Chapter 11
Guidelines for the Provision of Anaesthesia Services for Inpatient Pain Management

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Declarations of Interest

All Chapter Development Group (CDG) members, stakeholders and external peer reviewers were asked to declare any pecuniary or non-pecuniary conflict of interest, in line with the GPAS conflict of interest policy as described in the GPAS chapter development process document.

Declarations were made as follows:

- three members were involved in producing one or more of the items of evidence.

The nature of the involvement in all declarations made was not determined as being a risk to the transparency or impartiality of the chapter development. Where a member was conflicted in relation to a particular piece of evidence, they were asked to declare this and then if necessary removed themselves from the discussion of that particular piece of evidence and any recommendation pertaining to it.

Medico-legal implications of GPAS guidelines

GPAS guidelines are not intended to be construed or to serve as a standard of clinical care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

Promoting equality and addressing health inequalities

The Royal College of Anaesthetists is committed to promoting equality and addressing health inequalities. Throughout the development of these guidelines we have:

- given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it
- given regard to the need to reduce inequalities between patients in access to, and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities.

GPAS guidelines in context

The guidelines for the provision of anaesthetic services (GPAS) documents should be viewed as 'living documents'. The GPAS guidelines development, implementation and review should be seen not as a linear process, but as a cycle of interdependent activities. These in turn are part of a range of activities to translate evidence into practice, set standards and promote clinical excellence in patient care.

Each of the GPAS chapters should be seen as independent but interlinked documents. Guidelines on the general provision of anaesthetic services are detailed in the following chapters of GPAS:

- Chapter 2: Guidelines for the provision of anaesthesia services for preoperative assessment and preparation
- Chapter 3: Guidelines for the provision of anaesthesia services for intraoperative care
- Chapter 4: Guidelines for the provision of anaesthesia services for postoperative care

These guidelines apply to all patients who require anaesthesia or sedation, and are under the care of an anaesthetist. For urgent or immediate emergency interventions, this guidance may need to be modified as described in Chapter 5: Guidelines for the provision of emergency anaesthesia.

The rest of the chapters of GPAS apply only to the population groups and settings outlined in the 'Scope' section of these chapters. They outline guidance that is additional, different or particularly important to those population groups and settings included in the 'Scope'. Unless otherwise stated within the chapter, the recommendations outlined in GPAS chapters 2–5 still apply.

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Each chapter will undergo yearly review, and will be continuously updated in the light of new evidence.

Guidelines alone will not result in better treatment and care for patients. Local and national implementation is crucial for changes in practice necessary for improvements in treatment and patient care.

Aims and objectives

The objective of this chapter is to promote current best practice for the delivery of inpatient pain management by anaesthesia services. The guidance is intended for use by anaesthetists with responsibilities for service delivery and healthcare managers.

This guideline does not comprehensively describe clinical best practice relating to inpatient pain management, but is primarily concerned with the requirements for the provision of a safe, effective, well-led service, which may be delivered by many different acceptable models. The guidance on provision of inpatient pain management applies to all settings where this is undertaken, regardless of funding. All age groups are included within the guidance unless otherwise stated, reflecting the broad nature of this service.

A wide range of evidence has been rigorously reviewed during the production of this chapter, including recommendations from peer-reviewed publications and national guidance where available. However, both the authors and the CDG agreed that there is a paucity of Level 1 evidence relating to service provision in inpatient pain management. In some cases, it has been necessary to include recommendations of good practice based on the clinical experience of the CDG. We hope that this document will act as a stimulus to future research.

The recommendations in this chapter will support the RCoA's Anaesthesia Clinical Services Accreditation (ACSA) process.

Scope

Target audience

All staff groups working in inpatient pain services, including (but not restricted to) consultant anaesthetists, specialty doctor and associate specialist (SAS) anaesthetists, trainee anaesthetists, nurses and allied health professionals contributing to a multidisciplinary approach to good pain management.

Target population

All ages of patients requiring inpatient pain services.

Healthcare setting

All settings within the hospital in which anaesthesia services for inpatient pain services are provided.

Clinical management

- Key components for the provision of anaesthesia services for inpatient pain services
- Key components needed to ensure provision of high quality anaesthetic services for inpatient pain services
- Areas of provision considered:
  - levels of provision of service, including (but not restricted to) staffing, equipment, support services and facilities
  - areas of special requirement, such as paediatric patients, obstetric patients, obese patients, elderly patients and patients with mental health problems and learning difficulties.
  - training and education
  - research and audit
  - organisation and administration
  - patient information.

