2 and demonstrated the feasibility of their use after major abdominal surgery.

USE OF GENETIC PROBES TO IDENTIFY KEY CELL TYPES INVOLVED IN THE CEREBRAL INFLAMMATORY RESPONSE TO BLAST EXPOSURE

Award: 2012 Round 2, AAGBI/ *Anaesthesia* small research grant

Principal Investigator: Surg Cdr Jane Risdall, Addenbrooke's Hospital

Blast injuries, including those to the brain, are a problem in both military conflicts and terrorist incidents. Inflammation would appear to be the key response of the brain to blast exposure, and may well represent the trigger for cerebral swelling. However, the genetic changes and molecular mechanisms underlying this response remain to be elucidated.

Using a current model of blast brain injury, we were able to demonstrate the presence of inflammatory markers in the brains of terminally anaesthetised rats. These markers were not seen in rats treated identically, except for the blast exposure. Genetic analysis supported this finding. We used the grant to attempt to determine which cells within the brain, were expressing these genes and which regions of the brain were affected. We stained sections of the blast-exposed and non-blast exposed brains to identify the cell types, and then attempted to superimpose colour-labelled genetic probes for two of the inflammatory genes we had identified. Unfortunately, the process was not successful and we were not able to convincingly identify regions or cell types showing genetic activation.

A SIMULATOR BASED RANDOMISED COMPARISON OF NATIONAL GUIDELINES FOR LOCAL ANAESTHETIC TOXICITY VERSUS MODIFIED VERSIONS

Award: 2013 Round 1, AAGBI/ *Anaesthesia* Small Research Grant

Principal Investigator: Dr Matthew Mackenzie, East Surrey Hospital

Outcomes following cardiac arrest secondary to local anaesthetic toxicity depend on good CPR and efficient dosing with Intralipid. The AAGBI produces a guideline outlining the delivery method using boluses and an infusion. Whilst it looks easy to follow, we found that during simulations candidates had trouble starting the infusion in a timely manner. We postulated that a version based only on boluses which approximated a bolus and infusion would reduce cognitive load and improve drug delivery. In a randomised comparison we found no overall difference between the two protocols, but candidates reported that the new guideline was easier to use.

NIAA Grants

DEVELOPMENT OF A MODEL OF SUBPERINEURAL INJECTION DURING ULTRASOUND GUIDED REGIONAL ANAESTHESIA

Award: 2013 Round 1, RA-UK project grant

Principal Investigator: Professor Graeme McLeod, Ninewells Hospital & University of Dundee School of Medicine

Ultrasound guidance for regional anaesthesia has failed to reduce the incidence of transient or chronic postoperative nerve damage. Nerve damage has been attributed to subperineural (fascicle) damage, yet the resolution of current technology prevents accurate real-time visibility of local anaesthetic injection. In this study, we scanned fresh and soft embalmed cadaver nerves using a single element 30MHz transducer. We identified fascicles > 0.4 mm in diameter and splitting or rotation of fascicles. This data will inform our ultrasound research group to build a new epidural needle with an ultrasound array at the tip.

DEVELOPING A CLINICAL MEASURE OF DEPTH OF ANAESTHESIA USING BRAIN CONNECTIVITY MEASURES

Award: 2013 round 1, AAGBI/*Anaesthesia* small research grant

Principal Investigator: Dr David Smith, University of Southampton / Southampton University Hospital

Monitoring the adequacy of anaesthesia is still a challenge. Several measures of brain activity are in use, but they provide no information regarding the brain mechanism activated (or deactivated) during anaesthesia. A promising approach is to use brain connectivity analysis to investigate changes in information flow between brain areas. In the first year we completed the validation studies on simulated data and moved on to demonstrate that long-range information sharing is higher in wakefulness than physiological sleep in healthy volunteers, and that similar changes are seen during anaesthesia in rats. Clinical anaesthesia studies in man are now underway.

TO EXPLORE GENERAL PRACTITIONERS' VIEWS ON POST SURGICAL OUTCOMES UTILISING A CONSENSUS DELPHI METHODOLOGY

Award: 2013 Round 2, AAGBI/*Anaesthesia* Research Grant

Principal Investigator: Dr Rachel Evley Anaesthesia & Critical Care, Division of Clinical Neuroscience, University of Nottingham

Co-Investigators: Professor Ravi Mahajan Anaesthesia & Critical Care, Division of Clinical Neuroscience, University of Nottingham

Dr Jaspar Taggar, Division of Primary Care, University of Nottingham

Perioperative Outcomes are becoming increasingly relevant in the primary care setting. Since the introduction of the Enhanced Recovery Programme in 2010, patients are discharged back to the primary care setting far earlier, with General Practitioners accountable for more immediate postsurgical care. This study explored GPs views on postoperative outcomes using a Delphi methodology. We found that GPs observed similar types and frequencies of postoperative complications, whether based in an inner city or rural practice.

