NAP4

The 4th National Audit Project of the Royal College of Anaesthetists

Major Complications of Airway Management in the United Kingdom

AUDIT PACK
August 2008
4th National Audit Project (NAP4)

Major Complications of Airway Management in the UK

During every operation and admission to intensive care, it is vital to ensure that the patient can breathe through a ‘clear airway’. Multiple options for achieving this are available. While these procedures are routinely performed and are usually very safe, we know that important complications occasionally occur. NHS litigation authority (NHSLA) data indicates that such events certainly do occur, but their frequency and consequences are unclear. It is likely that several patients die or suffer serious brain damage each year. The Royal College of Anaesthetists has undertaken to try to enumerate this problem as its 4th National Audit Project. This sets out to determine the number of major complications arising from airway management during anaesthesia and the number of these procedures performed per year. As similar events also occur during care in the emergency department and intensive care the project will capture these events too.

Reports of such events are often incomplete and the subject remains controversial even within the profession. This makes learning from such events difficult. Gaining a more accurate idea of the incidence of these complications will allow anaesthetists (and those involved in emergency airway management) to make better risk : benefit assessments in patient care and allow more robust disclosure of risk to patients. As well as learning how often such events occur, by studying the cohort of complications that we detect we hope to gain insight into the causes of the problems, clarify best practice and improve patient safety in England, Scotland, Northern Ireland and Wales.

The project process has been approved by the National Research Ethics Service and by the Department of Health (Patient Information advisory Group). It is being performed in partnership with the Difficult Airway Society (DAS) and is partly funded by DAS and the National Patient Safety Agency. It is endorsed and supported by the Association of Paediatric Anaesthetists, Obstetric Anaesthetists Association, Association of Anaesthetists of Great Britain and Ireland, Intensive Care Society, Intensive Care National Audit and Research Centre, College of Emergency Physicians, College of Operating Department Practitioners, Association for Peri-operative Practice, Chief Medical officers and Medical Defences organisations.

We hope to receive reports from anaesthetists, intensivists, emergency physicians, ODPs/anaesthesia nurses, and surgeons and are contacting the professional bodies/associations of all these groups to seek their support with this project. Further cases may be identified by contact with NHSLA and NPSA.

We are interested in the complications of airway management in NHS hospitals and the main focus will remain anaesthesia. However we intend to include adults and children and will examine airway events arising during treatment by anaesthetists, emergency physicians and intensive care doctors.

This project is ONLY designed to collect data on major complications of airway management.

- Death.
- Brain damage.
- Emergency surgical airway or needle cricothroidotomy
• Unanticipated ICU admission: only where the complications of airway management are the cause of admission or lead to an adverse outcome.

In order for the project to be achievable we need to focus only on those cases with a poor outcome that is clearly identified as caused by difficult airway management.

Therefore we do not wish to be informed of the following:

• Cases admitted to HDU
• Cases which would have been admitted to ICU even without airway management difficulty, unless the airway management difficulty resulted in significant adverse outcome.
• Difficult airway management, no matter how difficult, without adverse patient outcome (we do wish to collect all cases of emergency surgical airway/needle cricothyroidotomy)

We estimate that approximately 200 cases may be identified in one year. This is less than one per hospital. So in most cases your colleagues would report either no cases, sometimes one and rarely two. The project will be co-ordinated centrally, and supported locally by a network of Local Reporters who will gather more detail once a case has been reported. At the time of writing over 90% of UK hospitals have agreed to take part and nominated a local reporter.

An example of how the system might work is as follows. An intensivist sees a patient with cerebral hypoxia following intubation difficulties during anaesthesia. The intensivist simply notifies us by email that a case has occurred (minimum data: date, hospital where event occurred, name and location of informant). The email is received at the project centre and the Local Reporter of the hospital is contacted. The local reporter then submits a full incident report. This report is directed to the Difficult Airway Society, who are developing a secure web-reporting site for this purpose. The data will be validated and fully anonymised. When data collection is complete the link with the original notification will be destroyed. The identified cases, fully anonymised and summarised, will then be reviewed by a small assessment group. The College and the review group will have no details of who or where a report came from.

We will start the project in September 2008 and complete it 12 months later. The project will be reported in 2010 including both quantitative analysis and an analysis of cases identified. We will feed this information back to all those who have assisted in the project.

For us this is an important investigation. At present we genuinely do not know the incidence of these major complications. This makes communication of risk to patients difficult or impossible. It also makes it difficult to balance risk and benefit for individual patients very difficult. We would greatly appreciate endorsement of this project and help in gaining the support of your colleagues/members.
Dear Local Reporter

Welcome, to NAP4. Many of you, or your departments, will have been inundated with letters from me asking for nominations for local reporters for this project. Firstly I would like to thank each of you for agreeing to act as local reporters. We now have a network covering the whole of the UK. Without the network of local reporters this project cannot work. Please do everything you can to promote awareness of the project in your department and so ensure that returns are as accurate and complete as possible.

I am pleased to enclose the ‘audit pack’ for this project.