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Exclusions

- Provision of inpatient pain services by a specialty other than anaesthesia.
- Clinical issues that will not be covered:
  - clinical guidelines specifying how healthcare professionals should care for patients
  - national-level issues.

Introduction

The inpatient pain service (IPS) consists of a multidisciplinary team including appropriately trained acute pain physicians and anaesthetists along with nurses specialised in pain management. Other allied health professionals such as applied psychologists, addiction medicine specialists, physiotherapists and pharmacists may also be part of the IPS team.

After the publication of the joint working party of the Royal College of Surgeons and College of Anaesthetists report "Pain after Surgery" document in 1990, the provision of IPSs in UK hospitals expanded rapidly.[1] The percentage of UK hospitals with an IPS increased from 44% in 1995 to >80% in 2004. However, further progress has been difficult to sustain, particularly in terms of quality and consistency.[2,3] Recent UK and European surveys of IPSs demonstrate a wide variation in service provision, with many IPSs not meeting minimal quality standards (for example, 45% of German IPSs met the specified standards in 2016).[4,5] A British survey in 2004 revealed that 69% of IPSs felt they were "struggling or non-existent".3 Clinicians agree that most of the reasons for the failure of IPSs to meet standards are organisational rather than technical; financial constraints were cited as being the major reason for failure in 53% of cases.2,3 It has proved difficult to implement early recommendations despite support from the Chief Medical Officer in his report of 2009.[6]

The Faculty of Pain Medicine (FPM) of the Royal College of Anaesthetists produced the document Core Standards for Pain Management Services in the UK in 2015 (CSPMSUK).[7] This chapter should be read with reference to CSPMSUK, which informs part of the requirements detailed below. CSPMSUK provides a detailed model for IPSs to emulate. Recent national audit has revealed that most IPSs do not meet the standards recommended in CSPMSUK in terms of staffing provision.[8]

Where benchmarking against national standards has identified shortcomings, organisational change is difficult to achieve in most UK hospitals. The particular challenges faced by IPSs have been investigated in three case studies and include: "doubts and disagreements about the nature of the changes required to improve inpatient pain management; challenging local organisational contexts; and the beliefs, attitudes and responses of health professionals and managers".[9] In order to provide an adequate IPS these challenges need to be addressed simultaneously at a local level. Embracing continuous quality improvement as a core value of the IPS and utilising change management techniques may increase the likelihood of success in the longer term.3

The relief of acute pain is primarily a humanitarian matter, but effective pain management may also result in improved clinical outcomes and reduced complication rates, particularly in high-risk patients undergoing major surgery.[10]

Providing safe and effective analgesia for an increasingly elderly surgical patient population with complex medical problems is a significant challenge for IPSs.

Patients' expectations of surgical outcome and pain relief are high, and it is difficult to meet these expectations with limited IPS resources.

Advances in minimally invasive surgery have resulted in a significant reduction in post-surgical pain in some cases. However, these new surgical techniques present challenges of their own, particularly when combined with enhanced recovery after surgery (ERAS) programmes in which the expectation is of early mobilisation and accelerated discharge from hospital.[11,12] Meeting the goals of ERAS has led to rapid and significant changes in pain management techniques, which must be supported by a well-trained and informed IPS. [13,14] However, it is important that we recognise that ERAS protocols are not a replacement for IPSs.[15] Patients with complex medical problems, opioid tolerance or chronic pain account for 20-30% of all inpatients and cannot be effectively managed using rigid post-surgical pain management protocols.[16] There is evidence from a Danish survey to suggest that a steady rise in the adoption of ERAS protocols from 40% of all hospitals in 2000 to 80% in 2009 was paralleled by the almost complete loss of IPSs outside teaching hospitals over the same period.[17]

The traditional role of the IPS was to manage acute pain after surgery. This remit is expanding in many hospitals to include the care of medical inpatients and patients with complex pain problems such as acute-on-chronic pain or opioid misuse.[18]

As part of a growing emphasis on perioperative medicine by anaesthetists in the UK, IPSs are increasingly involved at all stages of the patient pathway, from the decision to operate to full recovery after discharge from hospital. The potential for preoperative optimisation of pain management, both in terms of analgesic drugs and pain coping strategies, is being evaluated as part of wider prehabilitation programmes.[19,20] Preassessment programmes now include preoperative prediction of those who are likely to suffer severe acute pain and those at risk of developing persistent post surgical pain (PPSP).[21,22] IPSs may be involved in developing these programmes and devising enhanced analgesic strategies for high risk patients.[23,24]

IPSs therefore have the potential to evolve into Transitional Pain Services (TPSs) involving acute pain physcians, applied psychologists, physiotherapists and occupational therapists to identifiy risk factors for persistent pain, implement preventative strategies and avoid potential opioid dependency.[25,26] The use of opioid risk scores such as the Opioid Risk Tool should be considered to assess risk of opioid abuse when continuing opioid therapy beyond the immediate post operative period.