We intend to use these results to investigate whether simple interventions around communication and information provision within primary and secondary care can further influence postoperative outcomes.

NIAA Grants

NOVEL PRESERVATIVE STRATEGY IN ENHANCING MARGINAL KIDNEY DONOR POOL

Award: *BJA*/RCoA Basic Science Research Fellowship 2014

Principal Investigator: Dr Daqing Ma, Imperial College London

Kidney transplantation is the optimal treatment for patients with end-stage renal failure, and provides the best clinical outcomes, better quality of life and cost savings when compared to other modalities of renal replacement therapy. Currently, there are approximately 7,000 patients on the waiting list for a kidney transplant. Sadly, around 300 patients die each year while waiting for a kidney graft (Kidney Research UK). Clearly, despite the demonstrated advantages of transplantation, the full potential of these benefits cannot be obtained due to the severe shortage of donated kidneys. Efforts are underway to expand the potential donor pool including use of 'Extended Criteria' or 'marginal' kidney donors. However, grafts from these donors are often damaged by patient co-morbidities, ischaemia and stress responses. These would explain the apparent synergy noted clinically between the effects of delayed renal graft function and acute rejection episodes, leading to increasing deterioration and failure of the graft over time. Novel therapeutic approaches designed to "normalise" the affected graft during the preserving stage, i.e. before engraftment, are urgently required. Our project is to investigate the effects of exposing the novel strategies to renal grafts from marginal donation at the preserving stage. We aim to establish the novel strategy to "rescue" renal marginal grafts at the pre-clinical study level with data which could very likely lead to clinical trials and ultimately change our practice with expansion of the available renal graft donor pool to benefit our transplant patients and improve renal graft survival.

MECHANISMS OF PERIOPERATIVE MYOCARDIAL INJURY

Award: *BJA*/RCoA Basic Science Research Fellowship 2014

Principal Investigator: Dr Gareth Ackland, Barts & The London School of Medicine & Dentistry

More than 40% of patients undergoing major surgery sustain low levels of injury to the heart. Such heart injury is associated with higher complication rates in general, and increased risk of dying after surgery. This heart injury does not appear to be explained by the development of heart ischaemia ("heart attack"). Recent large international trials show that conventional heart treatments do not appear to be effective in the perioperative setting to reduce heart injury. Consequently, doctors are understandably uncertain as to how these higher-risk patients may benefit from enhanced care after surgery. We therefore urgently need new understanding of the processes that lead to heart injury after surgery, in order to develop new treatments and/or ways of looking after patients at risk of, and following, this complication. The overarching aim of the proposed research is to define how nerves that regulate heart function ("autonomic nerves") affect whether patients sustain heart injury after surgery. The specific aims are to identify signatures in the blood that appear during surgery to provide a detailed profile of likely mechanisms involved. In combination with laboratory models that explore the control of heart injury by autonomic nerves following major surgery, this research is designed to redefine current concepts of the mechanisms underlying heart injury for patients undergoing major surgery. This translational approach will provide evidence to embark on the next generation of perioperative trials that assess treatments and/or different approaches to perioperative care to reduce the risk of heart injury in higher-risk surgical patients.

NIAA Grants

MODEL BASED TIME SERIES CLUSTER ANALYSIS TO DETERMINE UNIQUE PATIENT STATES IN TRAUMATIC BRAIN INJURY

Award: John Snow Anaesthesia iBSc Awards 2014

Principal Investigator: Miss Tina Bylinski, University of Glasgow

Using an international traumatic brain injury patient database, we aimed to identify distinct patient groups distinguishable by the trajectory of their physiology over time using cluster analysis, a form of data mining. We hypothesised that the resulting groups would have good or poor outcomes, indicating physiological trajectories associated with a good or poor prognosis. Our cluster algorithm identified extreme outliers, with erratic physiology, based on minute-by-minute physiology. However, the algorithm was unable to identify groups with distinct outcomes based on hour-by-hour physiology, although it did identify one cluster with a slightly higher BP and CPP, and a slightly better outcome.

JAM-C AND REVERSE TRANSENDOTHELIAL MIGRATION OF NEUTROPHILS UNDER CONDITIONS OF SEPSIS

Award: John Snow Anaesthesia iBSc Awards 2014

Principal Investigator: Mr Gregor Devoy, University of Aberdeen

Neutrophils are the first responders to tissue damage, and leave the blood stream by transendothelial migration (TEM). However, neutrophils can also return to the circulation by reverse TEM (rTEM), and junctional adhesion molecule C (JAM-C) regulates this. The role of rTEM in sepsis is unknown, but it may be how neutrophils migrate to remote organs causing damage. In this in vitro study, we found that 50% of neutrophils underwent rTEM when co-cultured with endothelial cells under conditions mimicking sepsis and this process was increased when an antibody to JAM-C ($p=0.006$) was included, confirming the role of JAM-C in the process.