- **The paperwork for the ‘snapshot phase’**: collecting data on how many general and regional anaesthetics are performed in your hospital. SAE for returns.
  - hospital data submission form (to return snapshot data)
  - individual anaesthetists data collection form for use if you chose
- **An explanatory letter**: feel free to reproduce this as often as you wish, perhaps making a copy for all members of your department. Includes further details on the ‘prospective phase’: reporting data to the DAS website, when complications are detected.
- A document explaining inclusion and exclusion criteria
- A document suggesting sources of support that might be useful for doctors involved in these difficult cases, who may need support.

This pack is being sent to you by email and post, allowing you to file returns however suits you best.

(Also in the postal audit pack)

- Departmental poster which I hope you will find space for in your anaesthetic department
- 2 Additional posters for placement in Intensive Care and the Emergency Department. Some of you may have local reporters specifically for ICU and the ED. If you do, please involve them. If not, please discuss the project with ICU and the ED, seek their approval to placing the posters and if possible arrange a local reporter. The project is supported by the Intensive Care Society and the College of Emergency Medicine!
- A5 Flyers to be distributed as you see fit
(Also in the electronic audit pack)

- PDF of poster and flyers: feel free to distribute by email or reprint these and distribute as necessary. Further copies of the flyer may be requested from the College, but also feel free to ask Medical Illustration to print the poster or flyers.

Once again I am very grateful for your agreement to contribute to this project. I do hope that your involvement is not too arduous. Do feel free to contact me if there are queries that arise.

Best wishes

Tim Cook (tcook@rcoa.ac.uk).
Consultant Anaesthetist, Royal United Hospital, Bath
Co-Lead for the 4th National Anaesthesia Audit

August 2008

Royal College of Anaesthetists, Churchill House, 35 Red Lion Square, London WC1R 4SG
This document, similar to articles in the September editions of the College Bulletin and Anaesthesia News, sets out the whys and wherefores of the 4th National Audit Project. We encourage you to read it in full as it will provide a full explanation of the project and the role of the Local Reporter.

**Why?**
Airway management is a cornerstone of safe anaesthetic practice. Major complications occur only infrequently but their impact is devastating and their incidence is unknown in the UK. The opportunity to learn from a detailed analysis of a cohort of such cases has never existed before.

**What and when?**
The 4th National Audit Project (NAP4) is an ambitious project being conducted jointly by the Royal College of Anaesthetists (RCoA) and the Difficult Airway Society (DAS) in co-operation with the National Patient Safety Agency (NPSA) with the aim of discovering the incidence of serious airway complications and examining each reported case for common themes and learning points.

This project closely follows, and we hope builds on, the model used for the successful NAP3 audit of central neuraxial blockade, which is due to be reported at the end of this year.

Starting on 1st of September 2008 and running for one year the project will determine the incidence of major complications of airway management in the UK. To achieve this objective it will be necessary to undertake a snapshot of current airway management practice, providing the denominator, followed by a year-long data collection of major complications to provide a numerator.

There is good evidence that major complications of airway management are not restricted to routine anaesthesia and many of the most difficult airway management challenges occur in the emergency department (ED) and the intensive care unit (ICU). For this reason we are collaborating with the College of Emergency Medicine (CEM) and the Intensive Care Society (ICS) and wish all major complications of airway management (whether cared for by anaesthetists or other specialties) that occur in theatres the ED and ICU to be reported to NAP4.

We anticipate that most reports will be from anaesthetists directly involved with management of these cases, but will be happy to receive reports from intensivists, emergency physicians, operating department practitioners, anaesthesia nurses and even surgeons. We are in contact with the professional organisations of these groups to seek their support with this project. Further cases may be identified by contact with NPSA or the NHS Litigation Authority.

contd/…
What is included?
We are interested in the complications of airway management in NHS hospitals and the main focus will remain anaesthesia. However the project includes complications in both adults and children and complications arising during treatment by anaesthetists, emergency physicians and intensive care doctors.

This project is ONLY designed to collect data on major complications of airway management.

- Death
- Brain damage.
- Emergency surgical airway or needle cricothyroidotomy
- Unanticipated ICU admission: only where the complications of airway management are the cause of admission or lead to an adverse outcome.

In order for the project to be achievable we need to focus on those cases with a poor outcome that is clearly identified as caused by difficult airway management.

Therefore we do not wish to be informed of the following

- Cases admitted to HDU
- Cases which would have been admitted to ICU even without airway management difficulty, unless the airway management difficulty resulted in significant adverse outcome.
- Difficult airway management, no matter how difficult, without adverse patient outcome (though we do wish to collect all cases of emergency surgical airway/needle cricothyroidotomy)

We estimate that approximately 100-200 cases (less than one per hospital) may be identified in one year, but this is speculative. In most cases your hospital would report no cases, sometimes one and rarely two. The project will be co-ordinated centrally, and supported locally by a network of Local Reporters (LR) who will gather event details once a case has been reported. At the time of writing over 99% of UK hospitals have an agreed local reporter in post. As the project progresses we anticipate the LR will be supported by local reporters in ICU and the ED.

We are aware that anaesthetists engaged in this process may have suffered trauma themselves, on account of the incident they report. We anticipate a role for the LR in supporting those doctors involved in these cases: advice on sources of support will be provided as part of the project process.