The development of risk stratification tools for PPSP and opioid dependence, together with improved communication with surgical teams and primary care have the potential to reduce the risk of developing inappropriate long term opioid use. This intervention should be led by IPSs and has the potential to prevent an "opioid crisis" occurring in the UK. IPSs can help to develop and support analgesic techniques to minimise opioid use without worsening post surgical pain and increasing the risk of developing PPSP.[27]

The combination of IPSs with other teams, such as critical care outreach, is taking place in some hospitals, and there is evidence that this approach may reduce adverse events and improve analgesia in complex patients, but at the expense of an increased workload.[12,28] However, there is also a risk of dilution of pain management skills and the loss of highly trained clinical nurse specialists in pain management.

Recommendations

The grade of evidence and the overall strength of each recommendation are tabulated in Appendix 1.

1 Staffing requirements[7]

1.1 Inpatient pain services (IPS) should be staffed by multidisciplinary teams led by appropriately trained consultant or SAS anaesthetists. The minimum training requirement for new appointments to IPS lead roles is Royal College of Anaesthetists higher pain training.[29] Advanced pain training, or its equivalent, should be considered optimal.

1.2 Anaesthetists in an IPS post need to demonstrate an ongoing significant interest in acute pain management by involvement in CPD, appraisal and job planning.

1.3 Adequate time should be made available for IPS provision in job plans. Two clinical sessions for the lead and one session for all other anaesthetists involved in the IPS is recommended per week.

1.4 Adequate staff and systems should be in place to provide timely pain management to all inpatients. Out of usual working hours, this may be delivered by IPS nursing staff or appropriately trained anaesthetic staff (intermediate pain training as a minimum standard). A clear point of contact for expert advice should be available at all times.

1.5 Patients under the care of an IPS should be reviewed by the IPS regularly, with patients receiving epidural analgesia or other continuous local anaesthetic infusions being seen at least once daily.

1.6 Adequate numbers of clinical nurse specialists in pain medicine should be available to fulfil the following roles within working hours:

- review patients in pain with appropriate frequency to provide a safe and effective service
- provide advice to ward staff and other healthcare teams regarding all aspects of pain management
- liaise with an appropriate pain medicine specialist to highlight clinical or systematic problems
- ensure systems are in place to support non specialist heathcare staff to safely and effectively manage acute pain overnight and at weekends if the IPS is not immediately available.

1.7 The IPS should aim to provide multidisciplinary assessment and management of pain where needed. This should involve collaborative working with allied health professionals including pharmacists, physiotherapists, applied psychologists, liaison psychiatrists and addiction medicine specialists.

1.8 Outpatient (chronic) pain management teams should be available to provide advice to the IPS during working hours. This activity should be supported through job planning. If possible, the inpatient and outpatient (chronic) pain services should be integrated, with team members working in both environments, to ensure coordinated care for patients with complex pain while in hospital and also for those recently discharged to the community.

2 Equipment, Services and Facilities

Equipment

2.1 All equipment and disposables must be compliant with local and national safety policies. There should be an adequate supply of the following:[31,32,33,34]

- infusion pumps for neuraxial analgesia (epidural infusion / patient controlled epidural infusion (PCEA) and potentially intrathecal infusions)
- infusion pumps for use with continuous regional analgesia catheters
- patient-controlled analgesia (PCA) infusion pumps
- infusion pumps for other analgesic drugs
- disposables for the above including neuraxial and regional block devices e.g. NRFit™.

2.2 Ultrasound scanning, nerve stimulators and all equipment and drugs necessary to perform local and regional analgesic techniques should be available.[30]

2.3 Pumps and infusion lines should be single purpose and appropriately coloured or labelled.[31,32,33,34]

2.4 Drugs for epidural use or for continuous regional anaesthesia infusions should be prepared and stored in compliance with local and national medicines management policies.[31,32,33,34]

2.5 Controlled drugs must be stored and audited in line with current legislation.[35,36,37]

2.6 Efforts should be made to minimise administration errors, and be compliant with local medicines management policies. These should incorporate relevant national policy and frameworks, including the avoidance of 'Never Events'.[38,39,40,41]

2.7 Clinical areas caring for patients receiving analgesic techniques which may result in cardiovascular, respiratory or neurological impairment should have appropriate facilities and adequately trained staff to provide appropriate monitoring.[42]

2.8 Drugs and equipment for the management of the complications associated with analgesic techniques should be readily available.[42]

Facilities

2.9 There should be adequate office space, informatics and administrative support for the IPS.

2.10 There should be appropriate storage facilities for analgesic devices and drugs.

3 Areas of Special Requirement

Children

3.1 The standard of care for neonates, infants, children and young people should be the same as for adults with specific arrangements made for the management of pain in neonates, infants, children and young people.[43]

3.2 The service should be delivered by an appropriately trained team, with specific skills in paediatric pain management and paediatric anaesthesia. Paediatric pain management services may be provided by paediatricians or anaesthetists.

