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Surgery and opioids: An expert consensus based best practice guidance (practice advisory) on the perioperative use of opioids in the United Kingdom.

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Complete List of Authors:	Srivastava, Devjit; Raigmore Hospital, Anaesthesia Hill , Susan ; University Hospital of Wales, Vascular Surgery Carty , Suzanne; Taunton and Somerset NHS Foundation Trust, Anaesthetics and Pain Medicine Rockett, Mark; Plymouth Hospitals NHS Trust, Anaesthesia and Pain Medicine Bastable , Ruth ; Royal College of General Practitioners, General practice Knaggs, Roger; University of Nottingham, Faculty of Science Lambert , David G; University of Leicester, University department Cardiovascular sciences,Anaesthesia,Critical Care and Pain Management Levy , Nicholas ; West Suffolk Hospital, Anaesthesia and Perioperative Medicine Hughes , John ; James Cook University Hospital, Pain Management Unit Wilkinson , Paul ; Royal Victoria Infirmary, Anaesthetics
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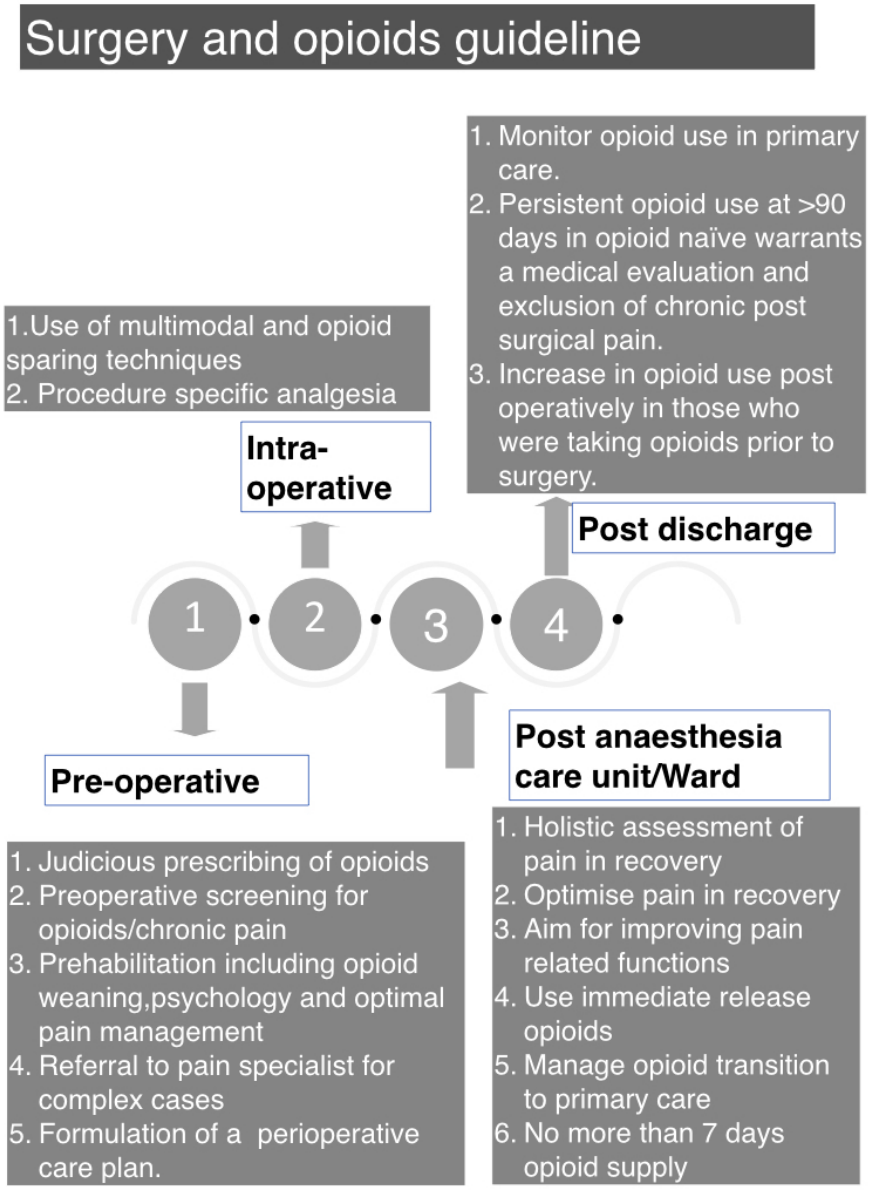

Figure 2: Key recommendations.

