The Royal College of Emergency Medicine

Clinical Audits

Procedural Sedation in Adults Clinical Audit 2015-16

National Report

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Contents

Foreword

Dr Clifford Mann, President

Dr Taj Hassan, President Elect

The delivery of safe sedation is a key component of the skill-set of any emergency medicine (EM) physician. Newer agents, better monitoring and a greater case-load have substantially changed sedation practice in the Emergency Department (ED) over the last few years.

Patients have benefited from this change in practice - better sedation/analgesia has increased the success rate of many procedures, shorter acting agents have allowed same day discharge of most patients and formal training and audit has promoted best practice and reduced the likelihood of complications. Sedating patients safely in EDs reduces admissions, pressure on theatre and costs. Importantly, no deaths were recorded as a consequence of a sedation performed in an ED in this audit.

The introduction of ACCS training for all EM trainees has provided an excellent platform from which to maintain the necessary skills associated with safe sedation. The case-mix relevant to ED sedation is very broad. Frail elderly patients with multiple co-morbidities presenting with ventricular tachycardia have a very different risk profile to young athletes with a shoulder dislocation. Predictably, this case mix variation impacts upon the reported event rate.

Provision of safe sedation is an area of practice that benefits particularly from standard operating procedures: the powerful lessons of the WHO safer surgery checklist are directly relevant. Similarly, professional collaboration with colleagues in anaesthesia will ensure standards, practice and outcomes are optimised.

We are very pleased that the committee chose this area to audit and look forward to further work in the future in this important field.

Co-signed:
Dr Adrian Boyle, Chair of Quality in Emergency Care Committee
Dr Jeff Keep, Chair of Standards & Audit Subcommittee

Executive summary

A total of 8845 patients presenting to 190 EDs were included in this audit. The spider graph on the next page is a summary of the current performance.

This was a challenging audit with challenging results. It is for this reason, this is a good area to tackle. It would be doing a disservice to patients and the emergency medicine specialty if only the areas in which the specialty is comfortable with its practice are audited.

Previous audit topics have highlighted deficiencies in documentation. It is recognised that these audit findings may be similarly related to shortfalls in documentation rather than in practice and EDs are urged to investigate this locally.

Emergency Medicine is adapting to:

- Increased patient expectation regarding treatment and safety practices
- Using more sophisticated and potent sedation agents, which have acknowledged benefit to patients
- Increased need to provide assurance to those charged with Clinical Governance of the ED

The purpose of the audit is to monitor documented care against the standards, and is as such formative, not summative. The audit is designed to drive clinical practice forward by helping clinicians examine the work they do day-to-day and benchmark against their peers but also recognise excellence. There is much good practice occurring and we believe that this audit is an important component in sharing this and ensuring patient safety.

After looking at the overall results, a sub-group analysis was performed on the group involving sedation using propofol, which has a higher risk of apnoea than other drugs. The standard was met in fewer cases where propofol was the sedating agent, which is of concern.

The results from this audit are a clear indicator that a step change is required in the way sedation is practiced and recorded. RCEM Quality in Emergency Care Committee will be leading the work to promote and support improvements in this area. A repeat audit is planned for 2017/18.

This graph shows the national performance on all standards for this audit.

↑ **Higher scores (e.g. 100%)** indicate higher compliance with the standards and better performance.
↓ **Lower scores (e.g. 0%)** indicate that your ED is not meeting the standards and may wish to investigate the reasons.

Standard 1 - Patients undergoing procedural sedation in the ED should have documented evidence of pre-procedural assessment, including:

a. ASA grading
b. Prediction of difficulty in airway management
c. Pre-procedural fasting status

Standard 2 - There should be documented evidence of the patient's informed consent unless lack of mental capacity has been recorded.

Standard 3 - Procedural sedation should be undertaken in a resuscitation room or one with dedicated resuscitation facilities.

Standard 4 – Procedural sedation requires the presence of all of the below:

a. A doctor as sedationist
b. A second doctor, ENP or ANP as procedurist
c. A nurse

Standard 5 – Monitoring during procedural sedation must be documented to have included all of the below:

a. Non-invasive blood pressure
b. Pulse oximetry
c. Capnography
d. ECG

Standard 6 - Oxygen should be given from the start of sedative administration until the patient is ready for discharge from the recovery area.

Standard 7 - Following procedural sedation, patients should only be discharged after documented formal assessment of suitability, including all of the below:

a. Return to baseline level of consciousness
b. Vital signs within normal limits for the patient
c. Absence of respiratory compromise
d. Absence of significant pain and discomfort
e. Written advice on discharge for all patients

Introduction

This report shows the results from an audit of procedural sedation in adults at participating EDs in the UK and the Isle of Man.

The administration of sedative drugs to promote calm or sleep for a medical procedure is common practice in EDs. Sedation is an important topic as it can lead to adverse effects if incorrectly undertaken. Studies by NCEPOD[1] and NPSA[2] have reported avoidable deaths and overdose.

Drugs used for sedation can sometimes result in under or over sedation, irrespective of the intention and experience of the practitioner.

Sedation is generally not a life-saving procedure, so safety in its practice is paramount and the provider must therefore be equipped with the necessary skills, support, monitoring and resources to manage this continuum and any possible complications resulting from it. This is reflected in our standards set out for this audit which is as much for addressing safety before, during and after the procedure as it is for monitoring the effects of medication.

Good quality sedation enhances the patient's experience and care by reducing pain and procedure time[3]. It may also benefit the hospital by reducing admissions. It is an ideal audit topic as process and outcomes can be measured.

The Academy of Medical Royal Colleges (AoMRC) *Safe sedation practice for healthcare procedures* guidance[4] states:

> *"There should be audit of the process and outcome of procedures performed under sedation, particularly the incidence of major complications (e.g. cardiopulmonary arrest, unexpected admission to intensive care and delayed hospital discharge).*

The joint guideline from the RCoA and RCEM[5] and AoMRC guidance[4] is used as the basis for standards and audit measures.

Nationally, **8845** cases from **190** EDs were included in the audit.

Country	Number of relevant EDs	Number of cases
National total	190/233 (82%)	8845
England	166/182 (91%)	7660
Scotland	10/26 (38%)	589
Wales	9/13 (69%)	322
Northern Ireland	4/9 (44%)	254
Isle of Man /Channel Islands	1/3 (33%)	20

RCEM Standards

The audit asked questions against standards published by RCEM in June 2015:

Standard	Standard type
1. Patients undergoing procedural sedation in the ED should have documented evidence of pre-procedural assessment, including **all**: a. ASA grading[4] b. Prediction of difficulty in airway management[4] c. Pre-procedural fasting status[4]	**Fundamental**
2. There should be documented evidence of the patient's informed consent unless lack of mental capacity has been recorded[4]	Developmental
3. Procedural sedation should be undertaken in a resuscitation room or one with dedicated resuscitation facilities.	**Fundamental**
4. Procedural sedation requires the presence of **all** of the below a. A doctor as sedationist[4] b. A second doctor, ENP or ANP as procedurist[4] c. A nurse	**Fundamental**
5. Monitoring during procedural sedation must be documented to have included **all** of the below a. Non-invasive blood pressure[4] b. Pulse oximetry[4] c. Capnography[4] d. ECG	**Fundamental**
6. Oxygen should be given from the start of sedative administration until the patient is ready for discharge from the recovery area.[4]	Developmental
7. Following procedural sedation, patients should only be discharged after documented formal assessment of suitability, including all of the below a. Return to baseline level of consciousness[4] b. Vital signs within normal limits for the patient[4] c. Absence of respiratory compromise[4] d. Absence of significant pain and discomfort[4] e. Written advice on discharge for all patients	**(a) Fundamental** **(b) Fundamental** **(c) Fundamental** **(d) Fundamental** (e) Developmental

Understanding the different types of standards

Fundamental: need to be applied by all those who work and serve in the healthcare system. Behaviour at all levels and service provision need to be in accordance with at least these fundamental standards. No provider should provide any service that does not comply with these fundamental standards, in relation to which there should be zero tolerance of breaches.

Developmental: set requirements over and above the fundamental standards.

Aspirational: setting longer term goals.

For definitions on the standards, refer to appendix 3.

Audit history

All EDs in the UK, Republic of Ireland, Isle of Man and the Channel Islands were invited to participate in June 2015. Data were collected using an online data collection tool. This is the first time this audit has been conducted. The audit is included in the NHS England Quality Accounts for 2015/2016.

Participants were asked to collect data from ED patient records on consecutive cases of adults (16 years old or over) who presented to the ED and were given procedural sedation between 1st January 2015 and 31st December 2015.

Sample size

RCEM recommended auditing a different number of cases depending on the number of the patients seen within the data collection period. If this was an area of concern, EDs were able to submit data for more cases for an in depth look at their performance.

Expected number of cases	Recommended audit sample
< 50	All eligible cases
50-250	50 consecutive cases
>250	100 consecutive cases

Format of this report

The table overleaf shows the overall results of all participating trusts. The table indicates the variations in performance between departments as displayed through the lower and upper quartiles of performance as well as the median values. More detailed information about the distribution of audit results can be obtained from the charts on subsequent pages of the report. Please bear in mind the comparatively small sample sizes when interpreting the charts and results.

Feedback

We would like to know your views about this report, and participating in this audit. Please let us know what you think by completing our feedback survey:
www.surveymonkey.co.uk/r/RCEMaudit15

We will use your comments to help us improve our future audits and reports.

Summary of national findings

	RCEM Standard	National Results (8845 cases)		
		Lower quartile	Median*	Upper quartile
STANDARD 1: Patients undergoing procedural sedation in the ED should have documented evidence of pre-procedural assessment, including a) ASA grading, b) Prediction of difficulty in airway management and c) pre-procedural fasting status	100%	0%	8%	39%
STANDARD 2: There should be documented evidence of the patient's informed consent unless lack of mental capacity has been recorded.	100%	24%	52%	74%
STANDARD 3: Procedural sedation should be undertaken in a resuscitation room or one with dedicated resuscitation facilities.	100%	71%	91%	98%
STANDARD 4: Procedural sedation requires the presence of all of the below a) a doctor as sedationist, b) a second doctor, ENP or ANP as procedurist, c) a nurse	100%	16%	42%	67%
STANDARD 5: Monitoring during procedural sedation must be documented to have included all of the below a) non-invasive blood pressure b) Pulse oximetry, c) Capnography, d) ECG	100%	4%	26%	60%
STANDARD 6: Oxygen should be given from the start of sedative administration until the patient is ready for discharge from the recovery area.	100%	18%	45%	72%
STANDARD 7: Following procedural sedation, patients should only be discharged after documented formal assessment of suitability, including all of the below	100%	0%	3%	17%
a. Return to baseline level of consciousness	100%	31%	56%	81%
b. Vital signs within normal limits for the patient	100%	34%	59%	81%
c. Absence of respiratory compromise	100%	8%	39%	71%
d. Absence of significant pain and discomfort	100%	7%	25%	55%
e. Written advice on discharge for all patients	100%	3%	15%	32%

Notes about the results

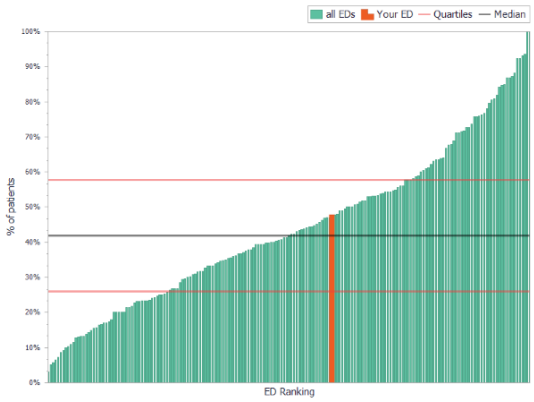
*The median value of each indicator is that where equal numbers of participating EDs had results above and below that value.
These median figures may differ from other results quoted in the body of this report which are mean (average) values calculated over all audited cases.

The lower quartile is the median of the lower half of the data values.
The upper quartile is the median of the upper half of the data values.

Understanding the charts

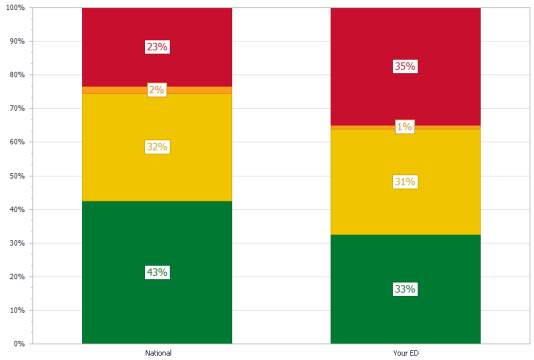
There are different types of charts within this report to present the data. The example graphs below show the type of charts you will encounter.

