Association of Anaesthetists

RCoA

Royal College of Anaesthetists

Safer Staffing for the Delivery of Anaesthesia Services

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0.0 Preface

At the time of the publication of this document, the aftermath of the COVID pandemic and constraints on the funding of the NHS have led to long surgical waiting lists. This inevitably means that the NHS in general, and the anaesthesia workforce in particular, are coming under increasing pressure to provide more efficient services. Meanwhile, the shortfall between the number of anaesthetists needed by the NHS and the number available is large and likely to grow in the next decade if training numbers are not increased significantly.[1] This imbalance between clinical demand and workforce supply risks compromising the delivery of safe anaesthetic care if provider organisations attempt to run services with fewer anaesthetists than are needed for safe patient care. The Councils of the Royal College of Anaesthetists (RCoA) and the Association of Anaesthetists commissioned this report from a Working Party that comprises key stakeholders in the delivery of anaesthesia care. It covers staffing for all anaesthesia services provided by departments of anaesthesia, including general anaesthesia, regional anaesthesia and analgesia, and procedural sedation. It also covers work in clinical areas in which anaesthetists provide services that are not directly anaesthetic, but which form a key part of the workload of the department of anaesthesia, i.e. resuscitation, acute pain management, preassessment, perioperative medicine and activities supporting the emergency department and intensive care medicine.

This document uses the term "anaesthesia provider" to include all registered healthcare professionals who provide anaesthesia, deep sedation or other anaesthesia services as noted above. The substantial majority of this group are doctors. It also includes, in some hospitals, Anaesthesia Associates. In including Anaesthesia Associates in this term, we do not intend to indicate equivalence between these groups. Anaesthesia Associates have substantially shorter training, limited scopes of practices and always require close supervision when providing anaesthetic care. However, as they form a part of the anaesthesia workforce, need to be included in workforce calculations, and are subject to similar considerations relating to the safe delivery of care, we have chosen to use this collective term.

1.0 Patient safety first

This guidance document seeks to put patient safety first. Patients have the right to expect safe, timely and effective care.[2] In order to achieve this goal, anaesthesia services must have an appropriate number of trained, experienced and qualified providers available to deliver safe care to their patients. Achieving this number should involve the development of a calculation tool, along with monitoring and reporting processes that allow rapid and effective responses from

service leaders to ensure that safe care is delivered. If these processes identify that there are insufficient numbers of staff to deliver safe care, managers, clinical leaders and clinicians should take immediate actions that minimise risk to patients. Cancellations, postponements and other changes to treatment should be made as far in advance as possible to allow patients to change their plans.

When staff shortages occur at short notice, patients should receive as much information as reasonably possible about the impact of these shortages on their care and, if patient care may be significantly compromised by staff shortages, managers, clinical leaders and clinicians should consider whether the situation is such that they have a responsibility to inform patients of the additional risk to their care that proceeding with treatment at that time may entail. This could involve giving a patient the choice of delaying their treatment until adequate staffing numbers are achieved.

2.0 The number "N"

Clinical leads of departments of anaesthesia are encouraged to take the following steps when planning and delivering anaesthesia services:

2.1 Calculate the number of anaesthesia providers needed to deliver overall anaesthesia services (often called the "establishment") and the number needed to provide safe care on any one day (we will call this "*N*") – both terms will be discussed in more detail later in this document.

2.2 Work with organisations and managers to ensure that these staff numbers are achieved and available.

2.3 Develop monitoring and reporting processes that alert service leaders when the numbers fall short of those calculated as being necessary to deliver safe care.

2.4 Develop agreed processes based on clinical need to take urgent and effective steps to protect patient safety by restricting the services provided to those that can be safely delivered if numbers fall short of those necessary. This may require the postponement or cancellation of some clinical services.

2.5 Empower those with responsibility for delivering clinical anaesthesia services on a day-to-day basis to take service delivery and staffing decisions that support patient safety.

This guidance addresses safe staffing levels of anaesthesia providers only. However, the Working Party would like to stress that an anaesthesia provider cannot function in isolation when providing services such as general and regional anaesthesia, and some forms of procedural sedation. As made clear in guidance published by the Association of Anaesthetists[3] and clarified in a Position Statement made by the College of Operating Departments[4], an anaesthesia provider must be assisted by a trained and qualified anaesthesia assistant when appropriate.