THE COUPLING OF THE MOP AND NOP RECEPTORS TO MITOGEN ACTIVATED PROTEIN KINASES

Award: John Snow Anaesthesia iBSc Awards 2014

Principal Investigator: Mr Jonathan O'Doherty, University of Leicester

Opioids are extremely potent analgesics, however their clinical use is limited by their adverse effects, including tolerance. In order to develop the next generation of opioid drugs, free from these adverse effects, a thorough and detailed understanding of opioid signalling pathways is required.

This project focused on the coupling of the MOP and NOP opioid receptors to the Mitogen Activated Protein Kinase pathway. We demonstrated activation of ERK1/2 by the MOP and NOP receptors, and distinct downstream amplification profiles at each receptor. We hypothesise that this is the result of distinct signalling mechanisms at these receptors.

CARDIOVASCULAR RESPONSE TO INFILTRATION OF LOCAL ANAESTHETIC AND EPINEPHRINE SOLUTION INTO THE NASAL MUCOSA

Award: John Snow Anaesthesia iBSc Awards 2014

Principal Investigator: Mr Matthew Isaac Sanders, Royal Hallamshire Hospital, University of Sheffield

This project investigated perioperative complications of endoscopic transsphenoidal pituitary surgery, focusing on haemodynamic changes following nasal infiltration of local anaesthetic and adrenaline solution and postoperative complications in the elderly. We found that mean arterial pressure falls significantly in >50% of patients following nasal infiltration of an articaine and epinephrine solution. Anaesthetists should be aware of this phenomenon, as neurosurgical patients often have compromised cerebral vasculature. We found that elderly patients are no more likely to experience complications of this surgery than young patients, meaning surgery can be offered to this group.

NIAA Grants

SHORT-TERM OUTCOMES WITH INTRATHECAL OPIOID AND PATIENT-CONTROLLED ANALGESIA VERSUS THORACIC EPIDURAL ANALGESIA FOR HEPATIC RESECTION: A RANDOMISED CONTROLLED TRIAL

Award: 2013 Round 2, AAGBI/ *Anaesthesia* Research Grant

Principal Investigators: Ben Clevenger and Dr Ramanathan Kasivisvanathan, Royal Free Hospital

Optimal analgesia is paramount to the success of recovery from surgery. Thoracic epidurals have been the mainstay of analgesia for hepatic resection surgery, though intrathecal opioids with patient-controlled analgesia (PCA) have been shown to offer equivalent analgesia. In colorectal surgery, when compared to thoracic epidurals, intrathecal opioids and PCA have been associated with improved outcomes, including reduced postoperative morbidity and length of stay. There remains equipoise as to whether alternative forms of analgesia can provide better outcomes from hepatic resection surgery.

Study participants are randomised to either thoracic epidural or intrathecal diamorphine with a fentanyl PCA, with the primary outcome of length of time until the patient is medically fit for discharge. Secondary measures include pain scores, fluid and blood transfusion requirements, morbidity and quality of life scores.

The study has been adopted onto the NIHR portfolio; recruitment to the trial began in 2015 and is due to complete in November 2016.

EFFECT OF ONE-WEEK INGESTION OF THE OPIOID ANALGESIC CODEINE ON IMMUNE FUNCTION IN YOUNG HEALTHY MALE VOLUNTEERS

Award: RCoA Small Grants, The Ernest Leach Fund 2015

Principal Investigator: Dr John Williams, Royal Derby Hospital

As a result of receiving the Ernest Leach grant from the RCoA we have been able to fund a research project to evaluate the effect of opioids on immune function. We use the grant to fund analytical techniques that allow us to explore whether chronic use (one week) of codeine affects immune function and whether this is mediated via the hypothalamic-pituitary-adrenal axis in healthy volunteers. The project is in collaboration with the University of Leicester. We hope the results will contribute to a greater understanding of the effects of opioids on the immune system.

ANAESTHESIA IN HOIMA REGIONAL REFERRAL HOSPITAL, WESTERN UGANDA

Award: RCoA Small Grants, SEA UK Award 2014

Principal Investigator: Dr Jolene Moore, University of Aberdeen

This award enabled me to undertake a volunteer placement at a referral hospital in Northwest Uganda in October 2014, arranged through the Ugandan Maternal and Newborn Hub, a network of healthcare partnerships whose focus is to improve the quality of obstetric and neonatal healthcare through knowledge exchange and training. I worked alongside a UK obstetrician and local anaesthesia technicians and healthcare workers, was able to be involved in numerous cases and obstetric emergencies, and participated in education sessions and maternal and paediatric mortality meetings. My time in Hoima was a very valuable experience and one which I will always remember.