How is data reported?
At its simplest all cases should be reported to the project team by email; tcook@rcoa.ac.uk. It will be possible for anyone to notify the RCoA of a case fitting the inclusion criteria shown above. The only information required will be the date and time of the event, the hospital where the complication occurred and the name and contact details of the person reporting. It is important that no information identifying the patient is sent. Where someone other than the anaesthetist reports the case it is unnecessary and unwanted to identify an anaesthetist.

contd/…
What happens then and how is data managed?
After notification of an event the RCoA project lead will liaise with the LR to confirm that an event fulfilling the inclusion criteria has occurred, after which the case will be added to the RCoA list of confirmed cases. The LR will be asked to co-ordinate uploading of the case details to a secure password-protected part of the DAS website. To enable the audit team to gain a clear picture of the events that took place the data collection form is detailed. Questions are not posed to judge or to imply criticism, but to seek the information needed to determine themes and learning points arising from these challenging cases.

Access to this area of the website will require a unique username which will be sent to the LR by the RCoA after the event is confirmed. Before submitting data the LR will need to create a password. The combination of username and password will ensure that only the person entering data has access to entering or modifying it. The DAS project lead will be able to read the entered data and judge when more data is required: the RCoA lead will not. When more data is required the DAS project lead will ask the RCoA to inform the LR that more data is required. When a report is complete the username will be destroyed and the link between the RCoA list of reported cases and data on the DAS website will be broken.

The RCoA will have access to the hospital location of every notified event, but no details on the DAS website: first because of the password and then because access for that username will be removed when the reporting process is complete. The DAS project lead will have access to the report on the DAS website but will have no access to information on identity of hospital, patient or clinicians. No patient- or anaesthetist-identifying data will be requested, and if entered it will be removed.

What if I do not know whether to report a case?
Dr Ian Calder (nap4moderator@rcoa.ac.uk) will act as a moderator. His role will be to advise LRs and those completing forms if they are unsure about inclusion criteria or the data to be submitted. He will be independent both of the RCoA and DAS.

Reviewing the cases
The data reported will be reviewed in detail by a panel from DAS, the RCoA and specialist societies, to seek themes and learning points.

Reporting of results
A formal report of the project will be published by the RCoA and DAS in mid 2010. This will include quantitative analysis (incidence calculations) and an analysis of cases identified. This will be in the form of clinical review seeking learning points and cross specialty education. The findings will be sent to all those who have assisted in the project.

Approvals
The project process has been approved by the National Research Ethics Service and by the Department of Health (Patient Information advisory Group). It is endorsed or supported by the Association of Anaesthetists of Great Britain and Ireland, Association of Paediatric Anaesthetists, Association for Perioperative Practice, College of Emergency Physicians, College of Operating Department Practitioners, Intensive Care Society, Intensive Care National Audit and Research Centre, Obstetric Anaesthetists Association, Paediatric Intensive Care Society, Paediatric Intensive Care network, the Chief Medical Officers of England, Northern Ireland, Scotland and Wales and the Medical Defence organisations.
**Raising awareness in your hospital.**

Please increase awareness in your hospital as much as you can. **You are welcome to use, reproduce or distribute any of the contents of this audit pack.**

We suggest the following:

- Inform all of your anaesthetic colleagues of the project directly by email.
- Inform all of your operating department practitioners and anaesthetic nurses of the project.
- Remind them all frequently.
- Raise the profile of the project by discussing it informally whenever possible.
- Use the posters and flyers provided: reproduce as necessary.
- Make a presentation to the department. A **powerpoint presentation** for your use is available to download from the websites of the RCoA ([www.rcoa.ac.uk](http://www.rcoa.ac.uk)) or the DAS ([www.das.uk.com/natauditproject](http://www.das.uk.com/natauditproject)). Simply enter the websites and search under ‘NAP4 presentation’.
- Place the NAP4 posters prominently in your department (please ensure your name is written in the section for local reporter).
- Liaise with your ICU and emergency department (ED). Find out if you have local reporters for these sites. If you do please keep in close contact. If you do not have a LR-ICU or LR-ED please create a point of contact and keep in regular contact. Encourage these contacts to become LRs.
- Ensure posters are placed in ICU and the ED.

We believe this is an important project. Reports of such events are often incomplete and the subject remains controversial even within the profession. At present we do not know the incidence of these major complications or whether patterns exist in their causes or consequences. It is likely that learning from these events is a local process and lessons that might be more widely applicable are not disseminated. We hope this project will teach us much about both the scale and nature of this problem. It offers us a chance to increase our knowledge, make better risk: benefit assessments in patient care and enable more robust disclosure of risk to patients. We believe more knowledge will also directly improve patient safety.

**The key to success of the project is universal involvement. We urge you to discuss this project within your departments and liaise with your emergency and intensive care colleagues. We are happy to discuss the many questions which are likely to arise.**

Tim Cook  E mail tcook@rcoa.ac.uk
Nick Woodall  E mail nicholas.woodall@nnuh.nhs.uk
Co-Audit Leads, 4th National Audit Project  August 2008
NAP4 Inclusion Criteria
Guidance for local reporters

This project is ONLY designed to collect data on **major complications of airway management**. These include:

- Death and brain damage.
- Emergency surgical airway or needle cricothroidotomy
- Unanticipated ICU admission: only where the complications of airway management are the cause of admission or lead to an adverse outcome.