This guidance should be read in conjunction with other guidance published by the RCoA in its Guidelines for the Provision of Anaesthesia Services (GPAS), notably the chapter entitled The Good Department 2024.[5]

3.0 Anaesthesia providers

In order for anaesthesia providers to deliver the best possible care, these practitioners should be:

3.1 Trained in accordance with guidance published by the RCoA and practising in accordance with guidance published by organisations such as the General Medical Council, the RCoA and the Association of Anaesthetists.

3.2 Working within an environment that has a culture of safe and effective working, with good collaboration between team members and an open, supportive and proactive approach to managing, reporting and investigating incidents and patient complaints.

3.3 Provided with additional, skilled support and assistance within an appropriate timeframe when unpredictable events occur. The support and assistance needed may include the prompt presence and support of skilled and experienced clinicians.

3.4 Provided with access to a suitably experienced clinician who can provide a second opinion on patient care.[6]

3.5 Supervised when necessary by an anaesthetist who knows what the supervisee is doing, is readily and reliably contactable and is available to give the support that is needed within an appropriate timeframe.

3.6 In good physical and mental health, and not tired, hungry, thirsty, too hot or too cold.

3.7 Able to function safely, with any suitable adjustments having been considered and made for those practitioners with characteristics such as disability, and neurodiversity such as colour vision deficiency, dyspraxia or ADHD.[7]

3.8 Anaesthesia team members involved in on-table deaths or incidents associated with unexpected and significant patient harm should not be expected to continue working if this is possible, and should be offered appropriate support and debriefing before returning to clinical duties[8].

4.0 The needs of different groups of anaesthesia providers

It is important to recognise that an anaesthetist's job title in itself does not always automatically confer or negate the need for supervision or support. This need will primarily be dependent on the work environment, the caseload being undertaken and the level of experience the clinician has in a particular area of clinical activity. In order to calculate the staffing necessary to deliver safe care, those leading departments of anaesthesia should consider the needs of different groups of anaesthesia providers. These include:

4.1 Autonomously practising anaesthetists: Consultants, Associate Specialists and Specialists working within their areas of clinical expertise will be able to practise without supervision. This group may also include Specialty Doctors, other SAS Doctors, post-CCT Fellows and Locum Consultants who are deemed able to work autonomously in a particular area of clinical activity. This group of providers will not need supervision but may require assistance with long or complex cases, clinical support if unexpected adverse incidents occur, access to an appropriate colleague for a second opinion, and relief breaks as necessary.

4.2 Anaesthetists who are not autonomously practising but not in training schemes: Clinicians not listed above should work under supervision. This group will include Specialty Doctors, Locally Employed Doctors ('Trust Grades'), Clinical Fellows and Medical Training Initiative (MTI) Doctors. In addition, supervision may also be appropriate for some Consultants, Locum Consultants, Associate Specialists, Specialists and post-CCT Fellows when practising outside of their areas of clinical expertise. Depending upon the specific circumstances, anaesthetists who are not autonomously practising will therefore need supervision in addition to assistance, support and access to a second opinion (as in 3.1 above).

4.3 Anaesthetists in training (resident doctors - including those not in a formal training programme): a graded level of supervision is always required and is set by the RCoA. [9] Assistance and support may be required (as in 3.1 above).

4.4 Anaesthesia Associates: supervision is always required and is set by the RCoA[10]. Assistance and support may be required (as in 3.1 above).

4.5 Student Anaesthesia Associates: direct supervision is always required and is set by the RCoA[10].

5.0 Responsibilities

The responsibility for the delivery of safe anaesthesia services lies with the Chief Executive, Senior Management Team, operational managers, clinical leaders in anaesthesia and anaesthetists coordinating and providing anaesthesia care on a day-to-day basis.

5.1 It is the organisation's responsibility to employ sufficient, appropriately trained and experienced anaesthetic staff to cover the elective and emergency clinical workload, and other key roles such as supervision, leadership, research, clinical governance, education, training and service development, based on discussion and agreement with the department. This number is often referred to as the "establishment".

5.2 Calculation of the establishment numbers must include provision for anaesthesia providers taking leave of all legitimate sorts, e.g. annual, study, professional, sick and carers', without having to work in an environment in which there are overly restrictive leave rules.

5.3 It is the department's responsibility to determine how many staff with what level of training and experience should be employed to provide the overall service, i.e. the establishment.

5.4 It is important to understand that the establishment is not an unchanging number but is one that will change according to varying workload, service developments, physical environments, overall staffing composition and clinical standards. The establishment should be agreed between managers and clinical leaders in anaesthesia, and should be reconsidered when circumstances change, and at least annually.