CORONARY SINUS ISOFLURANE CONCENTRATION IN PATIENTS UNDERGOING HEART SURGERY

Award: RCoA Small Grants, The Sargant Fund 2015

Principal investigator: Dr R Peter Alston, Royal Infirmary of Edinburgh

Volatile anaesthesia is associated with less adverse myocardial outcomes and a lower mortality in patients undergoing heart surgery, than total intravenous anaesthesia. As it has previously been unmeasured, this study aims to sample coronary sinus blood and measure its isoflurane concentration as an estimate of the myocardial concentration. Arterial blood concentrations will also be measured and compared to coronary sinus concentration to determine if the myocardial concentration has equilibrated before application of the aortic cross-clamp.

NIAA Grants

THE EFFECT OF ACUTE HYPOXIA ON THE ENDOGENOUS REGULATION OF NITRIC OXIDE PRODUCTION IN HEALTHY HUMAN SUBJECTS

Award: RCoA Small Grants, The Ernest Leach Fund 2014

Principal Investigator: Dr Simon Lambden, University College/Imperial College, London

Co-Investigators: Dr Dan Martin, University College/Royal Free Hospital; Professor Monty Mythen, University College; Dr James Leiper, Imperial College

The small project grant from the RCoA allowed us to conduct an important translational study into the immune response to hypoxia. Understanding the role of dimethylarginine dimethylaminohydrolase 2 (DDAH2), a regulator of nitric oxide production, is important in understanding of the biology of sepsis and may lead to the development of new therapeutic agents to treat this important syndrome. Having understood the importance of DDAH2 in animal models, We showed using the hypoxic chamber at the Institute for Sports and Exercise Health that, as in animals, human DDAH2 is regulated by hypoxia. This observation is a critical step in understanding how nitric oxide synthesis is regulated by pathophysiological stress, and has facilitated further studies in patient populations with sepsis.

INTERACTIVE WEB-BASED TUTORIALS, SIMULATION DISCUSSIONS AND TOPIC GRAND ROUNDS FOR BARTS AND THE LONDON SCHOOL OF ANAESTHESIA

Award: RCoA Small Grants, The Belfast Fund 2015

Principal Investigators: Dr Katherine MacGloin, Dr Sumitra Lahiri, Dr Rosel Tallach, Dr Mevan Gooneratne, Dr Kate Grailey, The Royal London Hospital

The aim of this project was to use an internet-based conferencing system to provide remote and interactive teaching. The overarching intention was to facilitate the dissemination of information but with the capacity for this to be discursive. The web-based programme, namely Adobe Connect Webinar™ technology, allows for interaction between participants and the dissemination of resources and can be accessed on hand-held devices.

Having demonstrated the successful use of this programme to execute teaching sessions for anaesthetic trainees, we aim to continue its use for the discussion of non-technical skills and 'Anaesthetic Grand Rounds' between hospitals in the region and abroad.

THE NOVEL INFLAMMATORY BIOMARKER 'SOLUBLE UROKINASE-TYPE PLASMINOGEN ACTIVATOR RECEPTOR' (SUPAR); DOES IT HAVE A PROGNOSTIC ROLE FOLLOWING CARDIAC SURGERY

Award: RCoA Small Grants, The Ernest Leach Fund 2014

Principal Investigator: Dr Philip McCall; University of Glasgow / Golden Jubilee National Hospital

Our group used the Ernest Leach fund to perform a retrospective observational cohort study looking at suPAR in patients undergoing cardiac surgery. This was the largest study to date looking at this topic and the first to show any association with outcomes. We showed that suPAR levels increased following cardiac surgery, and were higher in those patients who required prolonged Intensive Care Unit stay, prolonged hospital stay and prolonged ventilation. Interestingly, this association was present pre-operatively indicating that suPAR may have a role as a prognostic biomarker, predicting those patients requiring higher levels of critical care support postoperatively.

Reports from NIAA Events

JOINT ROYAL COLLEGE OF SURGEONS/NIAA MEETING – 4 MARCH 2015

ARISTOTLE D. PROTOPAPAS
IMPERIAL COLLEGE LONDON

I am very grateful to have been invited to yet another educational day with the RCS in collaboration with the NIAA.

The balanced programme gave me, as well as fellow participants, a compact, efficient opportunity to consolidate the concept of initiating a clinical trial. The critique of the presentations prior to concluding a productive day gave us a great opportunity to reflect on how to pursue a grant application.