Sorted Bar Chart



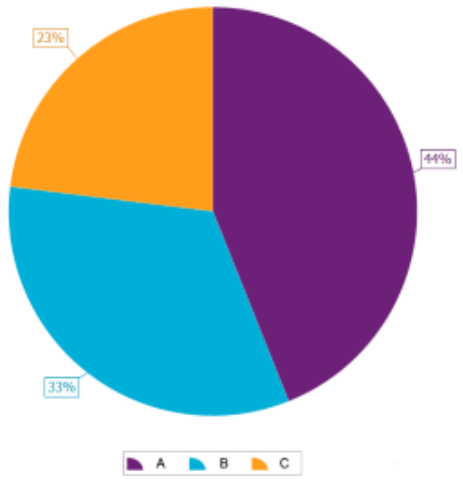
Sorted bar charts show the national performance, where each bar represents the performance of an individual ED. The horizontal lines represent the median and upper/lower quartiles.

Stacked Bar Chart



Stacked bar charts show the breakdown of a group nationally. These are used when it will be helpful to compare two groups side by side, for example comparing local data with the national data.

Pie Chart

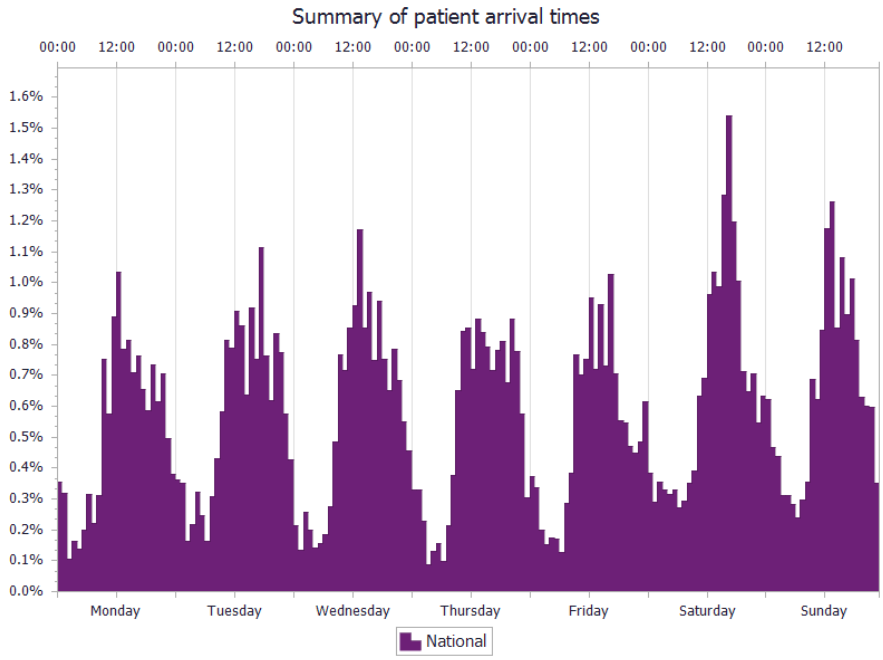


Pie charts show the breakdown of a group nationally.

SECTION 1: Casemix

This section covers the national case mix and demographics of patients included in this audit.

Q1 and Q2. Day and time of arrival



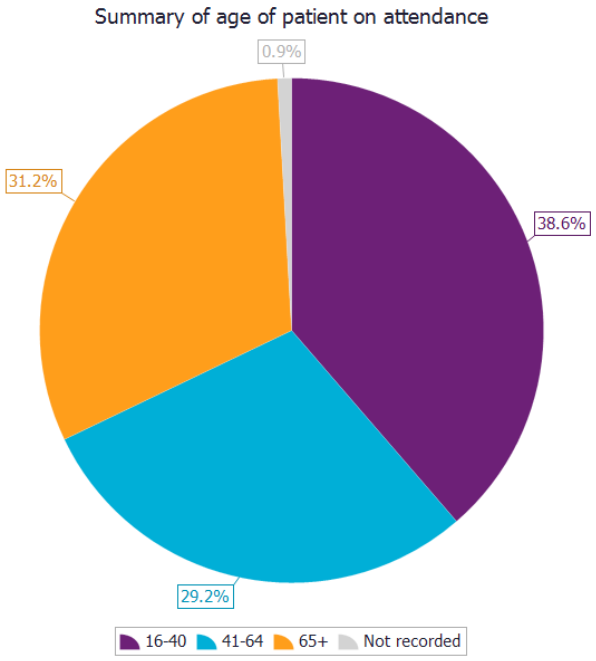
Sample: all patients (n= 8845)

This chart shows the day and time of arrival and not the time of sedation.

Indications for hyper-acute sedation such as large joint dislocations or ventricular tachycardia are uncommon, and therefore most sedation may take place several hours after arrival.

There is a spike on Saturday afternoon, which may correspond with increased sporting activity.

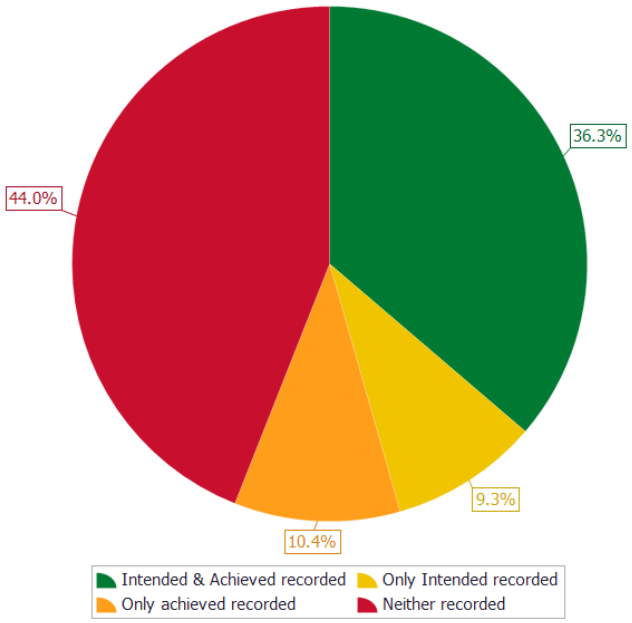
Q3 Patient age



Sample: all patients

This shows a reasonably even spread across the three age groups, with a third of patients attending aged 65 and over.

Q4 and Q5 Level of sedation



Sample: all patients

This pie chart shows that most of the time, level of sedation information is not recorded.

The intended level of sedation should be decided and recorded before the procedure. Where sedation levels are routinely deeper than intended, EDs should reflect on the reasons and consider patient safety implications.

Q4 and Q5 Level of sedation intended and achieved

		Achieved				
		Conscious	**Minimal**	**Dissociative**	**Deep**	**Not recorded**
Intended	**Conscious**	22.75%	0.76%	1.72%	0.03%	7.16%
	Minimal	0.28%	2.91%	0.06%	0.00%	0.63%
	Dissociative	0.05%	0.01%	0.07%	1.83%	0.21%
	Deep	0.24%	0.01%	4.44%	0.02%	1.24%
	Not recorded	5.63%	1.87%	3.28%	0.52%	44.28%

This table shows the level of sedation intended and the level of sedation actually achieved.

Where recorded, the majority of patients achieved the level of intended sedation. However, a smaller number achieved a higher or lower level of actual sedation. Where the level of sedation achieved is not recorded, this happened most commonly in patients where conscious sedation was intended.

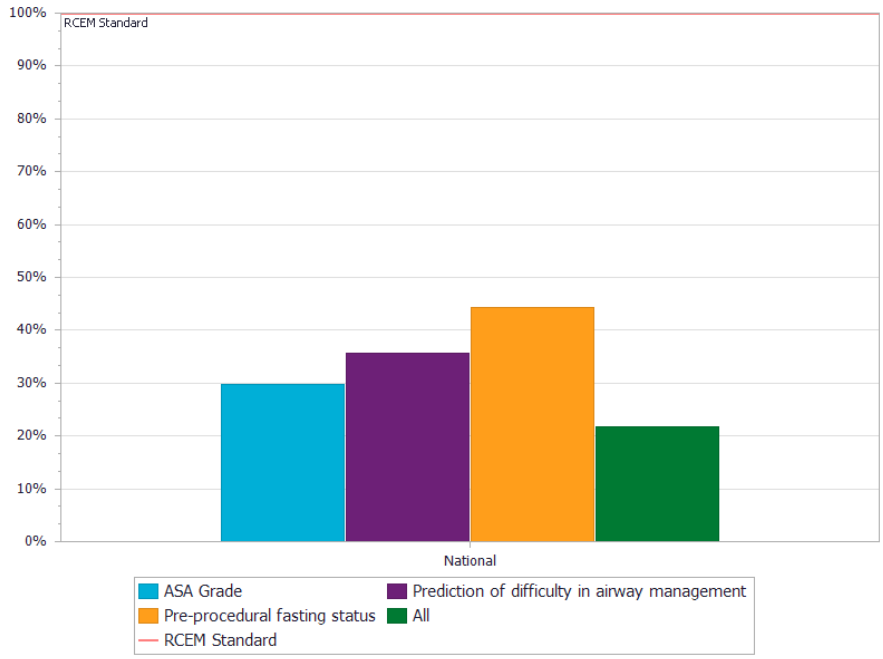
The reason for this may be that people are not sure of the sedation level or because the recording scale might not accurately reflect clinical practice. RCEM will be investigating potential solutions to this recording dilemma and welcomes suggestions from EDs.

SECTION 2: Audit results

Pre-procedure

This section gives information about care given pre-procedure i.e. assessment and patient consent.

Q6 Were the following elements of pre-procedural assessment recorded in the ED notes?



STANDARD 1: Patients undergoing procedural sedation in the ED should have documented evidence of pre-procedural assessment, including: a) ASA grading; b) Prediction of difficulty in airway management; c) Pre-procedural fasting status

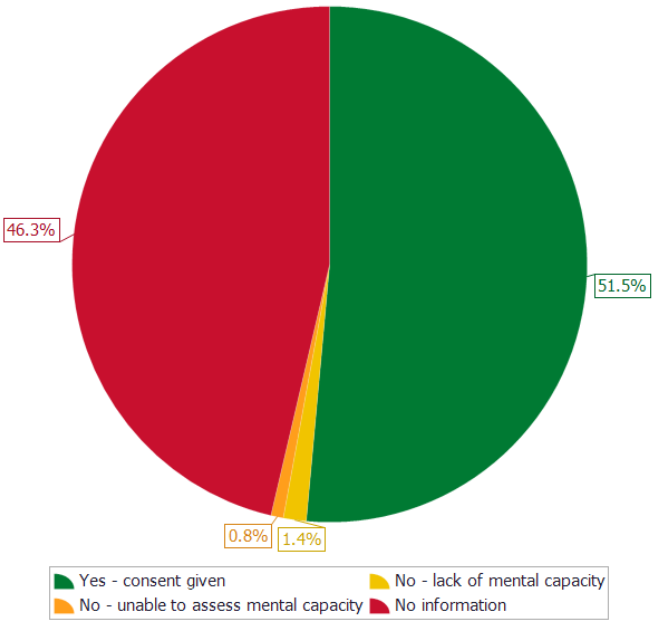
Sample: all patients

This information is important in predicting complications.

The standard was met in less than a quarter of the instances audited.

This is a clear area for improvement.

Q7 Was there documented evidence of the patient's informed consent for the sedation?



STANDARD 2: There should be documented evidence of the patient's informed consent unless lack of mental capacity has been recorded

Sample: all patients

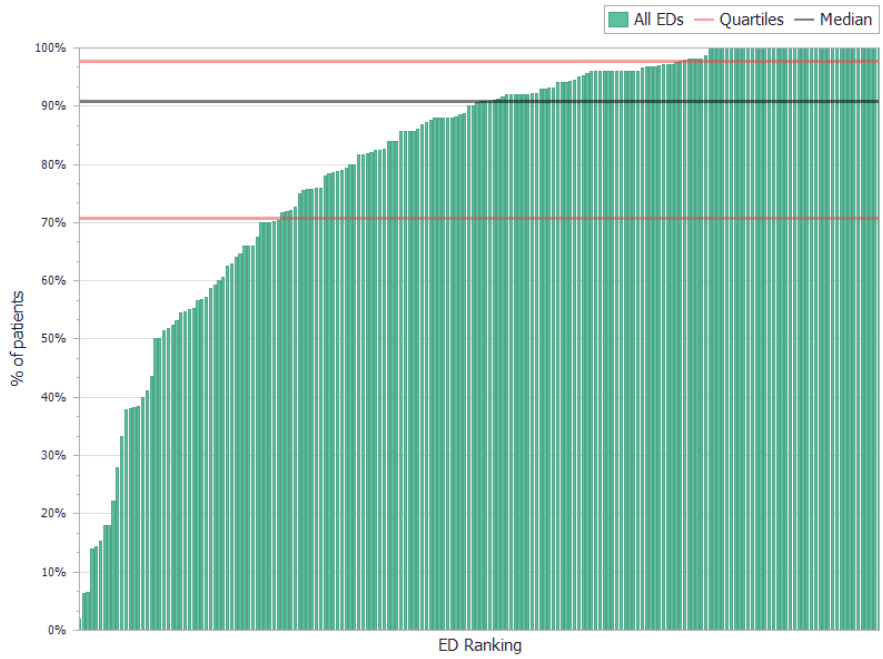
While in some circumstances full written consent is unfeasible, documented verbal consent with appropriate explanation of risk should be undertaken as a minimum standard.