5.5 It is the department's responsibility to determine how many staff with what level of training and experience represent the minimum needed to provide safe care on a particular day ("*N*": the minimum number of staff needed at any particular time to support the delivery of safe anaesthesia services).

5.6 It is imperative that the department has robust, pragmatic systems based on the local context to provide timely support and advice in case of an anaesthetic emergency, and that these systems are taken into consideration when calculating *N*.

5.7 It is the department's responsibility to ensure that when the number of staff is <*N*, the number of locations in which anaesthetic care is delivered is restricted to the number that can be safely staffed. Using established, transparent and agreed processes that include clear lines of communication with managers, clinical leaders should have the right to decide which services are continued and which are suspended based on assessments of clinical need. Managing these situations effectively will often require the physical presence of clinical leaders and managers in patient care environments.

5.8 It should be appreciated that responding to acute staffing shortages, i.e. when the number of staff is <*N*, by removing anaesthetists from activities that do not include direct and immediate anaesthetic care, such as pre-operative assessment, may lead to greater patient risk later. Clinical leaders in anaesthesia should make clear which of these services should be considered as essential when managing staff shortages.

5.9 The systems put in place to manage these situations should, as far as possible, identify potential staffing issues in advance. It is the organisation's responsibility to give the department of anaesthesia as much notice as possible of service developments that will have an impact on the staffing provided by the department.

5.10 It is the responsibility of those placing patients on operating and other procedural lists (usually but not exclusively surgeons, service managers and booking team members who have a responsibility for scheduling patients for surgery) to inform those planning anaesthesia services of patients or procedures that are unusually complex, high-risk or time-consuming in order to allow planning of staffing for that list.

6.0 The calculation of N

In this guidance, we propose the concept of the number *N*, which is the number of anaesthesia providers needed to provide a safe anaesthesia service at any one time. It is critical to the provision of safe care that *N* is understood to represent the minimum number necessary, and must not be taken to be the target number of anaesthesia providers. Indeed, it is arguable that the greater the extent to which the number of anaesthesia providers exceeds *N*, the greater is the capacity of the system to support patient safety should uncommon and unexpected events occur. *N* will always exceed the number of discrete sites in which anaesthesia care is being provided, often by a significant proportion. Even though a calculation of *N* can be made in advance based on the known, planned workload, estimated emergency workload and experience of managing the workload, *N* is dynamic and will change both from day to day and during the day. This flexibility is essential to ensure a resilient and responsive service.

N need not necessarily be continually recalculated with precision during the working day as circumstances change. Some rota software systems can help with the calculation or estimation of *N*. Although *N* is as much a concept as an actual number, its potential value as a real number is in flagging up increased risk when the number of anaesthesia providers falls below the estimated number needed to provide a safe service. When this happens, there should be a risk escalation process with a clear line of responsibility to managers and clinical leaders who can restrict the workload to within a safely staffed limit or make a documented decision to continue to provide the service at acknowledged increased patient risk. Under these circumstances, consideration should be given to whether patients should be told that their care is being delivered at increased risk.

This section and other sections make reference to the "working week" and "out-of-hours". It must be appreciated that as the pressure upon the NHS grows, and as employment contracts evolve, changes are being made that blur the hitherto clear distinctions between these working times. Planned procedures are increasingly taking place in extended lists that continue into the evenings while elective surgery at the weekend is becoming the norm in many hospitals. The principles used to calculate the number of anaesthesia providers needed to deliver safe care, and the reasonable actions taken in response to shortages, should not differ according to the day of week or time of day.

Considerations in the calculation of *N*

6.1 *N* includes not only those needed to provide directly patient-facing clinical care but also those needed to provide other essential services such as supervision and support (as set out in Section 4 above) and other roles such as clinical coordination and training.

6.2 Departments should consider developing processes that inform the estimation of *N*. These should include consideration of:

- The number of sites in which anaesthetic care is being simultaneously delivered.
- The geography and remoteness of sites within the hospital in which anaesthesia care is delivered.
- Other calls on the service such as the obstetric units, emergency departments, critical care units, and others as listed in the Appendix.
- The complexity of the work being done.

- The length of the procedures.
- Patient comorbidities.
- The experience of team members, to include consideration of new starters shortly after trainee rotation dates.
- The number of people who require supervision and the level of supervision required.
- Anaesthesia providers who have recently returned from long-term leave and those undergoing a staged return to work.