HSRC / QUARC MEETING – 17 MARCH 2015

DR MARIA CHAZAPIS
UNIVERSITY COLLEGE HOSPITAL

Quality Audit and Research Coordinators (QuARCs) are the HSRC's champions of front-line clinical quality improvement and research. This day brought all the QuARCs from around the UK together, for a whistle-stop tour through the latest and greatest of UK perioperative research, audit and quality improvement projects. Leading academics gave us updates on the exemplar National Audit Projects, the National Emergency Laparotomy Audit and the Sprint Audits amongst many others, interspersed with advice on how to use the data for local quality improvement. I also enjoyed meeting with the other QuARCs, learning from their experiences, and feeling part of an energetic network.

RESEARCH METHODOLOGY WORKSHOP – 5 OCTOBER 2015

SONIA POULOSE
ST7 ANAESTHETICS, NORTH EAST MIDLANDS SCHOOL OF ANAESTHESIA

Involvement in research can be a rewarding experience to the inquiring mind. Unfortunately, to a novice research enthusiast like me, the entire process seemed to be an enigma, until I attended the Research Methodology Workshop. The course helped me immensely in understanding the system. The speakers were eloquent and the lectures stimulating. I found the talk on 'Getting your Study Started' particularly useful as it addressed all the practicalities of the research process. I have since embarked on setting up a research project and referred to the presentations made at the course several times. I would thoroughly recommend it to all budding researchers!

The small group discussions were extremely effective and helped uncover strengths and gaps in my knowledge and thus gave me something to focus on.

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NIAA Grant Awards

2014 Round 1				
AAGBI/*Anaesthesia* Research Grant	Dr Tom Clark, Dr Charles Gibson, Dr Gary Minto	Plymouth Hospitals NHS Trust	Comprehensive mouth-care to reduce Postoperative pneumonia (CUPPA)	£7,428
	Dr Louisa Chrisman	Royal Surrey County Hospital	Surgicric 2: A comparative bench study with two established emergency cricothyrotomy techniques in a porcine model	£9,750
	Dr Rob Sanders & Dr Alex Bottle	Imperial College London	Predicting perioperative risk in patients with acute coronary syndromes	£51,222
***BJA*/RCoA Project Grant**	Dr Gudrun Kunst	King's College Hospital, London	A novel proteomic analytic pproach to identify potential biomarkers of acute kidney injury and failure	£62,548
	Prof Blair Smith	University of Dundee	Preparing exercise and physical activity as a complex intervention for chronic pain	£42,784
OAA Medium Project Grant	Dr Daqing Ma	Imperial College London	Novel strategy in preventing the neurotoxicity of nitrous oxide when used for labour pain relief	£14,996
VASGBI Project Grant	Prof David Lambert	University of Leicester	Effects of opioids on angiogenesis	£17,415
2014 Round 2				
AAGBI/*Anaesthesia* Research Grant	Dr Sheila Black	Leeds Teaching Hospital NHS Trust	Prospective, open label, single site pilot study to assess the effects of spinal cord stimulation on autonomic function in patients with failed back-surgery syndrome	£1,300
	Dr Emma Fitzgerald	Portsmouth Hospital	Cefoxitin resistance as a marker of AmpC beta-lactamase production: clinical significance in the intensive care unit	£1,100
	Dr Ramani Moonesinghe	University College London	EPICS: EPIdemiology of Critical care after Surgery: version 2	£45,354
***BJA*/RCoA Project Grant**	Prof Tim Hales	University of Dundee	Improving opioid analgesia by targeting beta-arrestin2 signalling	£65,000
	Surg Cdr Sam Hutchings	King's College Hospital	MICROSHOCK: An observational pilot study of the effects of haemorrhagic shock and resuscitation on the microcirculation	£23,271
	Dr Brijesh Patel	Imperial College London	Death receptor signalling in acute respiratory distress syndrome	£64,955
	Dr Carole Torsney	University of Edinburgh	Optimising translational capacity of melatonin administration for chemotherapy induced neuropathic pain	£65,000