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Figure 1:Guideline development process

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Surgery and opioids: An expert consensus based best practice guidance (practice advisory) on the perioperative use of opioids in the United Kingdom.

Devjit Srivastava[1]*, Susan Hill[2], Suzanne Carty[3] ,Mark Rockett[4], Ruth Bastable[5], Roger Knaggs[6], David Lambert[7], Nicholas Levy[8], John Hughes[9], Paul Wilkinson[10].

[1]Department of Anaesthesia and Pain Medicine, Raigmore Hospital, Inverness, Scotland, UK.

[2] Dept Vascular Surgery ,University Hospital Wales, , Cardiff, UK.

[3] Taunton and Somerset NHS Foundation Trust, Anaesthetics and Pain Medicine Taunton, Somerset, UK.

[4]Plymouth Hospitals NHS Trust, Anaesthesia and Pain Medicine, Plymouth, K.

[5]Royal College of General Practitioners, London, UK.

[6] School of Pharmacy, University of Nottingham, University Park, Nottingham, UK.

[7]Department of Cardiovascular Sciences, Division of Anaesthesia Critical Care & Pain Management, Robert Kilpatrick Clinical Sciences Building, Leicester Royal Infirmary, Leicester, UK.

[8]Anaesthesia and Perioperative Medicine, West Suffolk Hospital, Bury Saint Edmunds, Suffolk, UK.

[9]James Cook University Hospital, Pain Management Unit, Middlesbrough, Middlesbrough, UK.

[10] Department of Anaesthesia, Newcastle Pain Management Unit, Royal Victoria Infirmary Queen Victoria Road, Newcastle upon Tyne, Newcastle, UK.**Abbreviated title:** Surgery and Opioids.**Author for correspondence:**

Devjit Srivastava, M.B.B.S, MD, DNB, FRCA, FFPMRCA, MSc

Department of Anaesthesia and Pain Medicine, Raigmore Hospital, Inverness, Scotland, UK Tel +44 (0) 01463 705350 (secy)

e-mail: dev.srivastava@nhs.scot

Please address reprints requests to Dr. Devjit Srivastava[1]

Abstract:

There have been significant concerns regarding prescription and misuse of prescription opioids in the peri-operative period. The Faculty of Pain Medicine (FPM at the Royal College of Anaesthesia) has produced this evidence based expert consensus guideline 'Surgery and Opioids' along with the Royal College of Surgery, Royal College of Psychiatry, Royal College of Nursing and the British Pain Society.This expert consensus practice advisory reproduces the FPM guidance.

Perioperative stewardship of opioids starts with judicious opioid prescribing in primary and secondary care. Prior to surgery, it is important to assess risk factors for continued opioid use after surgery and identify those with chronic pain prior to surgery, some of whom may be taking opioids. A multidisciplinary perioperative care plan that includes a prehabilitation strategy, intra- and post-operative care needs to be formulated. This may need the input of a pain specialist. Emphasis is placed on optimum management of pain pre-, intra- and post-operatively. The use of immediate release opioids is preferred in the immediate post-operative period. Attention to ensuring a smooth care

transition and communication from secondary to primary care for those taking opioids is highlighted. For opioid naïve patients (patients not taking opioids prior to surgery), no more than seven days opioid prescription is recommended. Persistent use of opioid needs a medical evaluation and exclusion of chronic post surgical pain. The lack of grading of the evidence of each individual recommendation remains a major weakness of this guidance though evidence quoted for each recommendation have been rigorously reviewed by experts in this field.

Key words:

Surgery, anaesthesia, perioperative, perisurgical, opioids, pain, addiction, guidance.