6.3 There can never be enough staff to cover all possible eventualities, but unexpected emergencies are not uncommon in anaesthesia, and it is reasonable to staff a service in a way that allows an anaesthetist whose patient suffers an unexpected emergency to be given the timely support and assistance needed by someone who is free from other commitments or safely able to leave another commitment in the hands of a competent practitioner. The more sites at which anaesthesia care is being delivered simultaneously and the more potential sources of the need for emergency anaesthesia care that exist within a hospital, the more likely is the occurrence of an unexpected emergency, and indeed of simultaneous emergencies. Regular analysis and review of reports of staffing that proves to be inadequate to provide support should inform the overall degree of "slack" in the system that will allow safe care to be delivered most of the time by a resilient service that can respond to unpredictable pressures.

6.4 The department should set clear guidance on the number of anaesthesia providers that can be safely supervised by a single clinician. If an autonomously practising anaesthetist is supervising the delivery of anaesthesia services in more than one venue, it is always possible that unexpected events may mean that they are required simultaneously in more than one place. This consideration should lead to the provision of further "floating", supernumerary anaesthetists with no other fixed commitments (sometimes called "starred" or "floor" anaesthetists) who can provide support when needed. The greater the number of anaesthetists supervising more than one venue, and the greater the number of anaesthesia providers being supervised by anaesthetists, the greater the need will be for anaesthetists with no other clinical commitments to support safe care.

6.5 In calculating *N*, there should be careful consideration of contractual requirements and obligations such that anaesthesia providers are not required to work beyond safe and agreed weekday and out-of-hours limits.

6.6 There may be a differential effect on *N* of in-sourcing and out-sourcing additional personnel in times of staff shortage. Out-sourcing additional anaesthetic staff (external locums) who are unfamiliar with the clinical environment may require more coordination and support than in-sourcing existing employees who are familiar with the environment but are working in non-contracted time.

6.7 The principles used to calculate safe staffing levels and those used to determine the appropriate responses to potential and actual staff shortages should not differ according to the time of day, day of the week or whether it is a Bank Holiday.

6.8 On occasion, in response to acute or unexpected staffing shortages, it may be felt necessary to remove an anaesthetist in training (resident doctor) from a directly supervised training list. However, it must be appreciated that if frequent shortages lead to regular adverse impacts of this sort on training, departments of anaesthesia may reasonably stipulate that staff shortages should not be a reason for the loss of educational opportunities for anaesthetists in training (resident doctors). When an anaesthetist in training (resident doctor) is removed from a training list, they should be provided with appropriate supervision, told who is providing their clinical support and supervision, and when they will have that training opportunity returned.

Guidance on supervision and measures to develop independent practice in training is published by the RCoA.[11]

6.9 Consideration should be given to the safe staffing of cases with a predictably long duration, to include plans for a handover between different teams of anaesthetists for cases that are likely to exceed three operating sessions in length. When a second anaesthesia team takes over the care of a patient in these circumstances, the timing of shift patterns should allow handover time and familiarisation with the case while both teams are still within their working time.

6.10 Calculations of *N* should not differ for initiatives that aim to increase productivity by developing processes to deliver "high volume, low complexity" or "high intensity" workload, as procedures cannot be made risk-free by the efficiency of the processes that deliver them: unexpected emergencies can still occur.

6.11 When anaesthetists are scheduled to deliver daytime clinical services after a night on call, there should be sufficient flexibility in staffing to allow the safe provision of services without requiring those who have had disturbed sleep to work on the day after a night on call. Departments should work towards rota provision that allows those who are on call to not to be committed to clinical commitments on the following day.

7.0 Coordination, control and communication

All anaesthesia services need coordination and clinical management supported by effective communication. These should be underpinned by processes that support and empower those charged with the coordination of services to take decisions that enhance patient safety.

7.1 Coordination of the work of an anaesthesia service is a complex and demanding role that requires timely responses to a variety of demands on the service such as: scheduled emergency cases, unexpected acute emergencies, delays, staff absences, workload additions and cancellations, supporting anaesthesia providers in complex cases or unexpected emergencies, liaison between clinical specialties, and managing the provision of supervision and rest breaks.

7.2 There should be an identified autonomously practising anaesthetist with oversight of the anaesthetic service available 24/7. This anaesthetist should be readily contactable and, when off-site, should be able to attend physically within an agreed time.