NIAA Grant Awards

***BJA*/RCoA PhD Studentship**	Dr Claire Gibson & Prof Dave Lambert	University of Leicester	Investigating the pharmacology of nociceptin/orphaninFQ receptors during cerebral ischaemia	£72,310
	Dr Graeme McLeod	University of Dundee	Improved patient safety with micro-ultrasound: Development of anatomical models for evaluating clinical potential of micro-ultrasound imaging during epidural and regional anaesthesia	£72,363
	Dr Marie-Anne Shaw & Prof Phil Hopkins	University of Leeds	Identification of genes contributing to malignant hyperthermia and related phenotypes from differential gene expression	£72,186
BSOA Project Grant	Dr Anuraag Guleria	Royal Manchester Children's Hospital	The effect of paediatric tourniquets on tissue oxygenation levels using near infra-red spectroscopy (NIRS) – a feasibility study	£3,500
2015 Round 1				
AAGBI/*Anaesthesia* Research Grant	Prof Gary Mills	Royal Hallamshire Hospital, Sheffield	PRotective Ventilation with Higher versus Lower PEEP during General Anesthesia for Surgery in OBESE Patients - The PROBESE Randomized Controlled Trial (UK)	£10,054
	Dr John Williams and Dr Matthew Brown	The Royal Marsden Hospital, London	Development of a Personalised Care Plan Designed to Reduce Persistent Post-Surgical Pain Following Breast Surgery	£11,256
***Anaesthesia*/Wiley Project Grant**	Dr Vasileios Zochios	Papworth Hospital, Cambridge	Extravascular lung water as an early predictor and marker of the severity of reperfusion lung injury in pulmonary endarterectomy: A prospective cohort study	£15,000
ACTA/VASGBI/*BJA* & RCoA Project Grant	Dr Andrew Klein & Professor Toby Richards	Papworth Hospital, Cambridge	The UK CAVIAR Study: The UK CArdiac and Vascular surgery	£39,552
APAGBI Project Grant	Dr Dannie Seddon	Birmingham Children's Hospital	Platelet function in paediatric cardiac patients after cardiopulmonary bypass and Extra-Corporeal Life Support (ECLS)	£19,556
***BJA*/RCoA Project Grant**	Dr Jonathan Coles	University of Cambridge	Imaging NMDA (N-methyl-D-aspartate) receptor activation following head injury using positron emission tomography	£52,856
	Prof Helen Galley and Prof Nigel Webster	University of Aberdeen	Transcriptome changes induced by shift working and the effect of administered melatonin	£65,000
	Dr Simon Howell	University of Leeds	Pilot study of the diagnosis and Impact of frailty in patients undergoing elective colorectal urgery	£56,409
	Dr Iain Moppett	University of Nottingham	Hip fracture intervention study for prevention of hypotension (HIP-HOP) trial: pilot study	£52,290
DAS Project Grant	Dr Anthony Wilkes	University of Cambridge	Developing a framework for the assessment of introducers used for difficult airway management	£52,856

NIAA Grant Awards

2015 Round 2				
AAGBI/*Anaesthesia* Research Grant	Dr Timothy Dawes	Harefield Hospital, London	Qualitative methods in understanding patient safety in intensive care	£1,039
	Professor Gary Mills	Northern General Hospital, Sheffield	Evaluation of the microstructure and functional changes in the lung during recovery after major abdominal surgery, using functional hyperpolarized helium and xenon magnetic resonance imaging	£19,950
	Dr Gary Minto	Derriford Hospital, Plymouth	Coronary Anatomy & Dynamic Exercise Testing (CADET)	£5,957
	Dr Judith Partridge	St Thomas' Hospital, London	A pilot observational study to evaluate the feasibility and effectiveness of an enhanced recovery pathway (ERP) in complex thoracoabdominal aortic aneurysm repair	£19,588
APAGBI Project Grant	Dr Suellen Walker	Great Ormond Street Hospital, London	NECTARINE: NEonate-Children audiT of Anaesthesia pRactice IN Europe. Epidemiology of morbidity and mortality in neonatal anaesthesia: UK participation in a European prospective multicentre observational audit of practice	£27,619
***BJA*/RCoA Project Grant**	Dr Gareth Ackland	William Harvey Research Institute, Queen Mary University of London	Preventing postoperative infections through exercise induced mitophagy	£90,327
	Dr Iain Moppett	University of Nottingham	Biomarkers of postoperative delirium	£87,087
	Dr Michael O'Dwyer	The Royal London Hospital	Sepsis induced histone modifications: epigenetic regulation of the host response in post-septic immune suppression	£83,745
NACCSGBI Project Grant	Dr Martyn Ezra	University of Oxford	Determining the role of nitric oxide depletion in early brain injury after subarachnoid haemorrhage using multimodal magnetic resonance imaging	£20,000
RA-UK Project Grant	Dr Peter Odor	University College London Hospital	Prospective evaluation of plasma levobupivacaine concentrations after fascia iliaca block in fractured neck of femur patients – a pilot study	£3,514

NIAA Research Grant Figures

NIAA Grant Funding Awarded 2008–2015

Year	Number applications received	Amount requested	Number of awards	Amount funded
2008 R1	37	£1,232,748.00	10	£437,982
2008 R2	20	£423,659.00	4	£115,047
2009 R1	18	£315,525.00	5	£56,295
2009 R2	25	£1,096,642.00	9	£284,669
2010 R1	31	£922,931.00	10	£290,063
2010 R2	40	£1,472,347.00	12	£382,778
2011 R1	40	£775,158.00	14	£179,067
2011 R2	24	£720,627.00	8	£288,855
2012 R1	36	£956,380	11	£296,875
2012 R2	26	£432,738	8	£114,167
2013 R1	39	£966,397	13	£287,161
2013 R2	21	£482,945	8	£83,690
2014 R1	36	£1,341,210.48	7	£206,143.00
2014 R2	32	£1,305,588	11	£486,339.00
2015 R1	43	£1,440,121	10	£334,726.00
2015 R2	25	£706,664	10	£358,826.00
	493	**£14,591,681**	**150**	**£4,202,683**