In order for the project to be achievable we need to focus only on those cases with a **poor outcome that is clearly identified as caused by difficult airway management.** Therefore we do not wish to be informed of the following:

- Cases admitted to HDU
- Cases who would have been admitted to ICU even without airway management difficulty, unless the airway management difficulty resulted in significant adverse outcome.
- Difficult airway management, no matter how difficult, without adverse patient outcome (except we do wish to collect all cases of emergency surgical airway or needle cricothroidotomy)

As with all clinical projects there are bound to be cases which are grey.

The following examples may help.

**Patient A** is admitted to the emergency department with a severe head injury (GCS 6), requiring ICU admission. Intubation is difficult but no hypoxia, hypotension or sustained hypertension results. **Patient A does not fulfill inclusion criteria** as on balance of probability difficult intubation was not the cause of ICU admission and did not lead to adverse outcome.

**Patient B** is admitted to emergency department with a severe head injury. Intubation proves impossible and multiple attempts are needed. Ventilation becomes impossible. Intubation is finally achieved, but only after a **prolonged period of profound hypoxia**. **Patient B fulfills inclusion criteria** as, on balance of probability, difficult intubation will have contributed to an adverse outcome (even though extent of contribution will be difficult or impossible to determine).

**Patient C** is admitted following a routine case during which they aspirated. They are extubated at the end of the procedure, but as a precaution are sent to ICU (HDU is full) for close observation. The following day they are well and are discharged. **Patient C does not fulfill inclusion criteria** as complication of airway management did not lead to significant adverse outcome. They would fulfill criteria if aspiration led to pneumonitis requiring continued ICU care.

**Patient D** proves unexpectedly difficult to intubate: several attempts are needed. At the end of the case the anaesthetist is concerned about airway swelling and the patient is admitted to ICU for overnight ventilation and steroids. The patient is uneventfully extubated the next day. **Patient D does not fulfill inclusion criteria** as complication of airway management did not lead to significant adverse outcome. If the patient had been extubated in recovery and suffered airway obstruction, hypoxia and a myocardial infarction prior to ICU admission, they would fulfill inclusion criteria.
Patient E undergoes a percutaneous tracheostomy on ICU. Three weeks later the tracheostomy erodes the innominate artery and the patient dies as a result of airway bleeding/exsanguination. **Patient E does not fulfill inclusion criteria** as the complication was remote (in time). Similarly a late tracheal stenosis would not fulfill inclusion criteria. However they would fulfill inclusion criteria if injury to the posterior tracheal wall at the time of percutaneous tracheostomy lead to mediastinitis and death.

- **Events may occur during anaesthesia or in the emergency department or intensive care unit.**
- **We wish all cases to be reported.**
- **If you have a case you are not sure whether to report or not please discuss with the NAP4 moderator: Dr Ian Calder (email: nap4moderator@rcoa.ac.uk). Dr Calder will act independently of all others involved in the audit and will not be involved in analysis of cases.**
- **Note: Not all airway problems have an available solution. Some patients do come to harm or die even when an airway has been managed with a high degree of skill.**

Dr Tim Cook  
Dr Nick Woodall  
Co-leads for NAP4  

August 2008  

END
The 4th National Audit Project of the Royal College of Anaesthetists (NAP4) is a year-long data collection exercise to determine the incidence of major complications of airway management during anaesthesia. To find the DENOMINATOR for calculating the incidence of complications a snapshot of current anaesthetic practice is also required. We therefore ask Local Reporters in all NHS hospitals in the United Kingdom to complete and return the two-page HOSPITAL DATA SUBMISSION FORM below by email to tcook@rcoa.ac.uk or in the envelope provided to Ms Shirani Nadarajah, Professional Standards Directorate, Royal College of Anaesthetists, Churchill House, 35 Red Lion Square, London, WC1R 4SG.

Timing of snapshot
As the Local Reporter we would like you to collect data on the number and types of anaesthetics performed between 15th and 28th September 2008 (inclusive). This two weeks period may be inconvenient for some Local Reporters therefore data collection over another two week period around this time is perfectly satisfactory though we urge all Local Reporters to please complete this exercise and return data before the end of November 2008. All anaesthetists in each hospital should record data for the same period.

Data collection
How these data are collected should be determined locally. It is acceptable to send us your annual data if this is more easily extracted from your operating department database. Alternatively you may find it useful to photocopy or print the attached ANAESTHETIST’S DATA COLLECTION FORM and distribute copies to all anaesthetists requesting that they return the completed form to you at the end of the 2 week data collection period. Please ensure EVERY anaesthetist reports EVERY case. You will be requested to indicate the accuracy of the data you submit.

Definitions.
An anaesthetic should be regarded as a general, regional or a local anaesthetic technique performed by an anaesthetist. We do not wish to collect data on cases performed by non-anaesthetists or solely under sedation.

Inclusion and exclusion.
Please DO NOT include anaesthetics administered in the Intensive Care Unit or in the Emergency Department. Please DO include those performed elsewhere: eg theatres, endoscopy, radiology departments).

Accuracy
On the HOSPITAL DATA SUBMISSION FORM you will be asked to grade the accuracy of the data submitted using the four point scale below:
1. Accurate  0-2% error
2. Close Estimate  2-10% error
3. Estimate  >10% error
4. Guess  an estimate without data to support it

Thank-you for your help and assistance.

