

NAP5: Accidental awareness during general anaesthesia

This article is an introduction to the 5th National Audit Project (NAP5) – a partnership between the Royal College of Anaesthetists (RCOA) and the Association of Anaesthetists of Great Britain and Ireland (AAGBI).



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Following completion of NAP4, the topic of 'Accidental Awareness during General Anaesthesia (AAGA)' was selected after an open call for proposals, peer review and shortlisting. As the AAGBI was simultaneously assembling a working party to examine best practice for management of AAGA, it was agreed to collaborate and, for the first time, the National Audit Project (NAP) will be supported by the two major UK anaesthetic organisations. In September 2011 the post of NAP5 Lead was advertised and Professor Jaideep Pandit was appointed after a competitive interview amongst a strong field of candidates. Dr Tim Cook will continue as NAP5 Advisor.

Accidental awareness is of great importance to patients and anaesthetists alike. It is perhaps the second most common adverse outcome for patients to discuss before surgery (after postoperative nausea and vomiting) and both patients and anaesthetists rank it high in outcomes to avoid during anaesthesia, to the point that, after death, 'awareness with pain' is the outcome anaesthetists most wish to avoid. In a study by Myles' group, AAGA was associated with a 58-fold increase in the odds of dissatisfaction after surgery: no other outcome measure exceeded a 16-fold increased odds of dissatisfaction.

Despite this, the incidence (and hence importance) of AAGA remains controversial. Numerous studies using the Brice protocol (Appendix 1) or other active methods to identify AAGA consistently report an incidence of ~1 in 600 (an average of one case per consultant every two years) and that up to 50% of these patients develop significant psychological sequelae or post traumatic stress disorder (PTSD). In contrast, very few anaesthetists or departments recognise this high incidence in their routine work. Among

modern-day studies only Pollard's has reported a much lower rate of AAGA than ~1:600 but it can be argued that this study used a less robust methodology for case identification. Many of the studies pre-date changes in anaesthetic practice such as total intravenous anaesthesia (TIVA), use of depth of anaesthesia monitors and reduced muscle relaxants use. It remains uncertain to whom, when and how these patients present and what proportion of cases do not 'present' at all.

The methodology of the NAPs is now firmly established. Local co-ordinators in each trust anonymously upload key information onto a dedicated website where it is analysed. NAPs focus only on a cohort of critical patient incidents and capture neither lesser but still serious incidents nor near-misses. In line with this, NAP5 will examine only explicit reports of AAGA and will not capture those who recall awareness but do not report it to their carers, or those who experience wakefulness and do not recall it (implicit awareness).

What specific questions will NAP5 attempt to answer – and what will it not answer?

NAP5 will seek to answer: How many patients (in a defined population) spontaneously report AAGA?; How do these patients present: when, to whom and how?; To what extent do recognised risk factors (e.g. obstetrics, trauma, cardiac, paediatrics, TIVA, depth of anaesthesia monitors) feature in the reported cases?; Can these and other themes be extracted from the cohort by qualitative analysis of reported cases of AAGA?; What do patient stories tell us about patients' desires and expectations soon after an episode of AAGA (and do these change with time)?; Can strategies for prevention of AAGA be identified from existing knowledge



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and review of the NAP5 cohort?; Can NAP5 identify an optimal process for managing cases of explicit awareness and inform a national strategy?

NAP5 will not address questions such as: how many cases of awareness can be identified using a Brice protocol; how many cases of implicit awareness are there?

Methodology

NAP5 will accept reports of AAGA to any part of the hospital system for a period of one year. Sources are likely to include (but not be limited to) anaesthetists, recovery nurses, ward nurses, surgeons, patient advisory liaison services, risk managers, hospital lawyers, psychologists, psychiatrists, complaints via general practitioners and others.

The NAP5 team will wish to be informed of *all new reports of AAGA* whether the event took place during the collection period or is historical. Events *reported* after the collection period, even if they took place within it, will not be accepted. This method will enable us to ascertain the number of new reports of AAGA in a year and hence an estimate of the prevalence of self-reported AAGA.

The local NAP5 co-ordinator: a new role with recognition as a valid SPA activity

As with NAP3 and NAP4 a network of local reports will be established to support, disseminate and co-ordinate the project locally. Both the RCoA and AAGBI are keen to support the role as a suitable SPA activity. The local co-ordinator will need to establish a system whereby each month they can check the 'sites' (as listed above) where a case may be reported, extract key information from the case records, and then upload anonymised details to a secure password-protected and encrypted webpage. This process of NAP5 has been reviewed by the National Information Governance

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Board (NIGB) and National Research Ethics Service and deemed to be a Service Evaluation which accords to the proper (ISO) standards of data handling with appropriate firewalls in place.

One limitation recognised in NAP3 and NAP4 was that the voluntary nature of the registry made it difficult to be certain whether those hospitals not reporting cases were true or false zeros (i.e. whether 'zero submissions' were due to a zero event rate or failure of notification). Even hospitals that did report cases may have under-reported the number. To address this issue NAP5 will use a methodology similar to the UK Obstetric Surveillance System (UKOSS) which is designed to collect data on rare events in an obstetric setting. The local co-ordinator will file a report every month stating whether or not a relevant case was identified. If no return is logged this will trigger a response from the central NAP5 team to ensure a correct return is received. This has the potential to improve the reliability of numerator data acquired by NAP5 compared to previous projects.

Additional work streams and opportunities

The project as described above can be regarded as a 'core project' but there are several potential additional work streams under consideration.