Geographic Distribution of NIAA Grants 2008–15

Year	England – London	England – Outside London	Scotland	Wales	Ireland	Rest of world
2008	5	6	2	1	0	0
2009	7	4	2	0	1 (RoI)	0
2010	6	13	2	0	0	1
2011	7	10	3	1	1 (RoI)	0
2012	5	10	3	1	0	0
2013	6	12	3	0	0	0
2014	6	8	4	0	0	0
2015	7	12	1	0	0	0

John Snow Anaesthesia iBSc Award

AAGBI/*Anaesthesia* funded John Snow Anaesthesia iBSc		
2014		
Miss Tina Bylinski	University of Glasgow	Model-based time series cluster analysis to determine unique patient states in traumatic brain injury
Miss Esme Dunne	University College London	The NSQIP patient risk calculator accurately predicts postoperative morbidity in UK surgical patients enrolled into OPTIMISE, POM-O and VISION-UK studies
Miss Ashleigh Ward	University of Glasgow	Cerebral autoregulation model extension using high frequency ICU data
***BJA*/RCoA Funded John Snow Anaesthesia iBSc**		
Mr Gregor Devoy	University of Aberdeen	JAM-C and reverse endothelial transmigration of neutrophils under conditions of sepsis
Mr Charlie Hensher	University College London	Brainstem modulation of noxious coding
Mr William Manning	University of Leicester	What is the role of the nociceptin system in experimental sepsis?
Mr Alexander Nelson	University College London	Impaired cardiopulmonary reserve and exercise-evoked autonomic dysfunction are subclinical features associated with increasing CKD severity
Mr Jonathan O'Doherty	University of Leicester	The project will provide better understanding of opioid signalling processes and will aid the processes of rational drug design
Mr Matthew Sanders	Royal Hallamshire Hospital	An observational study of the cardiovascular response to infiltration of local anaesthetic into the nasal septum in patients undergoing trans-sphenoidal resection of a pituitary lesion

John Snow Anaesthesia iBSc Award

AAGBI/*Anaesthesia* Funded John Snow Anaesthesia iBSc		
2015		
Miss Daisy Moran	University of Glasgow	The association between anaesthetic and analgesic techniques and recurrence or metastasis following surgical resection of lung cancer
***BJA*/RCoA Funded John Snow Anaesthesia iBSc**		
Mr Matthew Duffield	University of Southampton	To investigate whether there is a change in the number or antigen expression of PMV produced during cardiac surgery
Miss Rebecca Huang	University of Liverpool	To determine the effects of the c.118A>G mu opioid receptor gene polymorphism and the predicted CYP2D6 phenotype on analgesic response over a period of 3 hours (time of peak plasma concentration of tramadol) in patients with osteoarthritis
Mr Javin Sandhu	University of Manchester	The purpose of this study is to see whether it is possible to identify a unique pattern of brain activity (detected by EEG) for pain caused by osteoarthritis or rheumatoid arthritis
Mr Mykhaylo Shumeyko	University of Aberdeen	Melatonin as a novel therapy in sepsis: effect on biomarkers
Mr Andrew Hunter	University of Aberdeen	EEG analysis of patients receiving dexmedetomidine
Neuroanathesia & Critical Care Society of Great Britain & Ireland		
Miss Jena Mamdani	University of Sheffield	The effect of acupuncture on preoperative anxiety in patients undergoing neurosurgical procedures

Joint Fellowship

***BJA*/MRC Joint Fellowship**		
2014	Dr Tom Abbott	Using epidemiological methods to examine the association between perioperative haemodynamic variables and myocardial injury after non-cardiac surgery
	Dr Cyndi Goh	An integrated metagenomic approach to understanding disease heterogeneity in severe sepsis due to community acquired pneumonia
	Dr Sanooj Soni	What is the role of microvesicles in the development of acute lung injury?