3.3 All tertiary paediatric centres should have access to paediatric chronic pain service to help in managing complex cases. Other centres should develop a network to provide access to paediatric chronic pain services for advice and guidance.

Other patient groups

3.4 Specific arrangements and guidelines should be available for the management of sub-groups of vulnerable adult patients including:

- critically ill patients
- elderly and/or frail patients[44,45]
- non-native English speakers
- patients with chronic pain
- patients with coexisting mental health problems
- patients with dementia
- patients with multi trauma or significant blunt chest wall trauma
- patients with opioid tolerance[46]
- patients with physical or learnining disability
- patients with problem drug and alcohol use[47]
- patients with significant organ dysfunction
- pregnant and breastfeeding patients

4 Training and Education

The inpatient pain service should actively contribute to a hospital environment in which education, training and staffing levels ensure safe care of patients being treated for pain.

4.1 The inpatient pain service should provide education delivered by appropriately trained individuals.[48] Training should include the recognition, assessment and treatment of pain, this includes using a management plan.

4.2 Training should be provided at induction and regularly thereafter for anaesthetists, ward staff, doctors in training and allied health professionals.

4.3 All staff should know how to obtain expert advice when needed. This includes being able to access guidelines and protocols.

4.4 Members of the IPS should have access to internal and external CPD appropriate to their roles. Funding and time should be available for staff to attend this training.[49]

4.5 Training for anaesthetists to attain basic, intermediate and higher level competencies in pain medicine, as specified by the Faculty of Pain Medicine of the Royal College of Anaesthetists, should be provided.

Where higher or advanced pain training is not feasible within an individual hospital, it should be available within the region.[50]

4.6 Inpatient pain nurse specialists providing education on the wards should have dedicated time for this role distinct from direct clinical duties.

4.7 Training should include consideration of the use of simulation where feasible. For example role play with the pain team simulating a patient with a failed epidural.

4.8 Members of the IPS should engage in outpatient (chronic) pain CPD.

5 Organisation and Administration

5.1 Clear lines of communication and close working with other services such as surgical and medical colleagues, outpatient (chronic) pain, palliative care, emergency medicine and primary care should be in place.

5.2 Advice for the management of step down analgesia should be provided for primary care doctors, where needed.

5.3 The inpatient pain service should engage with critical incident reporting, root cause analysis and mortality and morbidity meetings as part of the local hospital reporting structure.[51]

5.4 There should be processes in place for learning from critical incidents and from excellent care.

5.5 There should be mechanisms to disseminate national safety alerts from groups such as the Safe Anaesthesia Liaison Group of the RCoA (SALG).[52]

Guidelines

5.6 Analgesic guidelines, including those for specifc analgesic techniques, should be widely disseminated and easily accessible.

5.7 All guidelines should be dated and regularly reviewed. All guidelines should have a clearly documented author and review date and be published in line with local clinical governance policies with appropriate oversight.

5.8 Guidelines for the management of specific patients groups (as listed in 3.4) should be available.

5.9 Guidelines for side-effect and complication management including inadequate analgesia should be available.

5.10 Where good evidence exists, consideration should be given to procedure-specific analgesic techniques.

5.11 Where possible, guidelines should be shared locally, between hospitals and nationally.

Assessment and record keeping

5.12 Pain and its management should be regularly recorded in the patient notes and / or observation chart using validated tools for each clinical setting. Consistent tools should be used throughout the patient pathway.

6 Financial Considerations

Part of the methodology used in this chapter in making recommendations is a consideration of the financial impact for each of the recommendations. Very few of the literature sources from which these recommendations have been drawn have included financial analysis.

The vast majority of the recommendations are not new recommendations, but they are a synthesis of already-existing recommendations. The current compliance rates with many of the recommendations are unknown, and so it is not possible to calculate the financial impact of the recommendations in this chapter being widely accepted into future practice. It is impossible to make an overall assessment of the financial impact of these recommendations with the currently available information.