Dr Tim Cook and Dr Nick Woodall
Co-leads for NAP4  
August 2008
ROYAL COLLEGE OF ANAESTHETISTS NATIONAL AUDIT PROJECT 4

NAP4 HOSPITAL DATA SUBMISSION FORM

Hospital ...........................................  ...  ...  ...  ...  ...  ...  ...  ...  ...  ...  ...

Name of local reporter  ...........................................  ...  ...  ...  ...  ...  ...  ...  ...

Data collection period September 15th-28th Or alternative date __/__ to __/__/__.

During the 2 week (14 day) period of data collection please provide the following essential data about your hospital anaesthesia related activity (definitions are attached).

Question 1

How many general or regional/local anaesthetics were administered within the 2 week period in your hospital?

A) GA General anaesthetics by an anaesthetist
   The total number of general anaesthetics administered in the 2 week period = ... ... ...  
   This figure is [accurate¹/close estimate²/estimate³/guess⁴] please indicate one only

B) RA Regional or local anaesthetics (without GA) administered by an anaesthetist.
   The total number of RA's and LA's administered in the 2 week period = ... ... ...  
   This figure is [accurate¹/close estimate²/estimate³/guess⁴] please indicate one only.

Question 2

For all general anaesthetics please record the number of times each airway management device was used as the primary airway management device (i.e. that used during maintenance of anaesthesia).

A) Anaesthesia facemask (with or without oro/nasopharyngeal airway).
   Total number of general anaesthetics maintained using a facemask in the 2 week period = ... ... ...  
   This figure is [accurate¹/close estimate²/estimate³/guess⁴] please indicate one only.

B) Laryngeal mask or other supraglottic airway.
   Total number of general anaesthetics maintained using a laryngeal mask or supraglottic airway in the 2 week period = ... ... ...  
   This figure is [accurate¹/close estimate²/estimate³/guess⁴] please indicate one only.

C) Tracheal tube (any type).
   Total number of general anaesthetics maintained using any form of a tracheal tube in the 2 week period = ... ... ...  
   This figure is [accurate¹/close estimate²/estimate³/guess⁴] please indicate one only.
ADDITIONAL DESIRABLE DATA

**Question 3**

For all general anaesthetics please record the number of times each airway management device was used as the primary airway management device (i.e. that used during maintenance of anaesthesia) within the 2 week period.

**A)** Of the general anaesthetics administered using a facemask how many used each a device below?
- Anaesthesia facemask
- Simple Hudson mask or similar open delivery system

This figure is [accurate\(^1\)/close estimate\(^2\)/estimate\(^3\)/guess\(^4\)] please indicate one only.

**B)** Of the general anaesthetics administered using a laryngeal mask or supraglottic airway (this does not include or/nasopharyngeal airways) how many used each a device below?
- Classic LMA (or standard LM)
- ProSeal LMA
- I-gel
- Other (specify)

This figure is [accurate\(^1\)/close estimate\(^2\)/estimate\(^3\)/guess\(^4\)] please indicate one only.

**C)** Of the general anaesthetics administered using tracheal a tube of any kind how many used each of the devices listed below?
- Single lumen oral or nasotracheal tube
- Tracheostomy
- Double lumen tracheal tube
- Single lumen tracheal tube with bronchial blocker
- Surgical laryngoscope or surgical bronchoscope
- Transtracheal ventilation
- Other (specify)

This figure is [accurate\(^1\)/close estimate\(^2\)/estimate\(^3\)/guess\(^4\)] please indicate one only.

**Question 4**

Additional data on anaesthetic techniques

Please record the numbers of the following performed in the 2 week period

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV induction of general anaesthesia in a patient with a difficult airway (child)</td>
<td></td>
</tr>
<tr>
<td>Gas induction of general anaesthesia in a patient with a difficult airway (child)</td>
<td></td>
</tr>
<tr>
<td>IV induction of general anaesthesia in a patient with a difficult airway (adult)</td>
<td></td>
</tr>
<tr>
<td>Gas induction of general anaesthesia in a patient with a difficult airway (adult)</td>
<td></td>
</tr>
<tr>
<td>Awake intubation of a patient with a difficult airway</td>
<td></td>
</tr>
</tbody>
</table>

End
**ANAESTHETIST’S DATA COLLECTION FORM – ADVICE SHEET**

- Complete one row for each patient you anaesthetised during the two week data collection period.
- Only include patents from the hospital in which you were given this form.
- Include anaesthesia administered in and out of theatres but not on ICU or in the emergency department.
- Where two anaesthetists care for one patient data should be submitted by the senior anaesthetist.
- Where care is transferred between anaesthetists of similar grade the anaesthetist managing the airway should provide the information.
- Each anaesthetic should appear on only one form.

**Assistance with completing the form**

**Anaesthesia:**

- GA indicates a *general anaesthetic* (which may include regional or local techniques).
- RA indicates a *regional or local anaesthetic WITHOUT* general anaesthesia: if regional anaesthesia is performed please do not complete any further information on that case.

**Adult or Child**

Indicate if the patient was a child or adult: *age <16 = child*

**Airway**

Indicate the airway device used for maintenance phase of anaesthesia.