It is not acceptable from a patient or clinical risk perspective that nearly half of patients did not have consent recorded.

Procedure

This section details care provided during the procedural sedation. It shows the national performance regarding appropriateness of location, staffing, and sedating agents.

Q8 Was the sedation carried out in a resuscitation room or one with dedicated resuscitation facilities?

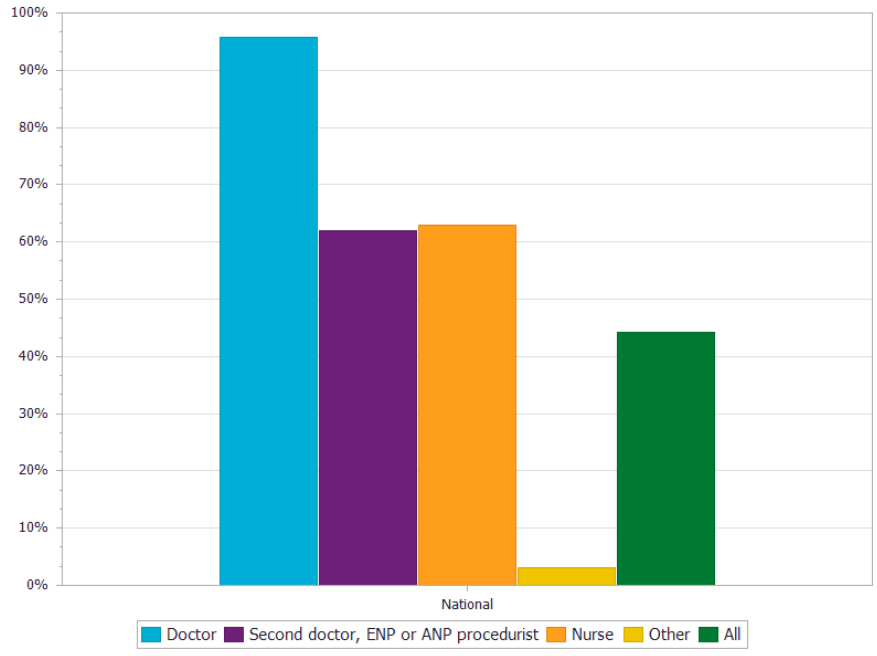


STANDARD 3: Procedural sedation should be undertaken in a resuscitation room or one with dedicated resuscitation facilities

Sample: all patients

After looking at the overall results, a sub-group analysis was performed on the group involving sedation using propofol, which has a higher risk of apnoea than other drugs. The standard was met in fewer cases where propofol was the sedating agent, which is of concern.

Q9 Which of the following staff were present during the procedure?



STANDARD 4: Procedural sedation requires the presence of: a) a doctor as sedationist; b) a second doctor, ENP or ANP as procedurist; c) a nurse

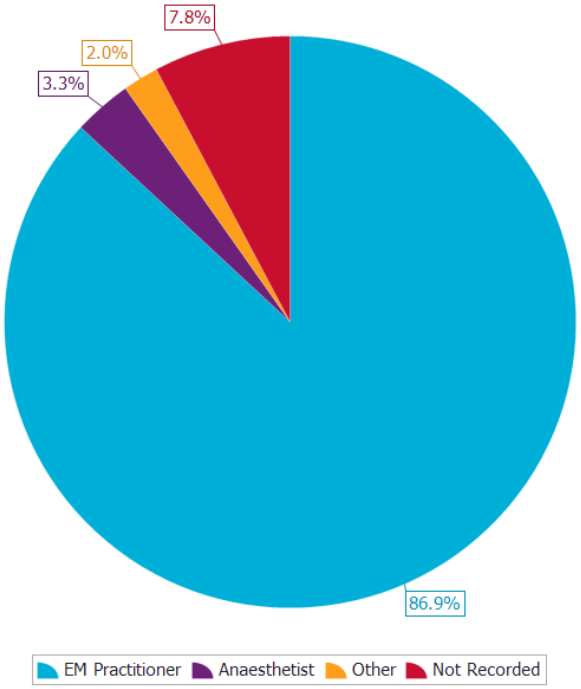
Sample: all patients

(all = doctor, second doctor/ENP/ANP procedurist and nurse)

While it is possible that there are only one or two staff present in the room, the results probably indicate poor data quality due to inadequate recording.

There is a clear duty to the patient and for clinical governance to record who is in the room at the time the patient is sedated.

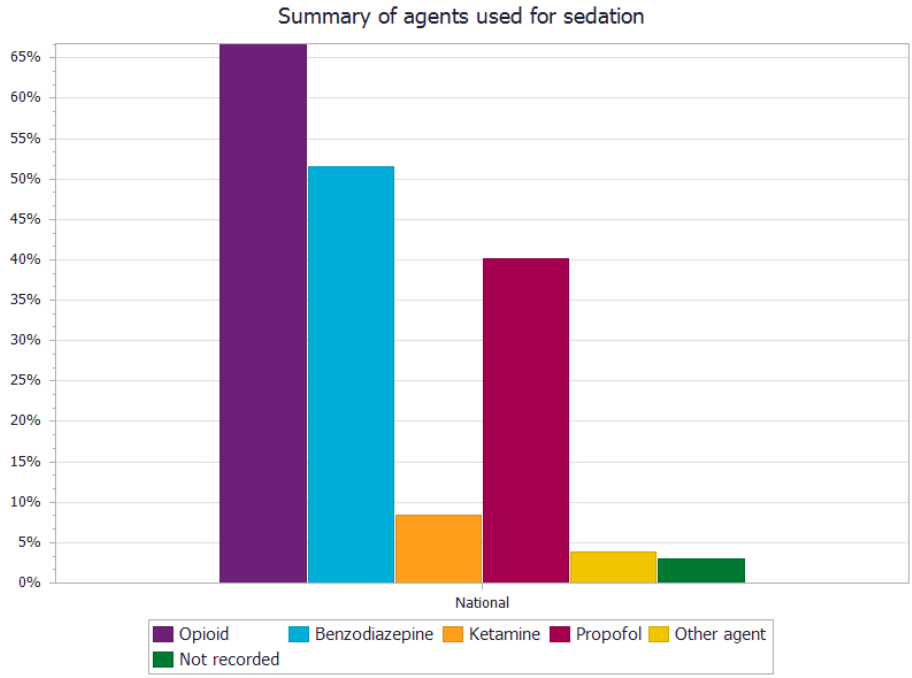
Q10 What was the speciality of the sedating practitioner?



The specialty of the sedating practitioner was recorded in 92% of cases.

For almost 10% of sedations, the practitioner performing the sedation was not recorded. It is important that sedation is performed by practitioners with appropriate experience and training.

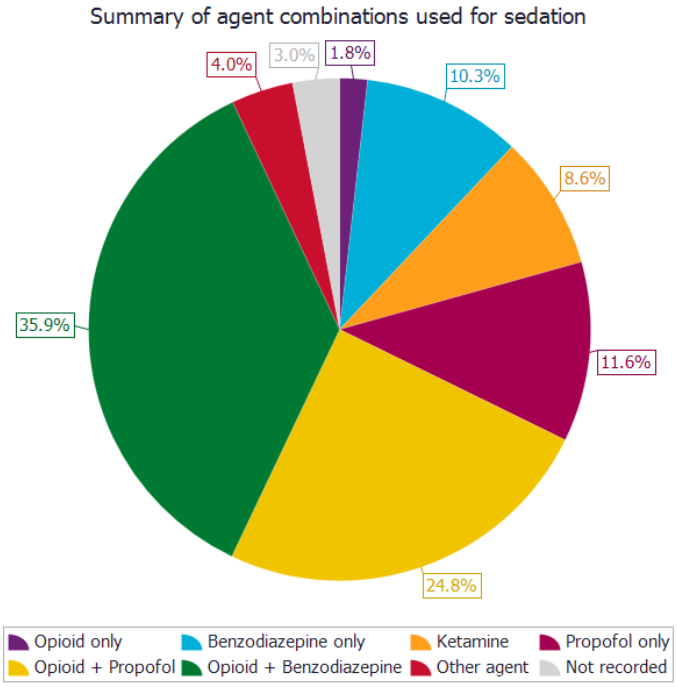
Q11 Which agents were used for sedation?



Sample: all patients

Benzodiazepines are the most commonly used sedation agent, used in over 50% of patients.

Q11 Which agents were used for sedation – in combination with other agents?



Sample: all patients, excluding Q11=not recorded (n=241)

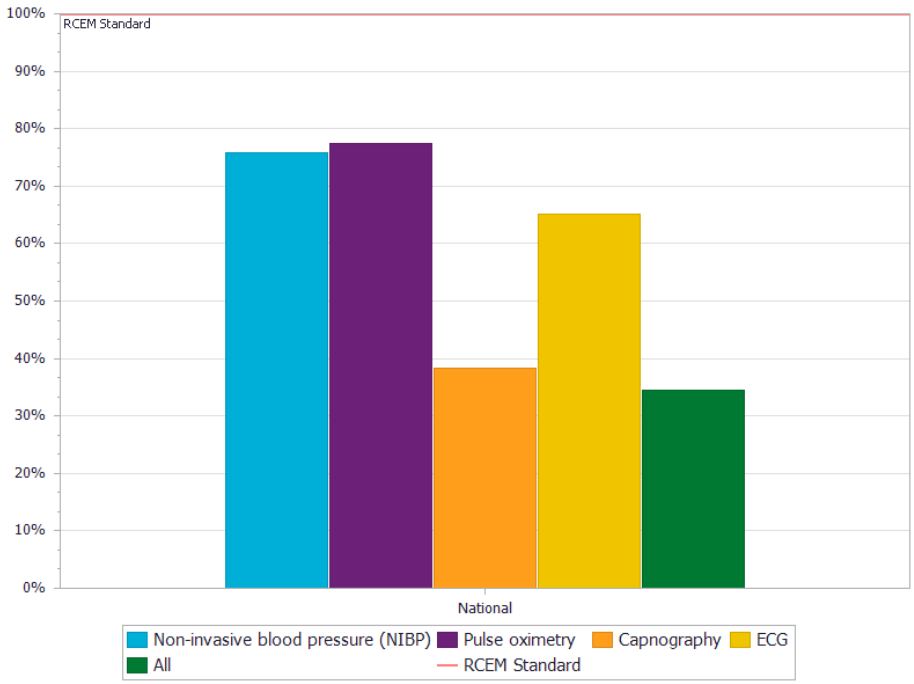
Combinations of agents are often used in sedation and therefore the pie chart gives a more detailed and clinically relevant breakdown of practice.

The opioid and benzodiazepine combination is used in over one third of patients sedated in the ED.

Monitoring

This section details the patient monitoring and oxygen administration during the procedural sedation.

Q12 Was there evidence of monitoring of the following during the procedure?

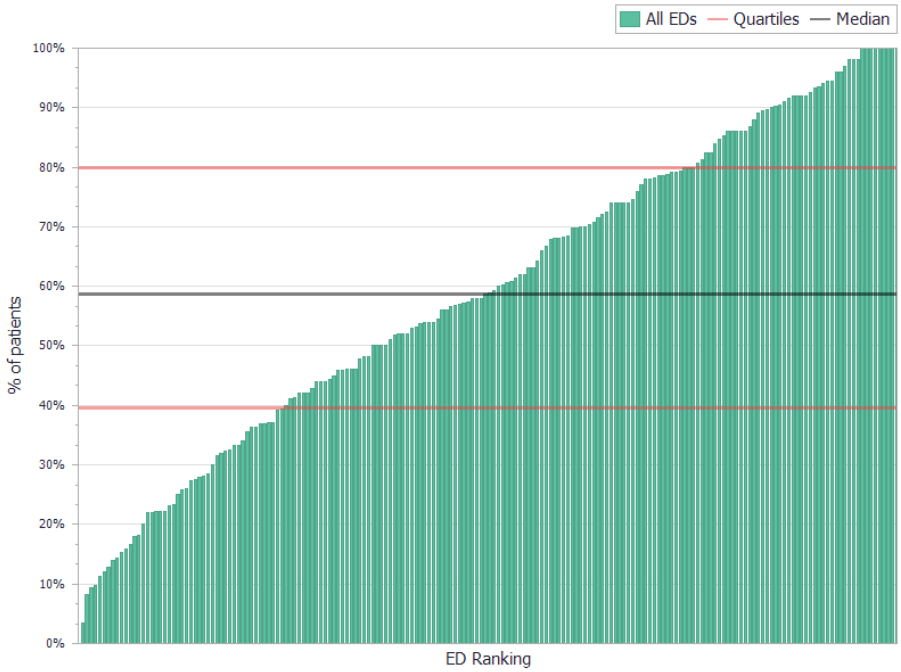


STANDARD 5: Monitoring during procedural sedation must be documented to have included all of: a) Non-invasive blood pressure; b) Pulse oximetry; c) Capnography; d) ECG.