7 Research, audit and quality improvement

7.1 Inpatient pain services should keep a prospective database of activity and outcome data. This should be used for quality imrpovement and early recognition of potential harm.[53]

7.2 The IPS should actively engage in benchmarking against national standards e.g. GPAS, CSPMSUK, ACSA, Audit recipe book.[54,55,56,57]

7.3 Where possible, the IPS should encourage engagement in research in acute pain medicine, including recruitment into well designed national and international multicentre studies.

8 Implementation Support

The Anaesthesia Clinical Services Accreditation (ACSA) scheme, run by the RCoA, aims to provide support for departments of anaesthesia to implement the recommendations contained in the GPAS chapters. The scheme provides a set of standards, and asks departments of anaesthesia to benchmark themselves against these using a self-assessment form available on the RCoA website. Every standard in ACSA is based on recommendation(s) contained in GPAS. The ACSA standards are reviewed annually and republished approximately four months following GPAS review and republication, to ensure that they reflect current GPAS recommendations. ACSA standards include links to the relevant GPAS recommendations, for departments to refer to while working through their gap analyses.

Departments of anaesthesia are given the opportunity to engage with the ACSA process for an appropriate fee. Once engaged, departments are provided with a 'college guide' (a member of the RCoA working group that oversees the process), or an experienced reviewer to assist them with identifying actions required to meet the standards outlined in the document. Departments must demonstrate adherence to all 'priority one' standards listed in the document to receive accreditation from the RCoA. This is confirmed during a visit to the department by a group of four ACSA reviewers (two clinical reviewers, a lay reviewer and an administrator), who submit a report back to the ACSA committee.

The ACSA committee has committed to building a 'good practice library' (GPL), which will be used to collect and share documentation such as policies and checklists, as well as case studies of how departments that have overcome barriers to implementation of the standards, or have implemented the standards in innovative ways.

One of the outcomes of the ACSA process is to test the standards, and by extension the GPAS recommendations, to ensure that they are able to be implemented by departments of anaesthesia and consider any difficulties that may result from implementation. The ACSA committee has committed to measuring and reporting feedback of this type from departments engaging in the scheme back to the CDGs updating the guidance via the GPAS technical team.

9 Patient Information

9.1 Patient information leaflets should be made available to provide information on analgesia in general and specialised analgesic techniques such as epidural analgesia, nerve blocks, specialist drug infusions and patient-controlled analgesia.[58]

9.2 Patient information should be available in formats that take into account the information needs of patients listed in 3.4.

9.3 Leaflets should explain pain management after discharge, including a step-down analgesic plans and how further supplies of medicine can be obtained. Patient information should emphasise the need to avoid harm from long term strong opioid use and give clear advice on the impact of analgesics on driving, acknowledging the current DVLA guidance.[59,60]

9.4 Patients should provide informed consent for invasive analgesic procedures, and this must be documented following the GMC advice on informed consent.[61,62]

9.5 Patient education regarding expectation of pain and analgesia after surgery should be given to all patients in the preoperative period.

Areas for Future Development

Following the systematic review of the evidence, the following areas of research are suggested:

- Transitional pain management [63]
- Psychological interventions [64,65]
- Establish a national database (organisational & patient level data)
- Opioid minimisation and long term abuse
- Persistent post surgical pain
- Pre-emptive and preventive analgesic strategies
- Safe analgesia for older people and those with cognitive dysfunction

Abbreviations

ACSA	Anaesthesia Clinical Services Accreditation
CDG	Chapter Development Group
CPD	Continuing Professional Development
CSPMSUK	Core Standards for Pain Management Services in the UK
DVLA	Driver and Vehicle Licensing Agency
ERAS	Enhanced recovery after surgery
FPM	Faculty of Pain Management
GMC	General Medical Council
GPAS	Guidelines for the Provision of Anaesthetic Services
IPS	Inpatient pain service
NICE	National Institute for Health and Care Excellence
PCA	Patient-controlled analgesia
PCEA	Patient controlled epidural infusion
PPSP	Persistent post surgical pain
RCoA	Royal College of Anaesthetists
SALG	Safe Anaesthesia Liason Group

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Appendix 1: Recommendations Grading

The grading system is outlined in the methodology section of this chapter. The grades for each of the recommendations in this chapter are detailed in the table below:

Recommendation Number	Level of Evidence	Strength of Recommendation
1.1	C	Strong
1.2	C	Strong
1.3	C	Strong
1.4	C	Strong
1.5	C	Strong
1.6	C	Strong
1.7	C	Weak
1.8	C	Weak
2.1	C	Strong
2.2	C	Strong
2.3	C	Strong
2.4	C	Strong
2.5	M	Mandatory
2.6	C	Strong
2.7	C	Strong
2.8	GPP	Strong
2.9	GPP	Strong
2.10	GPP	Strong
3.1	C	Strong
3.2	C	Strong
3.3	GPP	Strong
3.4	B	Strong
4.1	C	Strong
4.2	GPP	Strong
4.3	GPP	Strong
4.4	C	Strong
4.5	C	Strong
4.6	GPP	Strong
4.7	GPP	Aspirational
4.8	GPP	Strong
5.1	GPP	Strong
5.2	GPP	Weak
5.3	C	Strong
5.4	GPP	Strong
5.5	C	Strong
5.6	GPP	Strong
5.7	GPP	Strong

Recommendation Number	Level of Evidence	Strength of Recommendation
5.8	GPP	Strong
5.9	GPP	Strong
5.10	GPP	Aspirational
5.11	GPP	Aspirational
5.12	GPP	Strong
7.1	C	Strong
7.2	C	Strong
7.3	GPP	Weak
9.1	B	Strong
9.2	GPP	Strong
9.3	C	Strong
9.4	C	Strong
9.5	GPP	Strong

About these guidelines

Methodology

The process by which this chapter has been developed has been documented within the GPAS chapter development process document.

The evidence included in this chapter is based on a systematic search of the literature. Abstracts were independently screened by two investigators and reviewed against inclusion and exclusion criteria. Data were extracted by one investigator in accordance with predefined criteria. The review objective was to determine the key components needed to ensure provision of high-quality inpatient pain services for patients who have undergone surgery and/or interventions which involve anaesthesia.

Search strategy

Searches were performed on Embase (1980 to 2015), Ovid MEDLINE (1946 to present), CINAHL and Cochrane Library, for the literature search strategy, outcomes, databases, criteria for inclusion and exclusion of evidence (for the full inpatient pain chapter search protocol please contact the RCoA). A hand search of the literature was also conducted by the authors using the reference lists of relevant original articles and review articles.

The literature search was performed in November 2017.

The authors and researcher independently reviewed the abstracts and titles of the studies found in the initial search. After agreement on the primary selection of papers, full-text versions were accessed and reviewed against the following predefined inclusion and exclusion criteria. The full-text papers were also reviewed by the Chapter Development Group (CDG) for suitability. The final list of publications used can be found in the references.

Inclusion criteria

The literature review considered studies that included the following patient population with all of the inclusion criteria listed below:

- All patients undergoing elective or emergency anaesthesia
- All staff groups working within acute pain, under the responsibility of an Anaesthetic Clinical Director, including (but not restricted to) Consultant Anaesthetists, Trainee Anaesthetists, Nurses, Operating Department Practitioners, Surgeons, Pharmacists, General Practitioners, Radiologists and Radiographers

Exclusion criteria

The literature review used the following exclusion criteria:

- Provision of an acute pain service provided by a speciality other than anaesthesia

Data Extraction and Analysis

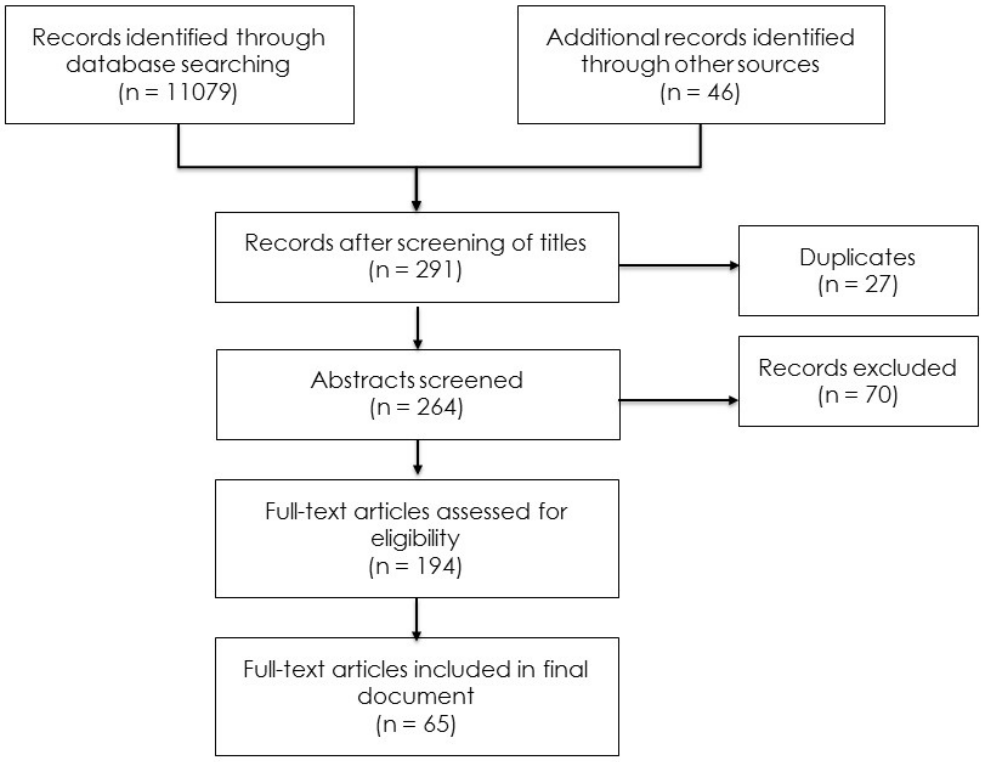
Data were extracted by the authors using a proforma. The study characteristics data included:

- the journal and country of publication
- the number of patients recruited into the study
- the study design
- patient characteristics
- outcome data
- the logic of the argument
- author's conclusions
- reviewer's comments.

The patient characteristics data extracted were; age, gender and type of surgery. The analysis considers studies that included any clinical outcome, including (but not restricted to) survival, length of stay, critical care or hospital, morbidity, adverse effects and complications.

The results of the literature review can be seen below:

Preferred Reporting Systems for Systematic Review and Meta-analysis (PRISMA) flow chart



The evidence that is included in this chapter has been graded according to a grading system adapted from NICE and outlined below:

Level	Type of evidence	Grade	Evidence
Ia	Evidence obtained from a single large/multicentre randomised controlled trial, a meta-analysis of randomised controlled trials or a systematic review with a low risk of bias	**A**	At least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (evidence level I) without extrapolation
Ib	Evidence obtained from meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias	**B**	Well-conducted clinical studies but no high-quality randomised clinical trials on the topic of recommendation (evidence levels Ib, II or III); or extrapolated from level Ia evidence
IIa	Evidence obtained from at least one well-designed controlled study without randomisation		
IIb	Evidence obtained from at least one well-designed quasi-experimental study		
IIc	Evidence obtained from case control or cohort studies with a high risk of confounding bias		
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies		
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities	**C**	Expert committee reports or opinions and/or clinical experiences of respected authorities (evidence level IV) or extrapolated from level I or II evidence. This grading indicates that directly applicable clinical studies of good quality are absent or not readily available.
UG	Legislative or statutory requirements	**M**	This grading indicates that implementation of this recommendation is a statutory requirement, or is required by a regulatory body (e.g. CQC, GMC)
		GPP	Recommended good practice based on the clinical experience of the CDG.
Adapted from Eccles M, Mason J. How to develop cost-conscious guidelines. *Health Technology Assessment* 2001;5(16) and Mann T. Clinical guidelines: using clinical guidelines to improve patient care within the NHS. *Department of Health*, London 1996.			

Strengths and limitations of body of evidence

Most of the published evidence on inpatient pain services is descriptive. There are publications describing aspects of this process based on expert opinion.

The limitations of the evidence are:

- the 'unmeasurables' (attitudes, behaviour, motivation, leadership, teamwork)

- few randomised controlled trials (RCTS); studies frequently use mixed populations of emergency and elective patients, or all emergency patients grouped together despite different underlying diagnoses
- papers often examine a single intervention within complex system or bundle
- papers are often examining small numbers and/or patients from a single centre
- poor use of outcome measures, frequently concentrating on easily measured short term outcomes which are not patient-centred
- generally, a paucity of long-term follow up
- there is no standard definition used of 'high risk'
- use of different risk-scoring systems
- decrease in outcome over time and geography when 'good papers' are used in quality Improvement programmes
- application of international studies in systems with either more or less resources than the UK into NHS practice
- older studies may no longer be applicable within the NHS
- very few studies included any analysis of financial implications
- evidence was mainly based on literature graded III and IV.