**Facemask anaesthesia:**

- FM= anaesthesia facemask +/- oro/naso-pharyngeal airway
- H= Hudson mask or similar open device

**LMA or supraglottic airway** (this does not include the use of the oro/nasopharyngeal airway)

- LM= Classic LMA or standard LM
- PLMA=ProSeal
- I-gel=i-gel
- O=other

**Tracheal tube:**

- TT= tracheal tube
- Trach = tracheostomy
- DLT= double lumen tracheal tube
- BB = TT with bronchial blocker
- SL= surgical laryngoscope or surgical bronchoscope
- TTJV = trans-tracheal ventilation
- O = other

**Difficult airway.**

Insert Y if the anaesthetist submitting data anticipated or encountered difficulty with airway management. Difficulty would be indicated by the need to change or modify airway management from the routine for this procedure.

Example 1: a general anaesthetic with LMA in a straightforward case.
Example 2: a spinal anaesthetic with sedation.

<table>
<thead>
<tr>
<th>Case</th>
<th>GA or RA</th>
<th>Adult Child</th>
<th>Airway for maintenance</th>
<th>Anaesthesia for establishing airway</th>
<th>Predicted or actual difficult airway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A/C</td>
<td>Facemask</td>
<td>LMA</td>
<td>TT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FM/H</td>
<td>LMA/PLMA/i-gel/other</td>
<td>TT/trach/DLT/BB/SL /TTJV/other ..........</td>
</tr>
<tr>
<td>Example 1</td>
<td>GA</td>
<td>A</td>
<td>PLMA</td>
<td>IV</td>
<td>N</td>
</tr>
<tr>
<td>Example 2</td>
<td>RA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Supplementary information on NAP4 is available from these web-sites**


The Difficult Airway Society at [http://www.das.uk.com/natauditproject](http://www.das.uk.com/natauditproject)
# NAP 4 ANAESTHETIST’S DATA COLLECTION FORM

**NAME**………………………………………………………………………………

**DATA COLLECTION PERIOD** 15\(^{th}\) September to 28\(^{th}\) September 2008 inclusive

<table>
<thead>
<tr>
<th>Case</th>
<th>GA or RA</th>
<th>Adult /Child</th>
<th>Airway for maintenance</th>
<th>Anaesthesia for establishing airway</th>
<th>Predicted or actual difficult airway</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Facemask</td>
<td>LMA</td>
<td>TT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>LM/PLMA/ I-gel/other</td>
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Sources of support for doctors

The Royal College of Anaesthetists and the Difficult Airway Society have initiated a national audit project (NAP4) starting September 2008 to run for one year looking at serious complications of airway management (death, hypoxic brain injury, emergency tracheostomy / cricothyroidotomy or unexpected ITU admission).

During planning meetings it became clear that while we are looking at patient outcomes, it is likely that the clinicians involved in the care of these patients may need personal support at a difficult time. The advice below relates primarily to the doctors involved in these cases.

We have identified several sources of support that can be accessed confidentially to help clinicians who find themselves in this situation:

1) Local **occupational health departments** would be a first source of help and many have access to local counselling / support services including those with experience of post traumatic stress disorders.

2) **Medical defence organisations** (MPS [http://www.medicalprotection.org/uk](http://www.medicalprotection.org/uk) and MDU [http://www.the-mdu.com/](http://www.the-mdu.com/)) should of course be contacted, as well as offering legal support which may be relevant they can often give appropriate advice based on their experience of dealing with difficult cases.

3) The **Doctors for Doctors** service is described by the BMA as ‘an enhancement of BMA Counselling and offers doctors in distress or difficulty the option of speaking in confidence to another doctor. They describe their ‘team of doctor-advisors working with you to gain insight into your problems, supporting and helping you to move on by adopting a holistic approach to your situation’. You can access the service via BMA Counselling on 08459 200 169 or visit [www.bma.org.uk/ap.nsf/Content/Hubhealthandwellbeing](http://www.bma.org.uk/ap.nsf/Content/Hubhealthandwellbeing) for more information.

4) For Anaesthetists, the AAGBI ([http://www.aagbi.org](http://www.aagbi.org)) has a welfare committee which may be able to offer help and advice to doctors with difficulties. They can be contacted during office hours on 0207 631 1650 or via secretariat@aagbi.org and should be able to put the doctor in contact with an appropriate advisor. The AAGBI also contributes doctor advisors to the BMA “Doctors for Doctors” service mentioned above.

Dr Chris Frerk  Chairman Difficult Airway Society
Dr Nick Woodall  Co-lead NAP4
Dr Tim Cook  Co-lead NAP4

August 2008
NAP4 FAQs

1. What do I do if I have a case to report?
Really all you need to remember is: if you know of an event anywhere in the UK in the year from 1st September 2008, please report it to the NAP4 team.

   1. That you know of an event meeting submission criteria (no other details of the event needed)
   2. Where it happened (which hospital)
   3. Date of event
   4. Your contact details

2. Where can I get more information on NAP4?
Many questions will be answered by reading the documentation on the NAP4 section of the RCoA website or the Difficult Airway Society website

3. Can I get more posters of flyers to advertise NAP4?
These files were sent to local reporters in the initial audit pack. They are also downloadable from the RCoA website.

4. Is there a downloadable presentation about NAP4?
Yes this is available from www.rcoa.ac.uk/docs/NAP4-presentation.ppt. Please feel free to use it, but please do not modify it prior to use or distribution.