Sample: all patients

Capnography (CO_2 monitoring) is a relatively recent addition to standards for sedation practice, however it is now accepted as fundamental.

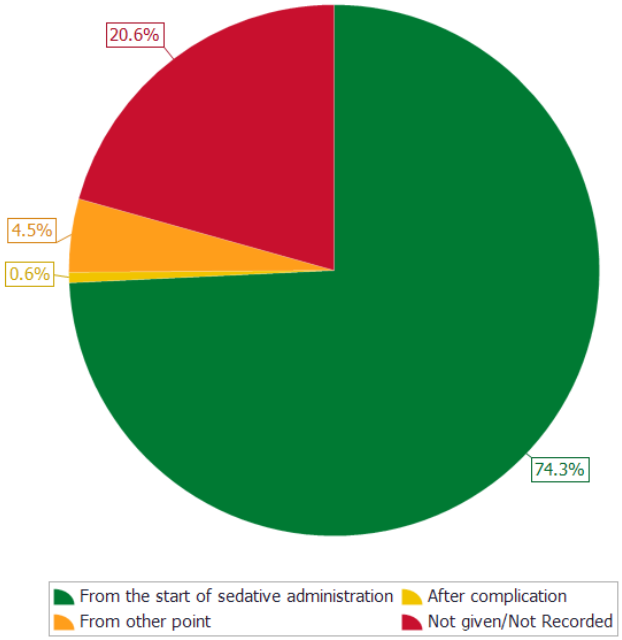
Q13a Did the patient receive oxygen during the sedation?



Sample: all patients

This graph shows that about 60% of all patients receive oxygen during sedation. Although a wide variation in practice is seen, the median is lower than expected.

Q13a and 13b When was oxygen given



STANDARD 6: Oxygen should be given from the start of sedative administration until the patient is ready for discharge from the recovery area.

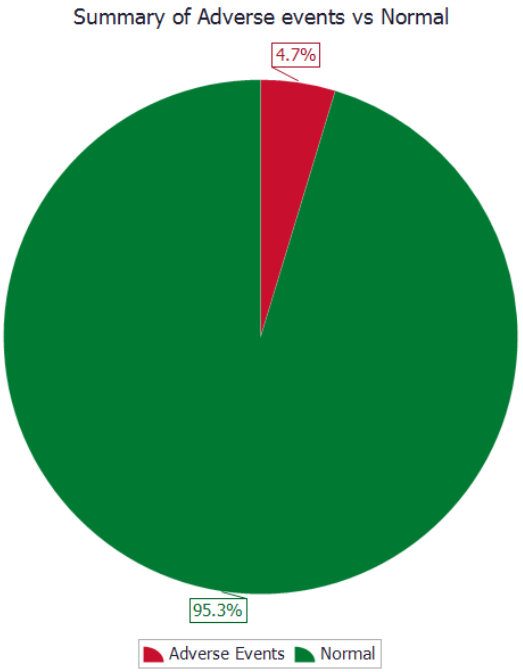
Sample: all patients

This shows that most of the time, if patients are breathing supplemental oxygen, this is normally commenced from the start of sedation.

Adverse events

This section tells you more about any adverse events that occurred, the outcome of any adverse event and how these events were reported.

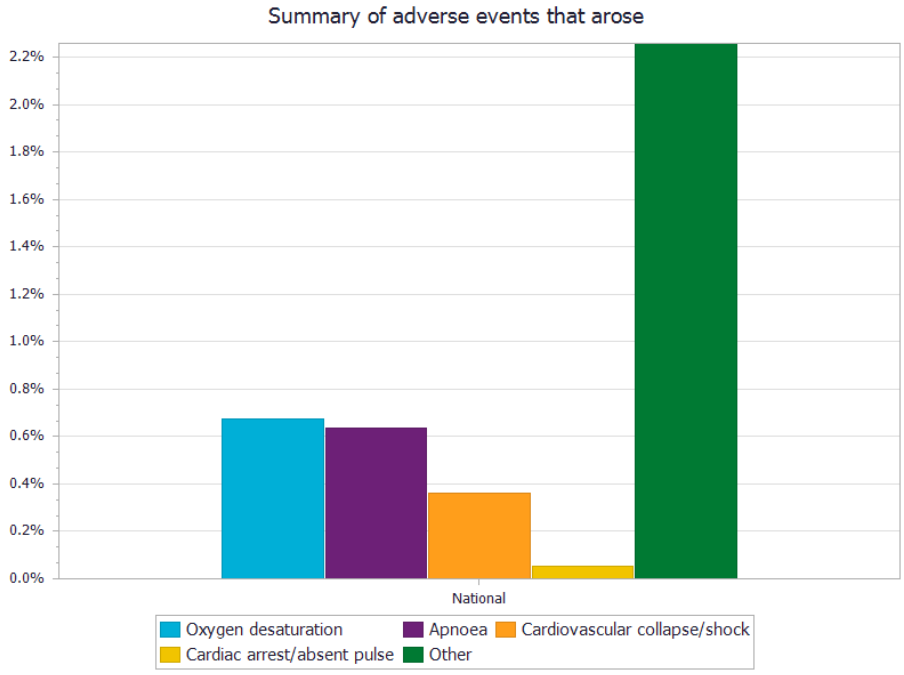
Q14 Did any adverse events arise?



Sample: all patients

The total adverse event rate was 4.7%, which is reassuringly low.

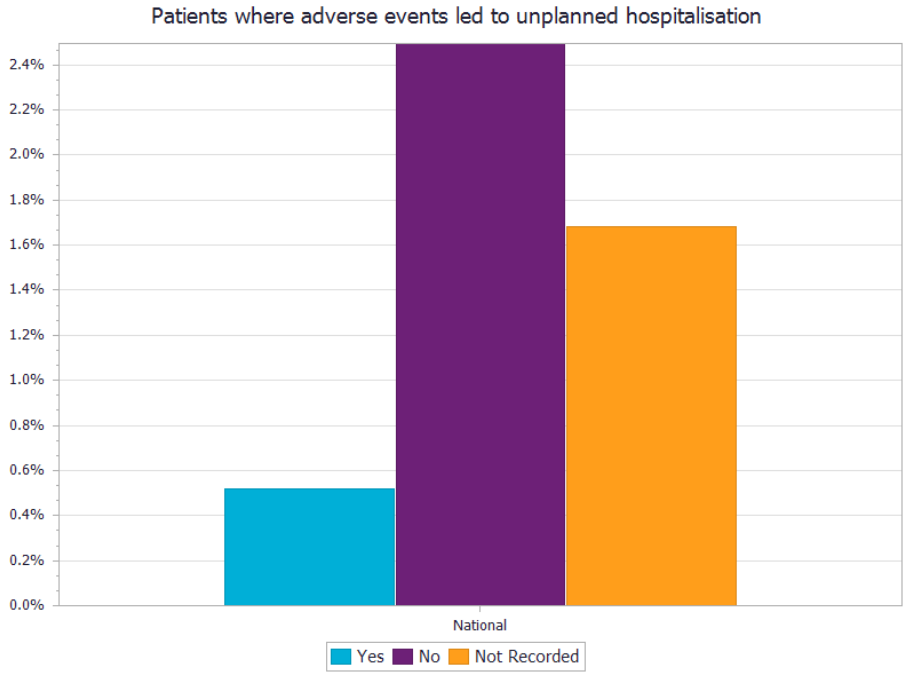
Q14 Did any of the following adverse events arise?



Sample: all patients

Departments should investigate adverse events categorised as 'other' to better understand lessons to be learned for safer sedation.

Q16 Did the adverse event lead to unplanned hospitalisation or escalation of care?

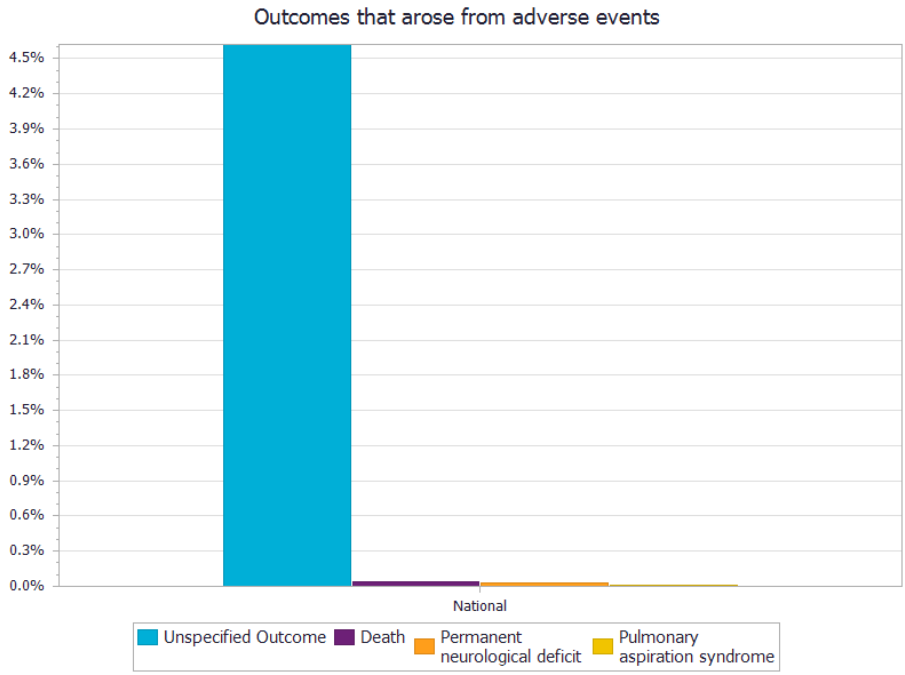


Sample: all patients

This shows that adverse events are rare and when they do occur they seldom cause unplanned hospital admissions or escalations of care.

There were a few instances where patients did have serious adverse events and we contacted the institutions to understand how these might have occurred and how we might prevent these.

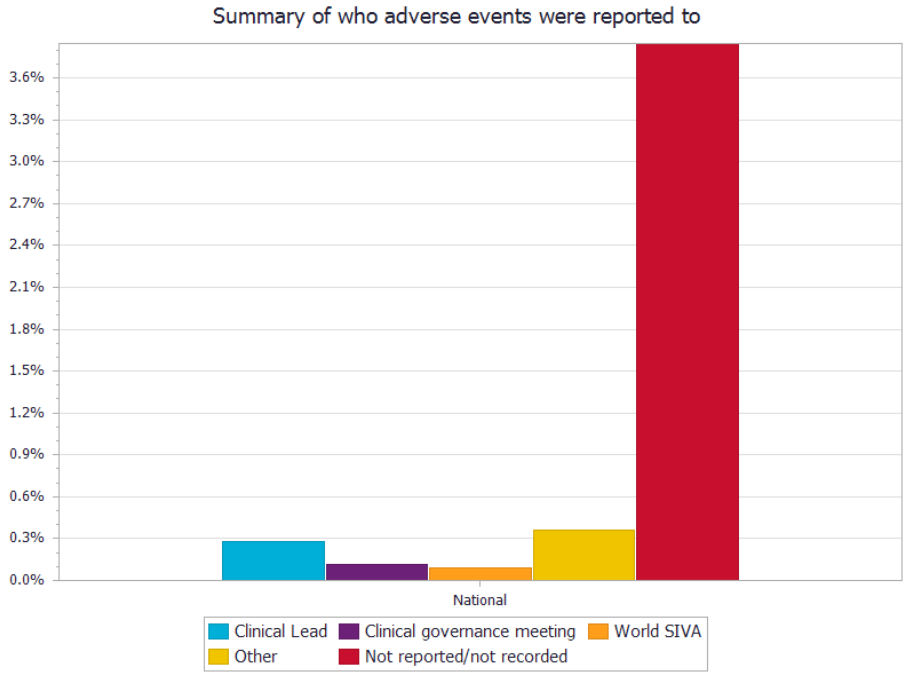
Q17 Did any of the following outcomes arise?



Sample: all patients

This shows that adverse events are uncommon and when they do occur they very rarely result in permanent neurological deficit, pulmonary aspiration syndrome or death.

Q18 If an adverse event occurred, was this reported as follows?