7.3 An appropriately experienced and competent anaesthetist should be on site and in charge of coordinating the anaesthesia service 24/7 in hospitals that provide anaesthesia support for emergency services or when there are multiple, simultaneous, planned activity sites. During the working week, and at other times when multiple planned sessions are running simultaneously, this will usually be an autonomously practising anaesthetist with no other duties that prevent them from responding to calls for help.

7.4 This coordinating anaesthetist will often be overseeing and responsible for other anaesthesia providers whose roles will include attending emergencies, supporting anaesthetists during long or complex cases, or unexpected adverse events, and providing rest breaks to those providing anaesthesia care[12]. They will often act as a second opinion for colleagues.

7.5 When a non-autonomously practising anaesthetist wishes to gain experience by fulfilling the coordinating role, they should work with and shadow an autonomously practising anaesthetist.

7.6 Out-of-hours, when there is minimal or no planned activity, the coordinating anaesthetist can be an anaesthetist in training (resident doctor) or other non-autonomously practising anaesthetist provided there is an autonomously practising anaesthetist readily available for

guidance and onsite support within an agreed and audited set time. This anaesthetist in training (resident doctor) or other anaesthetist should be able to work within Category 3 or 4 in the RCoA's 2021 curriculum Levels of Supervision documentation[13].

7.7 When staffing levels are close to or below *N*, the coordinating anaesthetist should have operational control over how anaesthesia services are provided after discussion with other clinicians and managers.

7.8 Communication systems should exist such that those delivering anaesthesia care are able to inform the coordinating anaesthetist of where they are, what they are doing, whether the services they are providing are of higher risk than normal and whether there are any other circumstances that mean that they are more likely to need support or assistance.

7.9 The coordinating anaesthetist should know who is delivering what anaesthesia care where and to whom, and should have plans for how those delivering anaesthesia care can be provided with supervision, support, assistance or rest breaks. In large departments, this role may need more than one clinician if it is to be delivered effectively.

7.10 The quality and safety of clinical supervision in line with guidance from the RCoA[7] should not be compromised to cover scheduled clinical activity. Similarly, the availability of support and assistance for complex cases or emergency situations should not be compromised to allow scheduled activity to be conducted.

7.11 The incidence of unexpected emergencies may be lower out-of-hours due to activity occurring in a smaller number of simultaneous sites. However, there should always be consideration of the possibility of unexpected emergencies, and the simultaneous commitment of all on-call anaesthesia providers to solo anaesthesia care should ideally not occur, and consideration should be given to its recording and reporting when it does occur.

8.0 Audit and reporting

The use of reporting systems that allow analysis of adverse incidents and near misses, and which inform responses that lead to quality improvement, and deliver change, are key to the delivery of safer staffing.

8.1 Reporting systems should be used or developed that allow reporting and analysis of adverse staffing issues that occur, e.g. if an unexpected emergency occurs and appropriate assistance is either not available within an appropriate timeframe, not available at all or is not sufficiently experienced to provide assistance of value. Departments should set realistic standards for the time from the call for assistance and its arrival that are audited and reviewed.

8.2 These systems should include the reporting and recording of occasions on which the number of anaesthesia providers fell below the number necessary to provide safe anaesthesia care, i.e. when the number fell to below *N*, along with the responses that were taken to address this situation. Collating these data should assist clinical leaders in anaesthesia in making a case for an increase in establishment.

8.3 When shortages of anaesthetists lead to the cancellation or postponement of procedures, the data collected should allow an analysis of whether steps could have been taken in advance to warn the department of anaesthesia of abnormal workloads arising from complex patients, complex procedures or lengthy procedures.

8.4 Audit processes similar to the RCoA's Cappuccini test[14] should be instituted to ensure that anaesthetic supervisors know whom they are supervising and are contactable and available, while those whom they supervise know who is supervising them and how to contact them.

Similarly, audits should be performed that confirm that anaesthesia providers are available to provide support and assistance if needed.

8.5 Additional audit suggestions can be drawn from the publication: "Raising the standards: RCoA Quality Improvement Compendium"[15].

9.0 The solo anaesthetist

Solo anaesthetists often provide anaesthesia care. Although this is not in itself unsafe, it creates potential problems that must be addressed when planning and providing a safe anaesthesia service. This includes enabling the anaesthetist to leave in order to see patients to provide pre-operative or postoperative care, the provision of rest breaks, and the availability of support and assistance when unexpected adverse incidents occur.