5. Can I get another copy of the audit pack?
Yes this is available from the NAP4 section of the website.

6. Are private patients and ISTCs included in the snapshot phase of the audit?
No. As with NAP3 we decided that it was organisationally more practical (and therefore likely to lead to more robust results) to perform the snapshot audit exclusively within NHS hospitals. As ISTCs may or may not be independent we have also excluded them. The critical issue is that the incidence calculations must be based on the same numerator as denominator. Our process and the review stage will ensure this is so.

7. Can cases of complications be reported if they occur in the independent sector or an ISTC?
Yes all such cases will be welcome. While they will be excluded from incidence calculations, they will be reviewed and analysed for learning points in the same manner as all reported cases will.

8. What will the incidence calculation be?
The calculation will be the incidence of major airway complications occurring during anaesthesia. It is important that the numerator and denominator match. So the denominator will be taken from the snapshot phase of the audit and will exclude anaesthetics performed on ICU and in the emergency department. All cases reported to NAP4 as part of year long data collection will be carefully reviewed. Only those that match the denominator population (anaesthesia in an NHS hospital outside ICU and the emergency department) will be only included in the incidence calculation.

9. Why are anaesthetics administered in the ICU and emergency department excluded from the snapshot?
We do not wish to calculate incidence data for these events so it is not necessary to collect snapshot (denominator) data. We are not including these cases in incidence calculation as the personnel administering an anaesthetic in the ICU and emergency department (and perhaps the definition of an anaesthetic) is likely to be different from most other hospital areas. The original prime aim of the project was to determine the incidence of major airway complications associated with anaesthesia delivered by anaesthetists in the UK. Excluding cases that may involve other medical specialties is therefore appropriate.

10. Why report cases of complications from ICU and the emergency department if they’re not being used for incidence calculations?
In addition to calculating the incidence of major complications of airway management during anaesthesia we will be reviewing each reported case in detail. We anticipate that many difficult cases (and therefore complications) will arise from ICU and the emergency department. We anticipate that review of these cases will be of interest and use in generating cross-specialty learning. Please report all relevant cases that occur in ICU or the emergency department.

11. Are neonatal intensive cares included in the audit?
We would be happy to receive reports of cases from NICU.

12. How will local reporters learn about a case that is reported?
Local Reporters may be unaware that an event has occurred in their hospital but when notified of an event the NAP4 team will directly contact the LR of that hospital. The LR will be given the date and time of an event and the name of the person reporting the event. The LR will locate the clinicians involved. The LR will support these clinicians and aid the data collection process. The LR and the involved clinicians will then submit a detailed report to the NAP4 section of the DAS website on behalf of another anaesthetist if that person is unable or unwilling to do so. As long as every event is notified to the NAP4 team at tcook@rcoa.ac.uk the rest will follow. Links to his email can be found on both the DAS and College web-sites. Anyone can tell him of an event, a surgeon, anaesthetist, ODP or nurse.
13. How does the local reporter get their login and password details?
The Local Reporter only needs a login and password when submitting a report on a case to NAP4 (on the DAS website). For each event a specific username will be supplied to the LR by the RCoA. This will enable secure password protected access to part of the DAS website. Before submitting data the person submitting data will need to create their own password. The combination of a username and password will ensure that only the person entering data has external access. Once the data submission is complete the username will be destroyed, thereby unlinking cases 'notified to NAP4' and 'case reports': thereby improving confidentiality and protection of both patient and clinician details.

14. What details will be inputted when the details of a case are reported?
Data to be submitted will be entered online. You will be able to view the forms online shortly and each form will be specific to each event. To enable the project team to gain a clear picture of the event the data collection form is extensive. Questions are not posed to judge colleagues or to imply criticism. Questions are framed to seek the information we believe will allow us to determine themes and learning points arising from these challenging cases.

15. Is there support for doctors involved in these difficult cases?
We are aware that anaesthetists engaged in this process may have suffered trauma themselves, on account of the incident they report. We thank all those reporting these data for their generosity and honesty in reporting their cases. We have gathered some information on support in these circumstances and this is available in the NAP4 section of the website.

16. How are duplicate reports avoided?
We anticipate some cases may be notified to the NAP4 team by more than one person. However in that hospital the Local Reporter will co-ordinate reporting case details and it is likely they will prevent duplicate reports.

The cases are notified to the RCoA NAP4 lead (Tim Cook) who will be aware when one hospital has made more than one notification. Where this occurs the RCoA NAP4 lead (Nick Woodall) who has access to the full reports on the DAS website (but not to the details of the notification, or the hospital notifying) will be able to screen the relevant reports to ensure there is no duplication.

It sounds complicated but we believe it a robust system that also maintains complete confidentiality for doctors (as neither the RCoA or DAS project lead has all the information, but between them they do!).

In the unlikely event that duplicates do slip through, they will be identified when cases are reviewed in detail by the review panel.

17. Does the 2 week snapshot include inductions by intensivists done out of hospital (i.e. retrievals)?
Please do not include anaesthetics performed in the ICU setting, in the emergency department or outside of hospital in the snapshot. Please do report adverse events meeting our inclusion criteria if they occur at these locations during the year of the NAP4 audit.

18. If an event occurs during a retrieval or a transfer of an ICU patient who reports it?
If an event occurs during a retrieval the report should be submitted by the hospital performing the airway management. Therefore if you go to another hospital for a retrieval and manage a patient who develops an airway problem resulting in cardiac arrest and brain damage your hospital will be asked to provide data on that case. If the intubation and damage had already occurred when you arrived to take the patient, the hospital responsible for managing the airway should submit the report. However you should still notify us that this event had occurred and indeed it would be useful if you would notify us of all events that occur even if they occur outside your own unit.