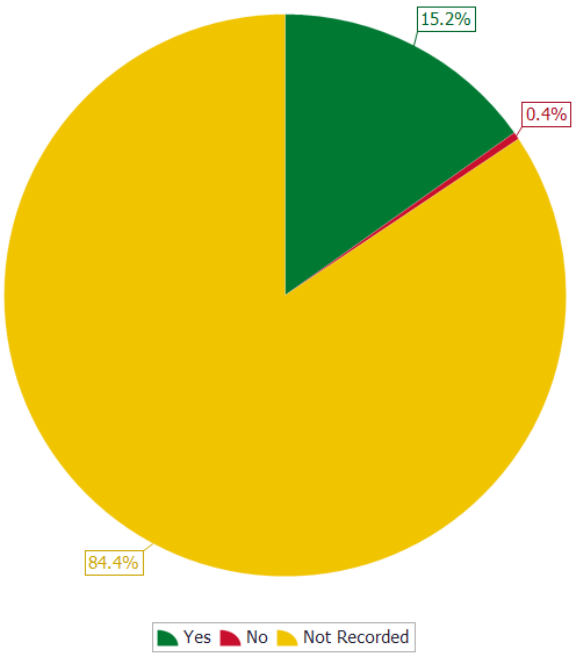
This shows that when adverse events occur they are often not formally reported.

In hospitals where this is occurring, it is important to ensure that a rigid framework exists that supports and encourages clinicians to report adverse events.

One of the lessons from aviation is that in considering adverse events it is important to ensure that the system and the reporting mechanism does not seek to punish but rather encourages reporting and the discussion of adverse events.

Patient satisfaction

Q15 Patient Satisfaction with procedure?



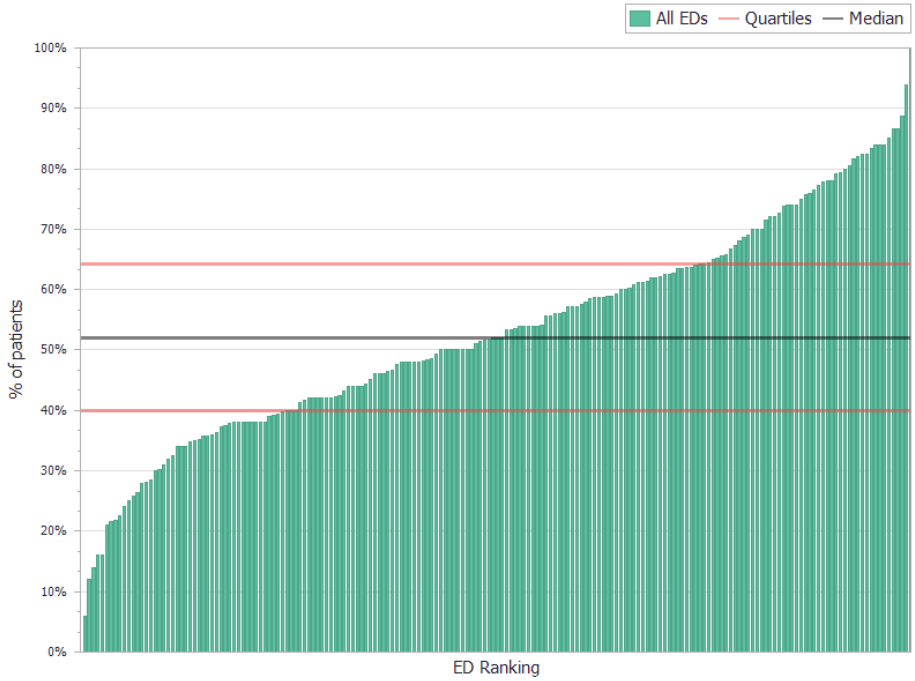
Sample: all patients

Patient dissatisfaction with procedure, when leaving the resus/procedure room, was rare. However, patient satisfaction level was not recorded in the majority of patient notes.

Patient discharge

This section tells you more about patient discharge and pre-discharge assessment.

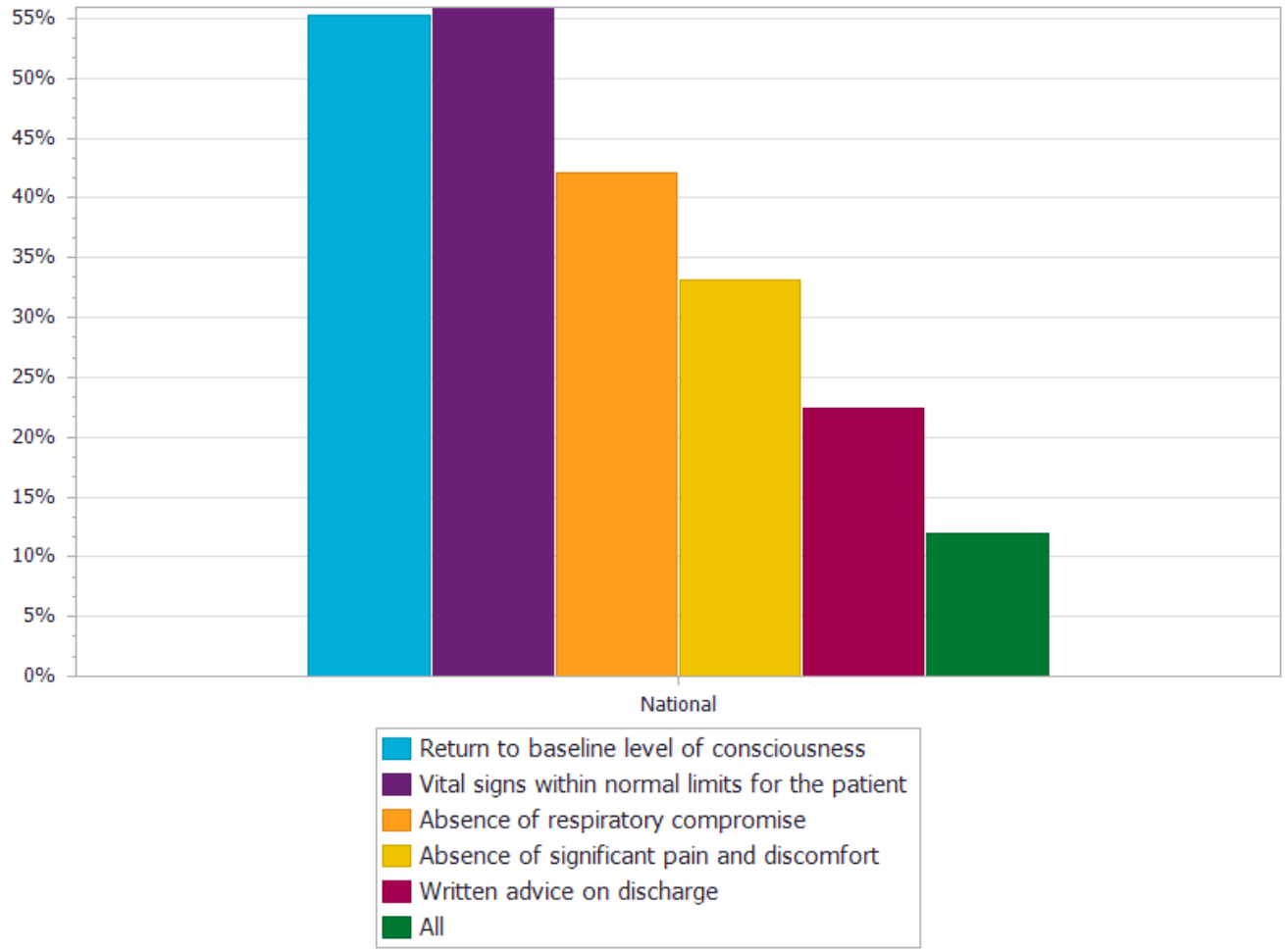
Q19 Was the patient discharged home?



Sample: all patients

Differences in discharge rates seen across departments may reflect local practice and population. Departments at either extreme of this graph may wish to consider review of admission and discharge criteria. Departments at the extreme left could consider potential for earlier discharge.

Q20 Were the following elements of formal assessment of discharge suitability documented?



STANDARD 7: Following procedural sedation, patients should only be discharged after documented formal assessment of suitability, including all of: a) Return to baseline level of consciousness; b) Vital signs within normal limits for the patient; c) Absence of respiratory compromise; d) Absence of significant pain and discomfort; e) Written advice on discharge for all patients.

Sample: Q19=yes (n=4616)

This shows that elements of formal assessment of discharge suitability were not recorded well.

At a minimum, discharging the patient with a leaflet that explains the treatment and any safety net (i.e. 'what to watch for') is good practice, as patients may not retain discharge advice, particularly post sedation.

Paediatric sedation

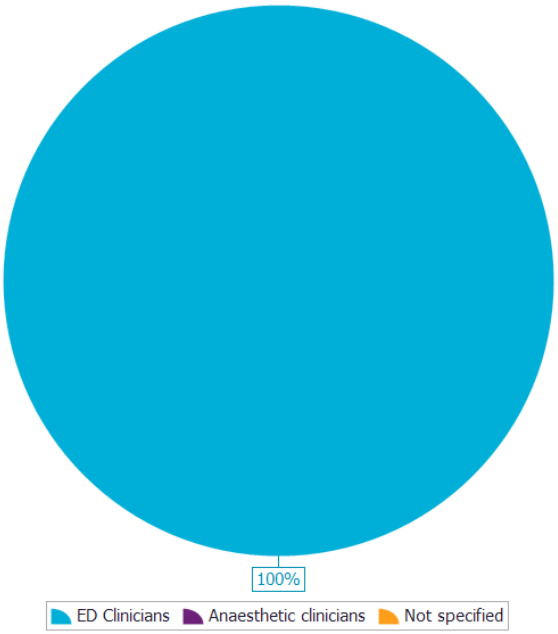
These questions were asked once per ED, and detail procedural sedation in children.

Q21 Is procedural sedation in children undertaken in your ED?

Although this audit was not about paediatric sedation, we were keen to understand the scope of this in the UK.

Paediatric sedation was surprisingly uncommon in this audit, being undertaken in 2 out of 190 EDs.

Q22 Please indicate by whom procedural sedation is undertaken in children.



Procedural sedation in children remains uncommon in the UK. Where this is undertaken, the sedating practitioners were recorded as ED clinicians.

Analysis

Casemix

A higher than expected number of younger patients in this audit may partially be explained by:

- younger adults suffering more injuries than older patients
- younger patients suffering more injuries that require sedation
- older patients are not being sedated, and that there may be unmet need in this group

Levels of sedation

The concept of multiple specific and non-overlapping levels of sedation may not be best-suited for ED usage. It may be that simpler classification levels of intended and achieved sedation, e.g. light or deep, may result in better data recording.

Use of sedating agent combinations

Sedating agents are often used as combinations, some of which were not explicitly considered in this report e.g. ketofol (ketamine and propofol). The safety of this practice is outside the scope of this report.

Limitations

This audit only describes current practice. It does not describe unmet sedation needs or the optimum number of patients who should receive sedation as part of their care.

By measuring performance, the performance itself is likely to be affected. This audit uses measurements to drive improvements in clinical care and organisational processes. In preparation for this audit, system changes had already been implemented by many EDs. e.g. some hospitals have altered/introduced a Procedural Sedation checklist that prompts the capture of key metrics. RCEM has developed an exemplar procedural sedation checklist that may be used or adapted by individual EDs.

Summary of recommendations

1. EDs must investigate and address the reasons for sedations performed outside of the resuscitation room or one with dedicated resuscitation facilities.

2. Checklist and guidance use:
    a. Hospitals must have protocols that ensure that staff using sedation are qualified to do so, and perform sedation only in safe situations with adequate staffing.
    b. A pro-forma should be used for procedural sedation and analgesia (PSA) as a checklist and as a record of the procedure. A safe sedation pro-forma has been developed by RCEM and departments must implement this (or a local version) prior to re-audit (see appendix 6 and 7).
    c. Ensure that the recommendations for ED sedation described in Safe Sedation of Adults in the Emergency Department (RCoA and RCEM, Nov 2012) are met (see appendix 5).
    d. Written discharge advice should be developed, if one does not already exist, and implemented. Examples of discharge advice are available here.

3. ED clinicians should ensure adequate documentation of pre-procedural assessment and of patient's informed consent (see appendix 7).

4. ED clinicians should ensure adequate documentation of monitoring during procedural sedation and that an accurate record of the event is completed.

5. ED clinicians should ensure adequate documentation of formal assessment of suitability of discharge.

6. Hospitals must support adverse event recording using the World SIVA reporting tool (see appendix 8).

Using the results of this audit to improve care in your hospital

The results of this audit should be shared with all ED staff, including doctors and nurses, who are involved in sedation, particularly sedationists, procedurists and nursing staff. Discussing the results of this audit with colleagues is a good way of demonstrating the ED's commitment to improve care. Engaging staff in the action planning process will lead to more effective implementation of the plan.