Introduction:

Opioids are widely used for perioperative analgesia.[1] The post-surgical use of opioids is thought to be an important source of problems particularly in the USA.[2]

The concerns related to opioid use are primarily death due to overdose[3] and other morbidity such as addiction and falls. [4-7]. There is a 64%increase in all cause mortality (hazard ratio 1.64) in patients who take long term opioids.[8] Although the opioid misuse problem has not been quantified in the UK, there are concerns that its trajectory mirrors that of the USA.[9] In England, opioid prescriptions increased by 34% between 1998 and 2016.[10]

Prolonged opioid use after surgery is a significant concern as this increases the chances of misuse and opioid related patient safety issues.[11,12] Persistent post

operative opioid use (PPOU) is the use of opioids 90 days after surgery in preoperative opioid naïve patients. For those on opioids prior to surgery, any increase in baseline opioid use 90 days after surgery would be classed as PPOU. It has been demonstrated that PPOU occurs in 0.6-26% of opioid naïve patients and the figure is 35-77% for those taking opioids prior to surgery.[12,13]

Concerns surrounding PPOU have led to calls for rational perioperative opioid management[14] and greater display of opioid stewardship by perioperative clinicians that include anaesthesiologists, surgeons, and general practitioners amongst others.[15,16]

In September 2018, the Faculty of Pain Medicine (FPM) at the Royal College of Anaesthetists (RCOA; London) commissioned a multi professional working party to develop a whole system guidance on the best practice relating to use of opioids perioperatively.[17] The developed guidance is presented here.

Target population

The primary population of interest are all patients who undergo surgery (both major and minor). This include both opioid naïve patients and those taking opioids prior to surgery.

End users for this guidance

This document represents the work of a multi-professional and multidisciplinary collaboration and sets out the guiding principles in opioid management in the perioperative period. This guidance is intended for use by clinicians, nurses and allied

healthcare providers, patients, pharmacists and policy makers. Clinicians involved in perioperative care (Anaesthetists, Surgeons, Pain Nurses, General Practitioners and Mental health practitioners) may use these guidance to inform their practice on perioperative opioids. Readers are signposted to the relevant evidence that underpins this consensus guidance.

Guidance (Practice advisory) development (Methods)

The FPM and the RCOA board laid down the terms of reference for the project working party in September 2018. The project working party (expert group) was tasked to develop policy and guidance on opioid prescribing in the perioperative period that was to include advice on preoperative, intraoperative and postoperative discharge on opioid management including care transitions from the hospital to primary care. Additionally, the working group was asked to consider opportunities for opioid de-escalation of pre- and post-operative opioids and treat chronic post surgical pain.

The working party membership and corresponding members included representatives from the FPM at RCOA, RCGP (Royal College of General Practitioners), RCS (Royal College of Surgeons, England), BPS (British Pain Society), RCN (Royal College of Nursing), RCP (Royal College of Psychiatry). A lay person representative from the RCOA reviewed and commented on the draft consensus statements. The details of the FPM terms of reference for this guidance may be found at supplementary data 1. The mentioned institutions were requested to nominate an ‘expert’ in opioid prescribing in the perioperative period. The experts involved were individuals with substantial experience in management, research, teaching or policy analysis of opioid prescribing in the peri-operative period. The diverse membership of the working party

was intended to have as wide an input as possible to create guidance that was inclusive of all care transitions or stakeholders for the surgical patient. The expert group reviewed existing research evidence and clinical practice guidelines prior to arriving at a consensus. 'Over three years[2018-20] the working group performed a series of guidance appraisal [Delphi] rounds [four] with the same group of experts.The first round was a face to face round and the rest were by email. Once a consensus was reached on all sections of the guidance , the experts took this guidance back to their respective bodies [partner Institutions RCOA,RCGP,RCS ,RCP,RCN ,BPS mentioned above] that had nominated them. The partner institutions then fed back comments to the working group which was discussed amongst the working group and a consensus reached. Once the final document was finalised, the expert working group reappraised the document. The lead authors of the working group moderated the consensus process. Disagreements were resolved using group email discussions followed till a consensus was reached on a particular issue. The final draft document then was hosted online on the FPM website for public consultation for a month. We received feedback from 43 respondents that were discussed by the expert working group and incorporated to the final guidance.

The rapid review revealed that the evidence base consisted of mostly observational studies and expert opinion/advisories/guidelines and hence a formal grading of each recommendation was not performed by the working party for this guidance. Previously published guidance on allied issues (Buprenorphine) in this journal have reported a similar evidence base.[18] We have however highlighted the low grade evidence base (as per Oxford ,UK CEBM Centre for Evidence Based Medicine)[19] available for the working group's recommendations alongside the headings for each section.

The available evidence was collated, and expert opinion consensus resulted in the development of this whole system pathway for using opioids rationally in the peri-operative period. The guidance development process is shown in Figure 1.

Clinical guidance (Practice advisory)

The detailed recommendations are as follows.