19. How do you define brain damage?
We ask the individuals providing care for the patient to identify brain damage. Clearly the ability to identify this problem will depend on the measures used to detect it. We request reports where there has been a recognisable deterioration in brain function following the airway event.

20. Does the audit include major complications of percutaneous tracheostomies (PDT), (or other airway events) for patients already on ICU?
Yes. Airway complications (related to intubation, accidental extubation, and PDT) should be reported in the same manner as those leading to ICU admission. So if they meet the criteria (i.e. lead to 1 - Death, 2 - Brain damage and 3 An injury that would have lead to ICU admission if they were not already there) they should be reported.

21. Are cases of sedation requiring an anaesthetist to be included in the snapshot?
No. Cases of sedation only (even when an anaesthetist is present/required) are not to be included in the snapshot. If they were this would blur the numbers of general anaesthetics performed. While it means the number of ‘anaesthetic interventions’ will be a slight under-estimate this in not a major consideration.

22. Are epidurals for labour and regionals for obstetric interventions to be included in the snapshot?
Yes. All anaesthetic general or regional procedures (outside the ICU and ED)
4TH NATIONAL AUDIT PROJECT (NAP4)

Major Complications of Airway Management in the UK

NAP4 will run from 1 September 2008 – 31 August 2009

A one year prospective audit to determine the frequency of major airway complications in all NHS hospitals. We aim to receive reports of all major complications of airway management that lead to patient harm. The project covers adults and children undergoing anaesthesia, and also during care in intensive care and the emergency department.

**PHASE 1:** a snapshot audit in September 2008 of all anaesthetic activity.

**PHASE 2:** a year-long case reporting period (1 September 2008 – 31 August 2009).

**Inclusion criteria**
- Death or brain damage
- Emergency surgical airway or needle cricothyroidotomy
- Unanticipated ICU admission: only where the complications of airway management are the cause of admission, or lead to an adverse outcome

In order for the project to be achievable we need to focus only on those cases with a poor outcome that is attributable to airway management.

**Reporting process**
Anyone can report an event by emailing tcook@rcoa.ac.uk. Send: 1) your name and contact details; 2) hospital name; 3) date of event. **SEND NO PATIENT IDENTIFYING DETAILS!**

Cases will be logged. The local reporter in your hospital will then be contacted and further details reported to a secure, protected website run by DAS. The project has no interest in individuals. Separation of data reported to RCoA and DAS will ensure patient and clinician anonymity. Events will be reviewed for learning points.

**Additional information**
Further more detailed information on the project can be found on either the DAS or RCoA websites (www.das.uk.com/natauditproject) (www.rcoa.ac.uk) or directly from Tim Cook (tcook@rcoa.ac.uk) or Nick Woodall (nicholas.woodall@nnuh.nhs.uk), co-leads for the project.

**YOUR LOCAL REPORTER IS**

**Approvals and endorsements:**
The project process has been approved by the National Research Ethics Service and by the Department of Health (Patient Information Advisory Group). It is being performed in partnership with the Difficult Airway Society (DAS) and is partly funded by DAS and the National Patient Safety Agency.

NAP4 is endorsed or supported by the Association of Anaesthetists of Great Britain and Ireland, Association for Peri-Operative Practice, Association of Paediatric Anaesthetists, College of Emergency Medicine, College of Operating Department Practitioners, Intensive Care Society, Intensive Care National Audit and Research Centre, Obstetric Anaesthetists Association, Paediatric Intensive Care Society, Paediatric Intensive Care network, all Chief Medical Officers and the Medical Defence organisations.
THE ROYAL COLLEGE OF ANAESTHETISTS

4TH NATIONAL AUDIT PROJECT (NAP4)

Major Complications of Airway Management in the UK

NAP4 will run from 1 September 2008 – 31 August 2009

Please report all cases of major complications of airway management.

Who? Any patient suffering harm from airway management during anaesthesia

Where? During anaesthesia, ICU and emergency departments

What? This project is ONLY designed to collect data on major complications of airway management resulting in:

- Death/brain damage
- Emergency surgical airway or needle cricothyroidotomy
- Unanticipated ICU admission: only where airway complications cause admission or lead to an adverse outcome.

In order for the project to be achievable we need to focus only on those cases with a poor outcome that is clearly identified as caused by difficult airway management.

How: Anyone can report, but only the following information: hospital name, the date and time of the event, and the name of the person reporting it. **The identity of the patient must not be submitted.** Please report to tcook@rcoa.ac.uk. The project team will log the event and contact your hospital’s Local Reporter for the project (we have a Local Reporter in every NHS hospital). The Local Reporter will then work with the clinicians involved to submit a full report on the event.

All events will to be treated with total confidentiality and anonymity, for staff and patients.

**Additional information:** More detailed information can be found on the DAS website (www.das.uk.com/natauditproject) or RCoA website (www.rcoa.ac.uk), or directly from Tim Cook (tcook@rcoa.ac.uk) or Nick Woodall (nicholas.woodall@nnuh.nhs.uk) co-leads for the project.