EDs may wish to consider using a rapid cycle audit methodology, which can be used to track performance against standards, as a tool to implement the action plan. For further resources, please see visit the RCEM Quality Improvement webpage.

The results of this audit mean that RCEM will be re-auditing procedural sedation again soon. The re-audit is planned for 2017/18, as this will be an opportunity to demonstrate improvements in sedation practice and documentation.

Further Information

Thank you for taking part in this audit. We hope that you find the results helpful.

If you have any queries about the report, please e-mail audit@rcem.ac.uk or phone 020 7400 6108.

Feedback is welcome at: www.surveymonkey.co.uk/r/RCEMaudit15

Details of the RCEM Clinical Audit Programme can be found under the Current Audits section of the RCEM website.

Useful Resources

- Site-specific report – available to download from the clinical audit website.
- Site-specific PowerPoint presentation – developed to help you disseminate your site-specific audit results easily and efficiently.
- Data file – a spreadsheet that allows you to conduct additional local analysis using your site-specific data for this audit. This year you can also access data from other EDs to customise your peer analysis.
- Safe Sedation of Adults in the Emergency Department (RCoA and RCEM, Nov 2012).
- RCEM Learning modules on sedation.
- RCEM Pharmacological Agents for Procedural Sedation and Analgesia in the Emergency Department (May 2016) – best practice guidance.
- World SIVA adverse sedation event reporting tool (you can register here).
- RCEM invasive procedure checklist (see appendix 6).
- Examples of discharge advice are available here.
- Procedural Sedation and Analgesia checklist and monitoring proforma (see all sheets) (see appendix 7).

Report authors and contributors

This report is produced by the Standards and Audit Subcommittee of the Quality in Emergency Care Committee for the Royal College of Emergency Medicine.

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Pilot sites

We are grateful to contacts from the following trusts for helping with the development of the audit:

Airedale General Hospital
Forth Valley Royal Hospital
Musgrove Park Hospital
Northampton General Hospital
Queen Elizabeth Hospital (The), King's Lynn
Royal Berkshire Hospital
Royal Blackburn Hospital
Royal Devon and Exeter Hospital (Wonford)
Royal Gwent Hospital
Royal United Hospital, Bath
Royal Victoria Hospital
Stoke Mandeville Hospital
Wythenshawe Hospital

References

[1] NCEPOD: Scoping our practice (2004)

[2] NPSA Rapid Response Report: Reducing risk of overdose with midazolam injection in adults (December 2008)

[3] NICE Clinical Guidelines (CG112): Sedation in under 19s: using sedation for diagnostic and therapeutic procedures (2010)

[4] AoMRC Safe Sedation Practice for Healthcare Procedures – Standards and Guidance (2013)

[5] RCoA and RCEM Safe Sedation of Adults in the Emergency Department (2012)

[6] ASA Physical Status Classification System (2014)

Appendix 1: Audit questions

The Royal College of Emergency Medicine

Clinical Audits

EXCELLENCE IN EMERGENCY MEDICINE

Procedural Sedation in Adults 2015/2016

Casemix

Q1	Date of arrival *(dd/mm/yyyy)*	dd/mm/yyyy	
Q2	Time of arrival *(use 24 hour clock e.g. 11.23pm = 23:23)*	HH:MM	
Q3	Age of patient on attendance	16-40	
		41-64	
		65 and above	
Q4	Level of sedation intended	Minimal	
		Conscious – Moderate	
		Deep	
		Dissociative	
		Not recorded	
Q5	Deepest level of sedation achieved	Minimal	
		Conscious – Moderate	
		Deep	
		Dissociative	
		Not recorded	

Pre-procedure

Q6	Were the following elements of pre-procedural assessment recorded in the ED notes? *(tick all that apply)*		
a	ASA grade		
b	Prediction of difficulty in airway management		
c	Pre-procedural fasting status		
Q7	Was there documented evidence of the patient's informed consent for the sedation?	Yes - consent given	
		No - lack of mental capacity noted	
		No - unable to assess mental capacity	
		No information	

Procedure

Q8	Was the sedation carried out in a resuscitation room or one with dedicated resuscitation facilities?	Yes	
		No	
		Not recorded	
Q9	Which of the following staff were present during the procedure? (tick all that apply)	Doctor	
		Second doctor, ENP or ANP procedurist	
		Nurse	
		Other	
Q10	What was the speciality of the sedating practitioner?	EM practitioner	
		Anaesthetist	
		Other	
		Not recorded	
Q11	Which agents were used for sedation? (tick all that apply)	Opioid	
		Benzodiazepine	
		Ketamine	
		Propofol	
		Other agent	
		Not recorded	

Monitoring

Q12	Was there evidence of monitoring of the following during the procedure? *(tick all that apply)*	Non-invasive blood pressure (NIBP)	
		Pulse oximetry	
		Capnography	
		ECG	
Q13 a	Did the patient receive oxygen during the sedation?	Yes	
		No → *(go to Q14)*	
		Not recorded → *(go to Q14)*	
b	(Only answer if YES to Q13a) please state when oxygen was given	From the start of sedative administration	
		After complication	
		From other point	
		Not specified	

Adverse events

Q14	Did any of the following adverse events arise?		
a	Oxygen desaturation, severe (<75% at any time) or prolonged (<90% for >60 s)	Yes	
		No	
		Not recorded	
b	Apnoea, prolonged (>60s)	Yes	
		No	
		Not recorded	
c	Cardiovascular collapse/shock	Yes	
		No	
		Not recorded	
d	Cardiac arrest/absent pulse	Yes	
		No	
		Not recorded	
e	Other	Yes	
		No	

Q15	Patient dissatisfaction with procedure (score of 5/10 or less) when assessed on leaving the resus/ procedure room	Yes	
		No	
		Not recorded	

Adverse events – further information

→ If answered yes to any on Q14 or Q15 please answer this section, if not → go to Q19

Q16	Did the adverse event lead to unplanned hospitalisation or escalation of care?	Yes	
		No	
		Not recorded	
Q17	Did any of the following outcomes arise? *(tick all that apply)*	Death	
		Permanent neurological deficit	
		Pulmonary aspiration syndrome	
Q18	If an adverse event occurred, was this reported as follows? *(tick all that apply)*	Reported to the department clinical lead	
		Discussed at the departmental clinical governance meeting	
		Via completion of World SIVA Adverse Sedation Event Reporting Tool	
		Other method	
		Not reported/Not recorded	

Patient discharge

Q19	Was the patient discharged home from the ED?	Yes	
		No	
		Not recorded	
Q20	(Only answer if YES to Q19) Were the following elements of formal assessment of discharge suitability documented? (tick all that apply)	Return to baseline level of consciousness	
		Vital signs within normal limits for the patient	
		Absence of respiratory compromise	
		Absence of significant pain and discomfort	
		Written advice on discharge	

PLEASE ANSWER THE FOLLOWING QUESTIONS ONCE PER EMERGENCY DEPARTMENT ONLY

Q21	Is procedural sedation in children undertaken in your ED?	Yes	
		No → *END*	
Q22	(Only answer if YES to Q21) Please indicate by whom	ED clinicians	
		Anaesthetic clinicians	
		Not specified	

Notes

Question and answer definitions

Q6a answer definitions

ASA - American Society of Anaesthesiologists Physical Status Classification[6]

ASA PS Classification	*Definition*
ASA I	A normal healthy patient
ASA II	A patient with mild systemic disease
ASA III	A patient with severe systemic disease
ASA IV	A patient with severe systemic disease that is a constant threat to life
ASA V	A moribund patient who is not expected to survive without the operation
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes

Q14c answer definitions

Cardiovascular collapse/shock: clinical evidence of inadequate perfusion, cardiovascular compromise raising clinical concern, need for resus, fluid, or positioning of the patient.

Q17c answer definitions

Pulmonary Aspiration Syndrome – known or suspected inhalation of foreign material such as gastric contents into the respiratory tract associated with new or worsening respiratory symptom

Q19 answer definition

Patients discharged from the ED clinical decision unit (CDU) or observation ward should be treated as a discharge from the ED.

Appendix 2: Participating Emergency Departments

Aberdeen Royal Infirmary
Addenbrooke's Hospital
Aintree University Hospital
Airedale General Hospital
Alexandra Hospital
Antrim Area Hospital
Arrowe Park Hospital
Barnet Hospital
Barnsley Hospital
Basildon University Hospital
Basingstoke North Hampshire Hospital
Bedford Hospital
Blackpool Victoria Hospital
Bradford Royal Infirmary
Bristol Royal Infirmary
Bronglais General Hospital
Broomfield Hospital
Calderdale Royal Hospital
Causeway Hospital
Charing Cross Hospital
Chelsea and Westminster Hospital
Cheltenham General Hospital
Chesterfield Royal Hospital
Chorley and South Ribble Hospital
City Hospital
Colchester General Hospital
Conquest Hospital
Countess of Chester Hospital
County Hospital
Croydon University Hospital
Cumberland Infirmary (The)
Darent Valley Hospital
Darlington Memorial Hospital
Derriford Hospital
Diana, Princess of Wales Hospital
Dorset County Hospital
Dr Gray's Hospital
Ealing Hospital
East Surrey Hospital
Eastbourne District General Hospital
Epsom General Hospital
Fairfield General Hospital
Forth Valley Royal Hospital
Friarage Hospital
Frimley Park Hospital
Furness General Hospital
Glan Clwyd Hospital
Glangwili General Hospital
Glasgow Royal Infirmary
Gloucestershire Royal Hospital
Good Hope Hospital
Grantham and District Hospital
Great Western Hospital (The)
Hairmyres Hospital
Harrogate District Hospital
Heartlands Hospital
Hereford County Hospital
Hillingdon Hospital
Hinchingbrooke Hospital
Homerton University Hospital
Horton Hospital
Huddersfield Royal Infirmary
Hull Royal Infirmary
Ipswich Hospital
James Cook University Hospital (The)
James Paget Hospital
John Radcliffe Hospital
Kettering General Hospital
King's College Hospital
Kings Mill Hospital
Kingston Hospital
Leeds General Infirmary
Leicester Royal Infirmary
Leighton Hospital
Lincoln County Hospital
Lister Hospital
Luton & Dunstable University Hospital
Maidstone District General Hospital
Manchester Royal Infirmary
Medway Maritime Hospital
Milton Keynes Hospital
Monklands Hospital
Morriston Hospital
Musgrove Park Hospital
New Cross Hospital
Newham General Hospital
Noble's Hospital
Norfolk and Norwich University Hospital
North Devon District Hospital
North Manchester General Hospital
North Middlesex Hospital
Northampton General Hospital
Northern General Hospital
Northumbria Specialist Emergency Care Hospital
Northwick Park Hospital
Peterborough City Hospital
Pilgrim Hospital
Pinderfields Hospital

Poole General Hospital
Princess Alexandra Hospital
Princess Royal Hospital
Princess Royal University Hospital
Queen Alexandra Hospital
Queen Elizabeth Hospital (The), King's Lynn
Queen Elizabeth Hospital, Birmingham
Queen Elizabeth Hospital, Gateshead
Queen Elizabeth Hospital, Woolwich
Queen Elizabeth The Queen Mother Hospital
Queen Elizabeth University Hospital (The)
Queen's Hospital, Burton-on-Trent
Queen's Hospital, Romford
Queen's Medical Centre
Rotherham District General Hospital
Royal Albert Edward Infirmary
Royal Berkshire Hospital
Royal Blackburn Hospital
Royal Bolton Hospital
Royal Bournemouth Hospital
Royal Cornwall Hospital
Royal Derby Hospital
Royal Devon and Exeter Hospital (Wonford)
Royal Free Hospital
Royal Gwent Hospital
Royal Lancaster Infirmary
Royal Liverpool University Hospital (The)
Royal London Hospital (The)
Royal Oldham Hospital
Royal Preston Hospital
Royal Shrewsbury Hospital
Royal Stoke University Hospital
Royal Surrey County Hospital
Royal Sussex County Hospital
Royal United Hospital
Royal Victoria Hospital
Royal Victoria Infirmary
Russells Hall Hospital
Salford Royal Hospital
Salisbury District Hospital
Sandwell General Hospital
Scarborough General Hospital
Scunthorpe General Hospital
South Tyneside District General Hospital
Southampton General Hospital
Southend Hospital
Southmead Hospital
Southport and Formby District General Hospital
St George's Hospital
St Helier Hospital
St James's University Hospital
St John's Hospital at Howden
St Mary's Hospital, Newport
St Mary's Hospital, Paddington
St Peter's Hospital
St Richard's Hospital
St Thomas' Hospital
Stepping Hill Hospital
Stoke Mandeville Hospital
Sunderland Royal Hospital
Tameside General Hospital
Torbay District General Hospital
Tunbridge Wells Hospital
Ulster Hospital
University College Hospital
University Hospital (Coventry)
University Hospital Lewisham
University Hospital of North Durham
University Hospital of North Tees
University Hospital of Wales
Victoria Hospital
Warrington Hospital
Warwick Hospital
Watford General Hospital
West Cumberland Hospital
West Middlesex University Hospital
West Suffolk Hospital
Weston General Hospital
Wexham Park Hospital
Whipps Cross University Hospital
Whiston Hospital
Whittington Hospital (The)
William Harvey Hospital
Wishaw General Hospital
Withybush Hospital
Worcestershire Royal Hospital
Worthing Hospital
Wrexham Maelor Hospital
Wythenshawe Hospital
Yeovil District Hospital
York Hospital
Ysbyty Gwynedd

Appendix 3: Standards definitions

The standards can be found under standards on page 8.