RCoA Small Grant Awards

2014			
The Ernest Leach Fund	Dr Simon Lambden	The effect of acute hypoxia on the endogenous regulation of nitric oxide production and the pulmonary circulation in healthy human subjects	£1,386.00
	Dr Philip McCall	The novel inflammatory biomarker 'soluble urokinase-type plasminogen activator receptor' (suPAR); does it have a prognostic role following cardiac surgery	£2,851.00
SEA UK Awards	Dr Tanja Beament	Speak up! What are the barriers to challenging seniors?	£500.00
	Dr Jolene Moore	Anaesthesia in Hoima Regional Referral Hospital, Western Uganda	£500.00
2015			
The Belfast Fund	Dr Katherine MacGloin, Dr Sumitra Lahiri, Dr Rosel Tallach, Dr Mev Gooneratne and Dr Kate Grailey	Interactive web-based tutorials, simulation discussions and Topic Grand Rounds for Barts and the London School of Anaesthesia	£600.00
The Ernest Leach Fund	Dr James Bowness	The utility of exosomes as a biomarker in N-Methyl-D-Aspartate (NMDA) receptor encephalitis	£1,500.00
	Dr Christopher Hebbes	Does the immunocyte release profile of nociceptin differ in critically ill septic patients and healthy volunteers	£2,423.00
	Dr John Williams	Effect of one-week ingestion of the opioid analgesic codeine on immune function in young healthy male volunteers	£2,500.00
The Sargant Fund	Dr Peter Alston	Coronary sinus blood isoflurane concentration in patients undergoing heart surgery	£2,380.00
	Dr Linden Baxter	Country-wide implementation of WHO Surgical Safety Checklist in Madagascar	£2,500.00
The Stanley Rowbotham Fund	Dr Samantha Jayaweera	Improving surgical safety at The Queen Elizabeth Central Hospital, Blantyre, Malawi	£1,350.00
	Dr Matthew Morgan	The ghost in the machine: anaesthesia software yesterday, today and tomorrow. To support the research, writing, publication, and presentation of this topic at the World Congress of Anaesthesia in Hong Kong	£1,683.00

RCoA Awards

BJA/RCoA Basic Science Research Fellowship		
2014	Dr Gareth Ackland	Parasympathetic modulation of perioperative myocardial injury
	Dr Daqing Ma	Novel preservative strategy in enhancing marginal kidney donor pool
British Oxygen Company Professorship		
2011-2015	Prof M Grocott	Fit 4 Surgery
Macintosh Professorship		
2015	Dr Simon Howell	Abdominal aortic aneurysm repair - An exemplar for the role of the anaesthetist in perioperative medicine
	Dr Iain Moppett	Perioperative hip fracture care: past, present and future
2014	Dr Daqing Ma	The potential impact of anaesthetics on cancer reoccurrence following surgery
Maurice P Hudson Prize		
2015	Major David Hunt	Transfer of the critically ill adult patient published in Surgery (2015) 33(4): 153-157
Payne Stafford Tan Award		
2014	Dr Danielle Huckle	Attendance at International Sepsis Forum 2014, Paris
2015	Dr Rebecca Szekely	Attendance at Emerging Clinical Leaders course run by the King's fund
President's Award for Undergraduate Research		
2014 (First Prize - Clinical Research)	Mr Savan Shah	Varying impact of chronic pain clinics on routinely employed patient reported outcomes - results of a survey conducted at a tertiary referral centre
2014 (Joint First Prize - Laboratory Research)	Mr James Sun	Dexmedetomidine exerts protective effect on bilirubin-induced injury to astrocyte cultures
	Miss Stefania Koumpa	Argon protects against nitrous oxide induced cortical neuronal injury in vitro

Acronyms

AAGBI	Association of Anaesthetists of Great Britain and Ireland
ACTA	Association of Cardiothoracic Anaesthetists
APAGBI	Association of Paediatric Anaesthetists of Great Britain and Ireland
ARS	Anaesthetic Research Society
BJA	British Journal of Anaesthesia
BOC	British Oxygen Company
BSOA	British Society of Orthopaedic Anaesthetists
CCRN	Comprehensive Clinical Research Networks
CLRN	Comprehensive Local Research Networks
CRN	Clinical Research Network
CTN	Clinical Trials Network
DAS	Difficult Airway Society
DMA&CC	Department of Military Anaesthesia and Critical Care
EPICOT	Evidence, Population, Intervention, Comparison, Outcome, Time stamp
HSRC	Health Services Research Centre
JLA	James Lind Alliance
NACCSGBI	Neuro Anaesthesia & Critical Care Society of Great Britain and Ireland
NELA	National Emergency Laparotomy Audit
NETSCC	NIHR Evaluation, Trials and Studies Coordinating Centre
NIHR	National Institute for Health Research
OAA	Obstetric Anaesthetists' Association
PQIP	Perioperative Quality Improvement Programme
PSP	Priority Setting Partnership
QuARCs	Quality Audit & Research Coordinators
RA UK	Regional Anaesthesia UK
RAFT	Research Anaesthesia Federation for Trainees
RCoA	Royal College of Anaesthetists
SDO	Service Delivery and Organisation
SEA UK	Society for Education in Anaesthesia, UK
SNAP	Sprint National Anaesthesia Projects
VASGBI	Vascular Anaesthesia Society of Great Britain & Ireland

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