PREOPERATIVE RECOMMENDATIONS (Oxford CEBM[19] Level 2b-5 evidence: cohort studies, case series, expert opinion)

Action: anaesthetists, surgeons, general practitioners, other healthcare professionals

1. Preoperative assessment:

a. Preoperative assessment for complex pain patients should include an assessment of pain and current consumption of analgesic drugs including opioids. Ideally, it should focus on a biopsychosocial assessment of pain as outlined in the FPM guidelines.[20-23]

2. Prehabilitation:

a. Consideration should be given to reducing preoperative anxiety and catastrophising[24,] as this may have value in improving post-surgical outcomes including pain.

b. Preoperative counselling must include working collaboratively with the patient[25] and expectation management regarding opioid use and perioperative pain management. A patient information leaflet should be provided.

c. Patients with complex pain needs who may benefit from an extended stay in the post anaesthesia care unit (PACU) should be identified, so that appropriate plans can be formulated.

3. Complex pain cases: (preoperative recommendations for opioid tolerant patients)

a. For complex pain patients prescribed high opioid doses, the opinion of a pain specialist[25] should be gained prior to surgery.

b. A useful way to assess preoperative opioid consumption is through the calculation of the Oral Morphine Equivalent dose (OME)[26] which should be documented in the clinical record.

c. Opioid tolerance (decrease in pharmacological response) and opioid induced hyperalgesia (increase in pain perception) may occur in patients taking opioids. Opioid tolerance is likely at OME doses 60 mg/day of for ≥7 days.[27-28] Avoid escalating opioid doses before surgery.

d. If the oral route is unavailable immediately after surgery, opioid conversion should be made to parenteral morphine.[26,27]

e. Prehabilitation (optimisation before surgery) should include optimal management of preoperative pain and optimisation of opioids and other pain/adjuvant medicines. In selected cases, weaning of opioids should be considered prior to surgery. [29,30]

f. In patients unsuitable for preoperative opioid de-escalation, opioids taken before surgery should usually be continued throughout the surgical admission.

g. An individualised plan should be made for patients on buprenorphine (sublingual or transdermal patches) or methadone and in other specific situations such as pregnancy.[31]

h. Opioid-sparing adjuncts should be considered when managing pain prior to surgery.

4. Perioperative management plan:

a. A perioperative management plan should be formulated with the patient and communicated to the surgical and anaesthetic team. The patient should be warned that the plan may occasionally need to be altered.

Summary of pre-operative recommendations

Prehabilitation (optimisation before surgery) should ensure optimal management of preoperative pain including opioid prescribing, psychological preparation and education / expectation management. All healthcare professionals involved in perioperative care should collaborate to provide the highest standards of patient-centred care including opioid stewardship. Opioids should be used judiciously by healthcare professionals. This means using opioids when necessary but stopping opioids when they are no longer required. Patients should be screened for chronic pain and opioid use in the preoperative period. Opioid weaning should be considered before surgery if feasible. The Oral Morphine Equivalent (OME) dose per 24 hours of prescribed opioids should be noted. Referral to a pain specialist should be considered in complex cases. A perioperative management plan should be formulated with the patient and communicated to the surgical and anaesthetic team.

INTRAOPERATIVE RECOMMENDATIONS (Oxford CEBM[19] Level 2b-5 evidence: cohort studies, case series, expert opinion)

Action: anaesthetists, surgeons

1. Intraoperative nociception management as a component of balanced anaesthesia should follow the principles of

a. Promotion of early return of usual function, i.e. drinking, eating and mobilisation.[32]

b. Multimodal analgesia- this has been shown to be opioid sparing and provides superior pain relief. [33-35]

c. Opioid sparing analgesia techniques- these and use of opioid sparing adjuvants are encouraged.[36]

2. PROSPECT (Procedure specific analgesic techniques) recommendations for analgesia should be used rather than over reliance on the WHO analgesic ladder.[37]

3. Anti-nociception management techniques as a component of a balanced anaesthesia technique need to be individualised, considering patient choice, type of surgery, comorbidity, and pre-existing medicines. This should be based on shared decision making with the patient.

Summary of intraoperative recommendations

Intraoperative nociception management as part of a balanced anaesthesia technique should include multimodal analgesia and opioid-sparing analgesic techniques. Evidence-based, procedure-specific analgesic techniques should be used when evidence is available. Perioperative antinociception techniques must be tailored to individual patients. This should be based on shared decision-making, considering the type of surgery, patient comorbidities and pre-existing medicines use.