Standard 1
ASA - American Society of Anaesthesiologists Physical Status Classification[6]. See Q6 answer definition for further detail.

Standard 2
Evidence of consent - a form with a ticked box for verbal consent is adequate, or documentation of verbal consent in the ED record. Written consent by the patient is not obligatory.

Standard 4
ENP – Emergency Nurse Practitioner
ANP – Advanced Nurse Practitioner

Standard 5
ECG - Electrocardiogram

Capnography - Sedation is a continuum. It is not always possible to predict the level of sedation in advance, therefore in this audit capnography is a standard for all sedation levels.

Appendix 4: Calculations

This section is intended to explain how each standard is calculated, allowing you to repeat the audit locally.

Standard	Patient sample	Calculations
1	All patients	Q6 = yes to all options
2	All patients excluding Q7=no, lack of mental capacity noted	Q7 = yes
3	All patients	Q8 = yes
4	All patients	Q9 = yes to doctor, second doctor/ENP/ANP *and* nurse
5	All patients	Q12 = yes to all options
6	All patients	Q13a = yes *and* Q13b = From the start of sedative administration
7	Q19= yes	Q20 = yes to all options

Appendix 5: Recommendations for safe sedation in the Emergency Department

The full document can be downloaded from:
www.rcem.ac.uk/code/document.asp?ID=6691

Table 1 Requirements for Emergency Department Sedation (see also notes below)

Depth of sedation	Minimum staffing levels	Competencies of sedating practitioner	Location and Facilities	Monitoring
Minimal sedation with Entonox	One Physician *or* Emergency Nurse Practitioner (ENP)	Current Immediate Life Support (ILS) or Advanced Life Support (ALS) certification or equivalent agreed locally	Anywhere within the Emergency Department (ED)	Pulse oximetry
Moderate sedation/ analgesia ('conscious' sedation) using intravenous agents, typically benzodiazepines	One physician as sedationist *and* one Physician or ENP as operator *and* one Nurse	Current ILS or ALS certification Local sign off for Level 1 sedation training*	Resuscitation room facilities****	ECG, NIBP, pulse oximetry The use of capnography is recommended
Deep sedation/ analgesia	As above	Royal College of Anaesthetists initial assessment of competence Local sign off for Level 2 sedation training**	Resuscitation room facilities****	Standards conforming to AABGI guidelines for general anaesthesia[3] The use of capnography is mandatory
Dissociative sedation using ketamine	As above	As above	As above	As above
Rapid sequence induction of anaesthesia (RSI) and tracheal intubation	As above	As above, plus additional supervised practice and local sign off for ED RSI training including: ■ experience in failed intubation drills/ rescue oxygenation techniques ■ the use of cricoid pressure ■ the adjustment of anaesthetic dosage in critical illness and circulatory support***	As above	As above

Part 2 Recommendations for safe sedation in the Emergency Department

* Level 1 sedation training ('conscious' sedation)
- ASA grading
- Pre-procedural assessment including prediction of difficulty in airway management
- Pre-procedural fasting and risk benefit assessment
- Consent and documentation
- Drug selection and preparation: benzodiazepine/opioid combinations, intervals between increments and reversal drugs
- Monitoring, complications (e.g. hypoxia and hypotension) and rescue strategies
- Governance and audit

** Level 2 sedation training (deep sedation/general anaesthesia)
- As per level 1
- Drug selection with emphasis on potential alternative strategies and/or lighter sedation
- Safe use of propofol
- Safe use of ketamine
- Monitoring, complications (e.g. hypoxia and hypotension) and rescue strategies
- Governance and audit

*** Additional training for ED RSI
- As per level 2
- Additional supervised practice and assessment in the operating theatre, intensive care unit and ED. Independent RSI is not included within the current emergency medicine core curriculum, and the additional competencies required to undertake this procedure, and maintain skills over time, have not yet been defined. Further work in this area would be welcomed

**** Resuscitation room facilities
- Full resuscitation equipment for the administration of basic and advanced life support. Equipment and drugs should be checked daily, and after each use. That such checks have occurred should be routinely recorded
- Difficult airway equipment
- Continuous high flow oxygen with appropriate devices for administration
- High pressure suction with appropriate suction catheters
- A trolley capable of being tipped head down
- Monitoring: Pulse oximeter, ECG, NIBP and continuous quantitative capnography
- Appropriate range of intravenous cannulae
- An appropriate range of intravenous fluids and infusion devices
- Manual handling devices

Part 2 Recommendations for safe sedation in the Emergency Department

Immediate Life Support comprises the essential knowledge and skills to enable recognition of the acutely ill patient and treatment of a patient in cardiac arrest while awaiting the arrival of a resuscitation team. Competencies within the domain of ILS include: delivery of high-quality chest compressions, basic airway management, safe defibrillation using either manual or automated external defibrillators (AEDs), and being a cardiac arrest team member.

Oxygen

Oxygen should be given to sedated patients, who may experience a fall in oxygen saturation from the baseline level measured on room air. Oxygen should be given from the start of sedative administration until the patient is ready for discharge from the recovery area.

Capnography

The use of continuous capnography is mandatory wherever deep sedation, dissociative sedation, general anaesthesia or RSI occurs (i.e. whenever it is anticipated that verbal contact with the patient will be lost), except in rare cases where it would substantially interfere with surgical access. Capnography is also recommended at lighter levels of sedation; this is an emerging area of practice, and the use of capnography is expected to become routine.[3]

Documentation

Standard forms should be routinely used for patient pre-assessment, patient information, consent, monitoring, discharge information and clinical audit. Past medical history, medications, allergies and physical examination of vital signs, airway and cardiopulmonary status should all be recorded prior to the procedure. Good practice guidelines, issued by the Department of Health, include standard consent forms for patients undergoing procedures including sedation and general anaesthesia,[4] but national agreement has not been established in the other documentation areas, and the development of appropriate forms would be welcomed. Whilst the urgency of the clinical situation or patient status may sometimes necessitate treatment in the absence of consent, and in the patient's best interests, every effort should be made to obtain prior written consent for both the proposed procedure and sedation technique.

Post-procedure monitoring

All patients who have received sedation should continue to be managed in a clinical area that provides the same level of facilities and monitoring as those required during the procedure, until the level of consciousness and other vital signs have returned to pre-procedure baseline levels. This includes the presence of a clinician who has been trained in the core skills required of recovery nurses, as described in guidelines issued by the Association of Anaesthetists of Great Britain and Ireland.[5] These skills include the monitoring and measurement of vital signs and overall patient status, including respiratory rate, blood pressure, heart rate, Glasgow Coma Score and basic life support training.

Part 2 Recommendations for safe sedation in the Emergency Department

Discharge status

Patients should be formally assessed for discharge suitability from the clinical area where sedation has taken place. Discharge criteria are as follows:

- The patient has returned to their baseline level of consciousness.
- Vital signs are within normal limits for that patient.
- Respiratory status is not compromised.
- Pain and discomfort have been addressed.

If there is a requirement to discharge the patient prior to meeting these criteria they should be transferred to an appropriate clinical environment, usually level 2 care with continuation of peri-procedure monitoring standards.

Patients meeting discharge criteria following sedation who go on to be discharged home from the Emergency Department should be discharged into the care of a responsible third party. Verbal and written instructions should be given.

The role of the skilled assistant

The RCoA recommends that anaesthesia should not proceed without a skilled, dedicated assistant.[6]

The role of the skilled assistant can be undertaken by a number of professionals in the emergency care setting such as an emergency nurse, other emergency practitioner or an operating department practitioner. They must be formally trained in the role that they will be required to undertake, be that assistance with sedation or assistance with RSI. NHS Education Scotland has devised a portfolio of core competencies for anaesthetic assistants.[7] It would be expected that those assisting with sedation and RSI would have achieved competencies equivalent to those listed in sections 3.5 and 3.6 and sections 4.1 to 4.12 of this document. If the patient is thought to have a potential neck injury a second competent assistant is needed to perform manual in-line cervical stabilisation (MILS).

The RSI assistant may also be involved in post intubation care, and should be familiar and practised in post intubation procedures. Local protocols, training packages and competency assessments should be developed to ensure that staff are able to perform the role of skilled assistant and regularly practise these skills (either through actual experience or high fidelity simulation).

Part 2 Recommendations for safe sedation in the Emergency Department

Fasting prior to Emergency Department sedation

Fasting is not needed for minimal sedation, sedation with nitrous oxide (in oxygen) alone, or moderate sedation where verbal contact is maintained.

For elective procedures using all other sedation techniques (deep sedation, dissociative sedation and moderate sedation where the patient might not maintain verbal contact with the healthcare professional), apply the fasting rule used for general anaesthesia: two hours for clear fluids and six hours for solids.[8]

For an emergency procedure in someone who is not fasted, base the decision to proceed with sedation on the urgency of the procedure and the target depth of sedation.

Careful judgement is required when assessing the risk of aspiration in relation to the urgency of a proposed procedure. The key factors to consider are:

1 The urgency of the proposed procedure. In many life or limb threatening situations (e.g. cardioversion of a cardiac arrhythmia causing significant cardiovascular compromise, or an orthopaedic procedure to correct distal limb ischaemia) the patient is unable to wait and the main question becomes the choice of sedation/ anaesthetic technique rather than the possibility of deferment.

2 The proposed depth and duration of sedation. Longer periods of sedation, greater sedation depth and airway interventions may stimulate airway reflexes (coughing, hiccoughs or laryngospasm) and gastro-intestinal motor responses (gagging or recurrent swallowing) leading to gastric distension, regurgitation or vomiting.

3 Patient factors. Conditions such as raised intracranial pressure, hiatus hernia and gastrointestinal obstruction are known to delay gastric emptying, and these patients may be at greater risk. Gastric emptying may also be delayed in patients who have previously undergone upper gastrointestinal surgery, in those recently injured or receiving opioids, and in pregnancy. Morbidly obese patients may be at risk, because the intra-abdominal pressure is higher and the incidence of hiatus hernia is greater than in non-obese patients. The timing of food intake in relation to the injury is also important.

Part 2 Recommendations for safe sedation in the Emergency Department

Therefore, each patient requires a thoughtful assessment of the urgency and benefit of the procedure compared to the risks of sedation. This assessment and the resulting decision should be recorded in the clinical notes, and discussed with the patient whenever possible. To assist with the decision-making process a North American committee of emergency physician sedation researchers have developed a 'tool to permit emergency physicians to identify prudent limits of sedation depth and timing in light of fasting status and individual patient risk factors', but goes on to state that 'the advisory is not intended to assert a legal standard of practice or absolute requirement'.[9] Overall, this clinical practice advisory is an attempt to more clearly articulate the required risk-benefit calculation, but includes an explicit expectation that further judgement will be required on a case-by-case basis.

Acting on increased aspiration risk

Where the risk of aspiration is significantly increased steps should be taken to mitigate this risk. Suggested approaches include:

- Delaying the procedure, if clinically appropriate.
- Adopting an alternative technique. Rapid sequence induction of anaesthesia and tracheal intubation is considered the 'gold standard' where there is an increased aspiration risk, but pulmonary aspiration may still occur.[10] In addition, RSI introduces other risks, such as inability to intubate or ventilate the patient and the risk of adverse reaction to induction and neuromuscular blocking drugs.
- Regional anaesthetic techniques may allow the required procedure to be performed with no or minimal sedation.
- Reducing the depth and duration of sedation. This increases the risk of procedural failure, but may be appropriate in some instances.
- Consider whether the administration of ranitidine or proton pump inhibitors, metoclopramide and sodium citrate is appropriate to neutralise gastric acid and promote gastric emptying.