Although a solo anaesthetist working in an operating theatre when other anaesthetists are working in the hospital creates some additional risk, greater patient risk is created when that anaesthetist is the only one on site. The occurrence of a solo anaesthetist delivering care, particularly towards the end of a working day, is made more likely by scheduling operating lists that are unrealistic, i.e. likely to take more time than that allotted to the list, or by starting long procedures towards the end of scheduled operating time. List scheduling should be realistic and, when an operating list is likely to overrun its scheduled end time, consideration should be given to the provision of additional staffing, or to case cancellation if this is not possible.

A solo anaesthesia provider delivering anaesthesia care on a site in which there are no other anaesthesia providers may provide significant risk to patients if unexpected complications occur or if the anaesthetist becomes incapacitated. Although arguably undesirable, in some circumstances solo practice of this sort is unavoidable. If it is the case, thought needs to be given to case selection to minimise the risk of untoward events and complications. There needs to be a careful risk assessment of the possibility of an unexpected emergency and a plan should it occur, including seeking the support of other clinical staff appropriately trained in airway management and resuscitation. There should be an agreed, formal policy for an escalation process for seeking prompt and appropriate support and assistance in emergency situations that is tested and rehearsed to ensure that it is effective. Such potential situations emphasise the need for regular multidisciplinary crisis management and human factors training for theatre and procedural teams. In hospitals in which there is no resident, out-of-hours anaesthesia staffing, consideration should be given to the scheduling of an on-call anaesthetist who can attend the hospital to provide support within an appropriate timeframe. Policies and processes should also be in place to facilitate the safe transfer of critically ill patients out of hospitals with no resident, out-of-hours anaesthesia or critical care service.

9.1. It is reasonable for a solo anaesthetist to be allocated to an operating list provided appropriate rest breaks – not just physiological "comfort breaks" - are made available through gaps between cases or the intermittent provision of an appropriate second anaesthesia provider to give breaks. Provision should be made for the anaesthetist to review patients who are admitted after the start of the list and those who have already undergone procedures, and consideration should be given to whether a change in anaesthetist to allow this to happen might affect the safety of the care being delivered.

9.2. It is appropriate for an anaesthetist conducting a list solo who cannot be provided with a rest break because of pressures on the anaesthesia service to take a rest break between cases, even if this causes a delay to cases or the eventual cancellation of a case.

9.3. If a rest break cannot be provided by an appropriate anaesthesia provider to an anaesthetist who is doing a long case, it is reasonable for that anaesthetist to take food and fluid during the case in the anaesthetic room (if there is one) or in the operating theatre.

APPENDIX

Some services that may be provided by a department of anaesthesia:

- Anaesthesia for theatre-based operating and procedural lists.
- Anaesthesia, analgesia and sedation provided in remote sites:
    - Cardiology Catheter Laboratory and electrophysiology procedures
    - Day case units
    - Dental units
    - Emergency Department
    - Endoscopy
    - Imaging [MRI/ CT]
    - Interventional Radiology, to include interventions for stroke
    - Nuclear medicine (oncology)
    - Obstetric Unit
    - Ophthalmology
- Anaesthetic contributions to critical care services, including the transfer of critically ill patients within and between hospitals, and advanced airway management.
- Acute pain services.
- Chronic pain services.
- Peri-operative medicine services.
- Pre-operative assessment.
- Resuscitation (in-patient and Emergency Department).
- Trauma service.
- Providing back up for sedation services.

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Working Party Members

Prof William Harrop-Griffiths	Chair
Dr Emma Wain	Deputy Chair/ Representative from Association of Anaesthetists
Dr Marie Nixon	GPAS Liaison and former Clinical Quality Advisor (CQA)
Dr Philip Barclay	Representative from Association of Anaesthetists, Co-Chair of the Safe Anaesthesia Liaison Group
Dr Laura Bubb	Anaesthetist in Training representative
Dr Chris Carey	Vice President, RCoA
Dr Jonathan Chambers	Bernard Johnson Advisor, RCoA
Dr Ashwini Keshkamat	SAS Committee Chair, RCoA
Dr Sandeep Lakhani	Clinical Leaders in Anaesthesia Network chair, RCoA
Ms Ruth Nichols	Head of Clinical Quality, RCoA
Dr Felicity Plaat	Clinical Quality Advisor, Co-Chair of the Safe Anaesthesia Liaison Group, RCoA

Royal College of Anaesthetists, Churchill House, 35 Red Lion Square, London WC1R 4SG
020 7092 1500 | www.rcoa.ac.uk/guidance | standards@rcoa.ac.uk
Twitter @RCoANews | **Facebook** RoyalCollegeofAnaesthetists

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