Methods used to arrive at recommendations

Recommendations were initially drafted based on the evidence by the authors for the chapter. These were discussed with the CDG, and comments were received both on the content and the practicality of the recommendations. The level of evidence that was the basis for each recommendation was graded according to a grading system, and the recommendation was then graded taking into account the strength of the evidence and the clinical importance using a recommendations criteria form (see GPAS Chapter Development Process Document). Recommendations were worded using the following system of categorisation:

Strength	Type of evidence	Wording
Mandatory	The evidence supporting the recommendation includes at least one with an 'M' grading	Wording should reflect the mandatory nature of the recommendation, ie 'must'
Strong	Confidence that for the vast majority of people, the action will do more good than harm (or more harm than good)	Wording should be clearly directive 'should' or 'should not'
Weak	The action will do more good than harm for most patients, but may include caveats on the quality or size of evidence base or patient preferences	Wording should include 'should be considered'
Aspirational	While there is some evidence that implementation of the recommendation could improve patient care, either the evidence or the improvement is not proven or substantial	Wording should include 'could'
Equipoise	There is no current evidence on this recommendation's effect on patient care	Wording should include 'there is no evidence of this recommendation's effect on patient care'

Consultation

The chapter has undergone several rounds of consultation. The multidisciplinary CDG formed the first part of the consultation process. The authors and GPAS Editorial Board identified key stakeholder groups. Where stakeholders are represented by an association or other medical college, they were asked to nominate delegates to join the CDG. The GPAS Chapter Development Process Document explains the recruitment process for those CDG members who were not directly nominated. The CDG members were involved in drafting the recommendations, and were provided with an opportunity to comment on all subsequent drafts of the chapter.

The chapter underwent peer review. Peer reviewers were identified by the authors or GPAS Editorial Board. Nominees were either anaesthetists of consultant grade or were nominated by a key stakeholder group. Nominees had not had any involvement in the development of GPAS to date and were asked to comment upon a late draft of the chapter.

Following peer review, the chapter was reviewed by the College's Clinical Quality and Research Board (CQRB) along with the College's Lay Committee. Comments from all groups were considered and incorporated into a consultation draft.

The consultation draft of this chapter was circulated for public consultation from 3 december 2018 – 4 January 2019. As well as being made available on the College's website and promoted via Twitter and the President's newsletter to members, the draft was also circulated to all key stakeholder groups identified by the authors and the College. A list of organisations contacted by the College is available from the GPAS team at the College: GPAS@rcoa.ac.uk.

The editorial independence of GPAS

The development of GPAS is solely funded by the Royal College of Anaesthetists. However, only the GPAS technical team and the GPAS researcher are paid directly by the College for their work on GPAS, the GPAS Editors' employing organisation receives 2 PA backfill funding. All funding decisions by the College are made by the CEO, in collaboration with the senior management team and College Council.

The authors of the chapters are all fellows of the Royal College of Anaesthetists. Members of College Council cannot act as chair of any CDG, as this individual has the deciding vote under the consensus method of decision making used in the chapters. Where College Council members have been involved in chapter development, this has been declared and recorded.

All persons involved in the development of GPAS are required to declare any pecuniary or non-pecuniary conflict of interest, in line with the GPAS conflict of interest policy as described in the GPAS Chapter Development Process Document. Any conflicts of interest are managed on a case-by-case basis to maintain the transparency and impartiality of the GPAS document. The conflicts, and the way they were managed, are outlined at the beginning of the chapter.

The role of the GPAS Editorial Board and CQRB

The overall development of the entire GPAS document is overseen by the CQRB of the Royal College of Anaesthetists, which includes representatives from all grades of anaesthetist, clinical directors and lay representation.

Responsibility for managing the scope of the document and providing clinical oversight to the project technical team is delegated by the CQRB to the GPAS Editorial Board, which includes individuals responsible for the various internal stakeholders (see above for membership). On the inclusion/exclusion of specific recommendations within each chapter, the Editorial Board can only provide advice to the authors. In the event of disagreement between the authors, the majority rules consensus method is used, with the GPAS Editor holding the deciding vote.

Both of these groups, along with the College's Lay Committee review each chapter and provide comment prior to public consultation and are responsible for signoff before final publication. In the event of disagreement, consensus is reached using the majority rules consensus method, with the chair of CQRB holding the deciding vote.

Updating these guidelines

This chapter will be updated for republication in January 2020.

Guidelines will be updated on an annual basis. The researcher will conduct the literature search again using the same search strategy to uncover any new evidence and members of the public will be able to submit new evidence to the GPAS project team. Where new evidence is uncovered, the lead author will decide whether the recommendations that were originally made are still valid in light of this new evidence.

If new evidence contradicts or strengthens existing recommendations, the authors decide whether or not to involve the remainder of the CDG in revising the recommendations accordingly.

If new evidence agrees with existing recommendations, then a reference may be added but no further action is required.

If there is no new evidence then no action is required.

This chapter is due to be fully reviewed for publication in January 2024.

Every five years guidance will be submitted to a full review involving reconvening the CDG (or appointment of a new, appropriately qualified CDG), and the process described in the methodology section of this chapter begins again.

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