A *Baseline survey* (via local co-ordinators) will be important; this describes the current situation with respect to anaesthetists' perception and experience of awareness, the availability and use of depth of anaesthesia monitors and any trust protocols in place for prevention or management of AAGA.

A *Snapshot survey* to collect data on the type of anaesthesia administered (volatile vs TIVA, nitrous oxide or air, relaxant or none, intubation vs no-intubation), the type of surgery (obstetric, cardiac, trauma, paediatric etc) and other procedures (such as use of specific monitoring). Such data might enable associations to be drawn between certain types of procedure/ anaesthesia/monitoring and increased or decreased risk of AAGA.

A *Psychological workstream* could be a further, more in-depth questionnaire or analysis of patients who have reported awareness. For instance, an attempt could be made to follow the natural history of reported cases over a longer period of time (most likely six months) to determine the proportion who lodge a complaint, meet a psychologist/psychiatrist etc. This work stream would require advice from psychological experts and would be subject to ethical review.

A *Medicolegal workstream* may be possible, to deconstruct the 'anatomy' of medicolegal cases as they relate to awareness, with a view to helping develop guidelines for management.

A *Brice day* in which the questionnaire is administered to as large a cohort of patients nationally as is possible. Such an event will need ethical review and would be a considerable organisational challenge.

Guideline development is an important aim of this project and any final report. Guidance is needed (a) to help prevent awareness and (b) to manage it, if it arises, in medical, psychological and medicolegal terms.

Finally, an *International dimension* is possible. The AAGBI has representation in the Republic of Ireland and it may be possible to extend the remit of this project, thereby increasing the potential size of the dataset.

Conclusion: a call to arms

We hope the NAP5 project will be underway by summer 2012. Data collection will run for one year and we hope to review, analyse and publish results within 9–12 months of the end of the data collection period. A draft publication date is spring 2014.

This is perhaps the most challenging of all NAPs to date. Data will need to be collected on potentially sensitive or emotive cases, not only from within anaesthetic departments but also from outside departments including from professionals (such as lawyers and psychologists) with whom we usually have little contact. We do not wish to change anaesthetists' current practices, nor to prejudge any conclusions by, for example, suggesting that depth of anaesthesia monitoring should be more widely used. Rather, we wish to document current practice as it is. The enthusiasm of local co-ordinators will be – as with NAP4 – key to the project's success. NAP3 and NAP4 were successes because every single hospital in the UK supported the project. We encourage you to ensure NAP5 is the same success. If your hospital does not have a local co-ordinator for NAP5 please consider standing and if it does please offer whatever help you can.

Note

For further information on NAP5 or any questions about the project, please contact Morguler Cenán, Secretary to the NAP5 Project, at mcenan@nap5.org.

Further reading

- Macario A et al. Which clinical anaesthesia outcomes are both common and important to avoid? The perspective of a panel of expert anaesthesiologists. *Anesth Analg* 1999;**88**:1085–1091.
- Macario A et al. Which clinical anaesthesia outcomes are both common and important to avoid? *Anesth Analg* 1999;**89**:652–658.
- Myles PS et al. Patient satisfaction after anaesthesia and surgery: results of a prospective survey of 10,811 patients. *Br J Anaesth* 2000;**84**:6–10.
- Myles PS et al. Bispectral index monitoring to prevent awareness during anaesthesia: the B-Aware randomised controlled trial. *Lancet* 2004;**363**:1757–1763.
- Avidan MS et al. Anaesthesia awareness and the bispectral index. *N Engl J Med* 2008;**358**:1097–1108.
- Avidan MS et al; BAG-RECALL Research Group. Prevention of intraoperative awareness in a high-risk surgical population. *N Engl J Med* 2011;**365**:591–600.
- Pollard RJ et al. Intraoperative awareness in a regional medical system: a review of 3 years' data. *Anesthesiol* 2007;**106**:269–274.
- Mihai R, Scott S, Cook TM. Litigation related to inadequate anaesthesia: an analysis of claims against the NHS in England 1995–2007. *Anaesthesia* 2009;**64**:829–835.

APPENDIX 1

The Brice protocol

The Brice interview is used by anaesthetists to detect awareness. The interview comprises five questions addressed to the patient after surgery. The questions are based on the study by Brice et al in 1970 (Brice D, Hetherington RR, Utting JE. A simple study of awareness and dreaming during anaesthesia. *Br J Anaesth* 1970;**42**:535–542) and are:

- 1 What was the last thing you remember before going to sleep?
- 2 What is the first thing you remember on waking up?
- 3 Can you remember anything in between?
- 4 Did you dream during the procedure?
- 5 What was the worst thing about your operation?

In most research projects the Brice protocol is administered on three occasions (on waking, in the next 24–48 hours and after two to three weeks) to identify all cases. Cases suggestive of awareness require ratification by an external independent panel.



Fifth National Audit Project of the Royal College of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland

NAP5 will examine Accidental Awareness during General Anaesthesia (AAGA).

It has the potential to be the largest study of AAGA ever conducted.

As with NAP3 and NAP4 we anticipate all UK hospitals will take part.

Please disseminate this information in your department and prepare for the start of this exciting project.

Professor Jaideep Pandit has been appointed as the Joint Clinical Lead for NAP5 and will be working closely alongside Dr Tim Cook, College Advisor for National Audit Projects (NAPs).

Provisional launch date for NAP5 is June 2012.

Please refer to www.niaa-hsrc.org.uk/article.php?newsid=153 for the latest information.

Please direct any queries to Morgulan Cenán at: mcenan@nap5.org