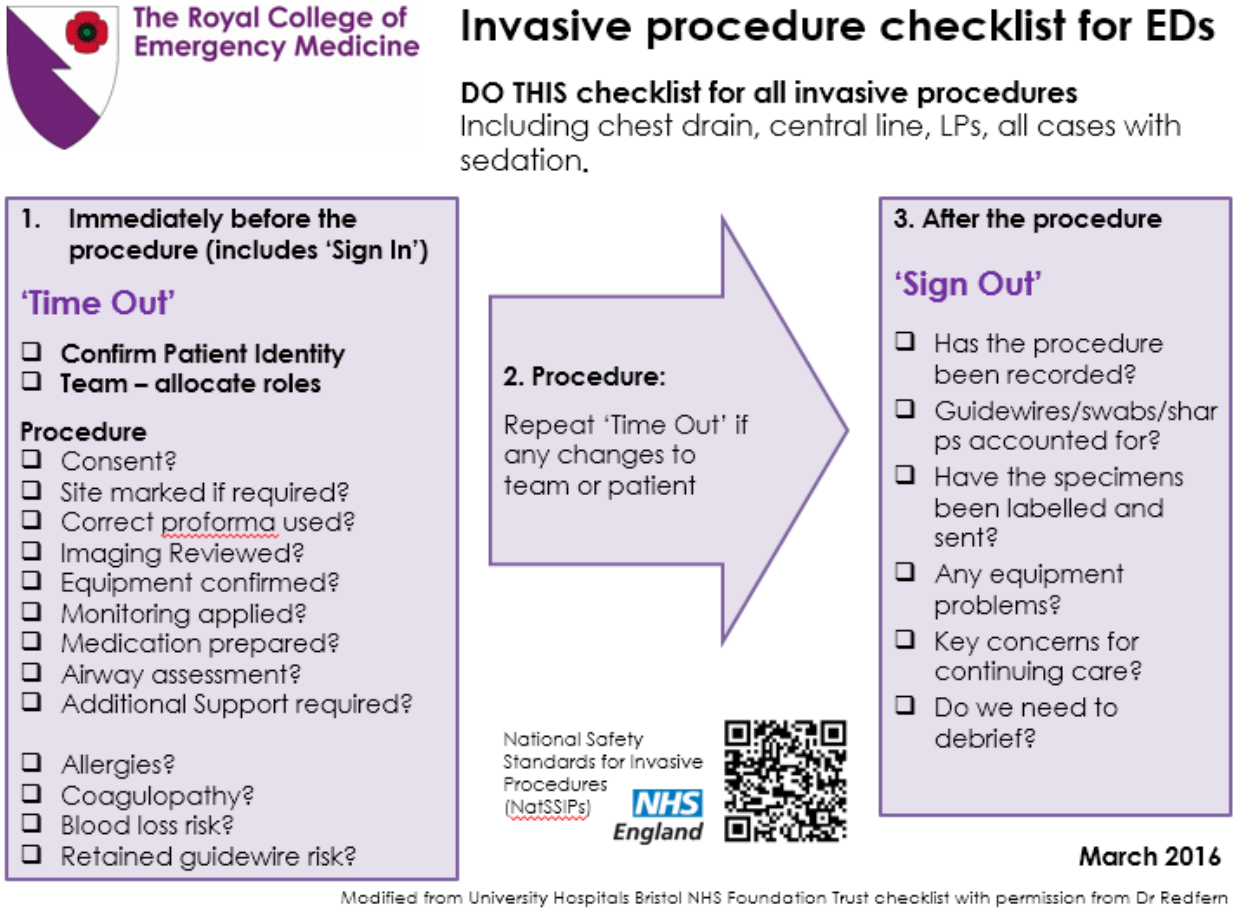
In all cases of increased aspiration risk the advice of an expert sedationist should be sought. However there is no consensus on this subject, even among experts.[11]

Audit

All sedation practice should be audited; individual Emergency Departments should develop audit standards and markers.

Appendix 6: Invasive procedure checklist for EDs

This checklist can be downloaded from
http://www.rcem.ac.uk/CEM/document?id=10069



The Royal College of Emergency Medicine

Invasive procedure checklist for EDs

DO THIS checklist for all invasive procedures
Including chest drain, central line, LPs, all cases with sedation.

1. Immediately before the procedure (includes 'Sign In')

'Time Out'

- ❑ **Confirm Patient Identity**
- ❑ **Team – allocate roles**

Procedure

- ❑ Consent?
- ❑ Site marked if required?
- ❑ Correct proforma used?
- ❑ Imaging Reviewed?
- ❑ Equipment confirmed?
- ❑ Monitoring applied?
- ❑ Medication prepared?
- ❑ Airway assessment?
- ❑ Additional Support required?

- ❑ Allergies?
- ❑ Coagulopathy?
- ❑ Blood loss risk?
- ❑ Retained guidewire risk?

2. Procedure:

Repeat 'Time Out' if any changes to team or patient

3. After the procedure

'Sign Out'

- ❑ Has the procedure been recorded?
- ❑ Guidewires/swabs/sharps accounted for?
- ❑ Have the specimens been labelled and sent?
- ❑ Any equipment problems?
- ❑ Key concerns for continuing care?
- ❑ Do we need to debrief?

National Safety Standards for Invasive Procedures (NatSSIPs) NHS England

March 2016

Modified from University Hospitals Bristol NHS Foundation Trust checklist with permission from Dr Redfern

Appendix 7: Safe sedation proforma for EDs

[Download in excel](#) (see all sheets)

Date				Patient name					
Time				Date of birth	affix label				
				Hospital number					
Planned procedure:									
Planned sedation level:			minimal						
			moderate sedation						
			deep sedation						
			dissociative sedation						
Patient factors:									
Age:				yrs		Weight		Kg	
Pregnant:		Yes		No					
Relevant co-morbidities			IHD	COPD/asthma		Obese			
			Schizophrenia	other:					
Allergies									
Normal Medications									
Acute Medications									
Recreational drugs or alcohol									
Previous anaesthetic			Yes		No				
Anaesthetic complications									
Date and time of last food									
Date and time of last oral fluid intake									

ASA grade (please circle)	**ASA I**	A normal healthy patient
	ASA II	A patient with mild systemic disease
	ASA III	A patient with severe systemic disease
	ASA IV	A patient with severe systemic disease that is a constant threat to life
	ASA V	A moribund patient who is not expected to survive without the operation

Difficult Airway? **no concern/ mild concern/significant concern**

Features to consider:

BMV ventilation: beard, no teeth, obesity, trauma, cachexia

LMA: Look for characteristics of difficult intubation, Evaluate mouth opening and

Laryngoscopy: thyromental distance, assess Mallampati score, look for Obstruction, assess Neck

Crithyroidotomy: mobility. (LEMON) Check front of neck.

Consent:	sedation		verbal		written		lacks capacity	
	procedure		verbal		written		lacks capacity	
Preprocedural ECG:			Y		N			
Pain before procedure			mild (0-3)		moderate (4-6)		severe (7-10)	
Pain post-procedure			mild (0-3)		moderate (4-6)		severe (7-10)	

Procedural Sedation Clinical Audit 2015-16

	Name	Grade	Speciality
Sedating Practitioner			
Procedural Assistant			
Nursing staff			

Patient Information
Name:
Hosp No: Affix patient label:

Location for procedure: Resus Y ☐ N ☐ Other (details)

Date:																
Time:																
Respiratory rate (bpm)																
SpO2 %																
Oxygen delivered (l/min or %)																
Et CO2																
Blood pressure: Systolic/ Diastolic (mmHg)	240															
	230															
	220															
	210															
	200															
	190															
	180															
	170															
	160															
	150															
	140															
	130															
Heart Rate (bpm)	120															
	110															
	100															
	90															
	80															
	70															
	60															
	50															
	40															
	30															
Drugs	Units															
GCS/ Sedation level																

Level of sedation achieved:
- minimal sedation ☐
- moderate sedation ☐
- deep sedation ☐
- dissociative sedation ☐
- anaesthesia ☐

Interventions needed:
- none ☐
- hypotension rx ☐
- BMV ☐
- LMA ☐
- ETT ☐
- reversal agent ☐
- other ☐

Adverse events:
- none ☐
- hypoxia ☐
- hypotension ☐
- adverse reaction ☐
- vomiting ☐
- cardiac arrest ☐
- aspiration ☐
- death ☐

Return to baseline: yes ☐ no ☐
Eating/ drinki yes ☐ no ☐
Ambulant: yes ☐ no ☐
Procedure Successful: yes ☐ no ☐
Discharge Advice given: verbal ☐ written ☐
Sedating Practitioner signature:
Patient satisfaction with procedure: ☐ /10

Appendix 8: World SIVA adverse sedation event-reporting tool

World SIVA adverse sedation event reporting tool

World SIVA adverse sedation event recording tool configured for a web page or paper form. Completion of this tool requires execution of all five steps. Responses to each step will often occupy different columns.

Step 1: Was there one or more adverse events associated with this sedation encounter?

- o No, this form is now complete.
- o Yes, fill out remainder of form below.

Step 2: Please DESCRIBE the adverse events(s). Check all that apply.

Minimal risk descriptors
- o Vomiting / Retching
- o Subclinical respriatory depression[a]
- o Muscle rigidity, myoclonus
- o Hypersalivation
- o Paradoxical response[b]
- o Recovery agitation[c]
- o Prolonged recovery[d]

Minor risk descriptors
- o Oxygen desaturation (75–90%) for <60 s
- o Apnoea, not prolonged
- o Airway obstruction
- o Failed sedation[e]
- o All ergic reaction without anaphylaxis
- o Bradycardia[f]
- o Tachycardia[f]
- o Hypotension[f]
- o Hypertension[f]
- o Seizure

Sentinel risk descriptors
- o Oxygren desaturation, severe (<75% at any time) or prolonged (<90% for >60 s)
- o Apnoea, prolonged (>60 s)
- o Cardiovascular collapse/ shock[g]
- o Cardiac arrest/absent pulse

- o Other, specify below

Step 3: Please note the INTERVENTIONS performed to treat the adverse events(s). Check all that apply.

Minimal risk
- o No intervention performed

Administration of:
- o Additional sedative(s)
- o Antiemetic
- o Antihistamine

Minor risk
- o Airway repositioning
- o Tactile stimulation

or the administration of:
- o Supplemental oxygen, new or increased
- o Antisialogogue

Moderate risk
- o Bag valve mask-assisted ventilation
- o Laryngeal mask airway
- o Oral/nasal airway
- o CPAP

or the administration of:
- o Reversal agents
- o Rapid i.v. fluids
- o Anticonvulsant i.v.

Sentinel intervention
- o Chest compressions
- o Tracheal intubation

or the administration of:
- o Neuromuscular block
- o Pressor / epinephrine
- o Atropine to treat bradycardia

- o Other, specify below

Step 4: Please note the OUTCOME of the adverse events(s). Check all that apply.

Minimal risk outcome
- o No adverse outcome

Moderate risk outcome
- o Unplanned hospitalisation or escalation of care[h]

Sentinel outcome
- o Death
- o Permanent neurological deficit
- o Pulmonary aspiration syndrome[i]

- o Other, specify below

Step 5: Assign a SEVERITY rating to the adverse event(s) associated with this sedation encounter.

- o If there are any options checked in the Sentinel columns above, then this is a Sentinel[j] adverse event.
- o If the most serious option(s) checked above are Moderate risk, then this is a Moderate[k] risk adverse event.
- o If the most serious option(s) checked above are Minor risk, then this is a Minor[l] risk adverse event.
- o If the most serious option(s) checked above are Minimal risk, then this is a Minimal[m] risk adverse event.

Additional details (including 'other' enteries):

Footnotes:

a. "Subclinical respiratory depression" is defined as capnographic abnormalities suggesting respiratory depression that do not manifest clinically.

b. "Paradoxical response" is defined as unanticipated restlessness or agitation in response to sedatives.

c. "Recovery agitation" is defined as abnormal patient affect or behaviors during the recovery phase that can include crying, agitation, delirium, dysphoria, hallucinations, or nightmares.

d. "Prolonged recovery" is defined as failure to return to baseline clinical status within 2 hours.

e. "Failed sedation" is defined as inability to attain suitable conditions to humanely perform the procedure.

f. Alteration in vitals signs (bradycardia, tachycardia, hypotension, hypertension) is defined as a change of >25% from baseline.

g. "Cardiovascular collapse/shock" is defined as clinical evidence of inadequate perfusion.

h. Examples of "escalation of care" include transfer from ward to intensive care, and prolonged hospitalisation.

i. "Pulmonary aspiration syndrome" is defined as known or suspected inhalation of foreign material such as gastric contents into the respiratory tract associated with new or worsening respiratory signs.

j. "Sentinel" adverse events are those critical enough to represent real or serious imminent risk of serious and major patient injury. Once recognized, they warrant immediate and aggressive rescue interventions. Once clinically concluded, they warrant immediate reporting within sedation care systems, and the highest level of peer scrutiny for continuous quality improvement.

k. "Moderate" adverse events are those that, while not sentinel, are serious enough to quickly endanger the patient if not promptly managed. Once clinically concluded, they warrant timely reporting within sedation care systems, and periodic peer scrutiny for continuous quality improvemet.

l. "Minor" adverse events are those encountered periodically in most sedation settings, and that pose little threat given appropriate sedationist skills and monitoring.

m. "Minimal" adverse events are those that alone present no danger of permanent harm to the patient.