POST OPERATIVE RECOMMENDATIONS (Oxford CEBM[19] Level 2b-5 evidence: cohort studies, case series, expert opinion)

Action: anaesthetists, surgeons, other healthcare professionals

Goals:

1. The goal of postoperative pain management is to minimise postoperative pain and to provide a seamless transition of analgesic care from operating theatre via recovery (PACU) to the ward.

2. Goals of pain management must be matched to the type of surgery and to the stage of recovery, e.g. after a laparotomy, the immediate goal is the ability to cough and breathe deeply, but in subsequent days it is to facilitate mobilisation.[38]

3. Postoperative pain assessment and pain management strategies must promote return of normal function, i.e. drinking, eating, movement and mobilisation.[32]

RECOMMENDATIONS FOR POST ANAESTHESIA CARE UNIT (PACU)

1. Optimisation of pain relief prior to leaving PACU: Pain assessment in the PACU should take function into account. A pain assessment that involves functional assessment (i.e pain on breathing or movement) along with awareness of factors such as anxiety that can increase pain perception is recommended.

One example of function-related pain scores is the functional activity score,[39] where

A is no limitation of (relevant) activity due to pain

B is mild limitation of activity due to pain

C is being unable to complete activity due to pain.

2. Managing patients with complex pain problems in recovery:

a) Opioid tolerant patients may require additional interventions in PACU to facilitate optimal pain management. These interventions should be planned and documented as far as possible so that a simple reliance on using opioids for pain relief in recovery/PACU is avoided.[40] In patients with complex pain problems, increased pain intensity taken in isolation should not be a sole indicator to administer further opioids. A comprehensive pain assessment is needed. Repeated elevated pain intensity scores should trigger further assessment and experienced input. iIncreased pain intensity score should not be a sole indicator for a delay to discharge from PACU.When patients report severe pain, empathy and active listening should be provided.

RECOMMENDATIONS FOR THE WARD

1. Promote return of normal function:

a) The oral route should be used as soon as possible for administration of medicines.

b) It must be realised that increased pain intensity may be a consequence of surgical complications (e.g. compartment syndrome or anastomotic leak).

c) Sedation scores should be recorded in addition to respiratory rate to detect those at risk of opioid-induced ventilatory impairment.[41-46]

2. Immediate-release opioids are preferred in the management of postoperative pain when simple analgesics are insufficient to achieve the analgesic goals. If modified-

release opioid preparations (including transdermal) are used, due care should be exercised as they have been associated with harm.[47] The prescribed dose of immediate-release opioids should be age-related (rather than weight) and take into account renal function. Liquid oral morphine at a concentration of 10 mg/5ml is the preferred opioid as it is a Schedule 5 drug in the United Kingdom, which facilitates more timely administration. Immediate-release oxycodone is not recommended as a first-line opioid, as it is a Schedule 2 drug and is more labour intensive to administer. However, it is recognised that in elderly patients aged over 70 years or in patients with renal failure, other opioids may be used post operatively in preference according to local policy.

3. When analgesic requirements are reduced, a reverse analgesic ladder is recommended: wean opioids first, then stop NSAIDs, then stop paracetamol (acetaminophen).

4. The Inpatient Pain Service should be involved in the post-surgical care of the opioid tolerant patient.[48] Inpatient psychology input may be needed to manage these patients.[49-50]

5. Patients on gabapentinoids should be identified and the indications reviewed.[51] Gabapentinoids should be tapered if no longer indicated.

DISCHARGE PLANNING

1. Patients should be informed on how to self-administer opioids safely:

a. On discharge, patients should be informed how to self-administer opioid medicines safely, wean analgesics and dispose of unused analgesic medicines. Patients should be reminded to take particular care with storing opioids and other medicines that may be liable to misuse. They should be told of the dangers of driving or using machinery while taking opioid medicines, and a patient leaflet should be provided to reinforce these messages.[52]

2. A protocol for discharge medicines should be used as it reduces subsequent opioid use.[53-57] Patients should have access to appropriate simple non-opioid analgesics.

a. It is preferable to prescribe opioid and non-opioid analgesics separately in order to allow for dose changes of individual analgesics.

b. Patients should be encouraged to keep a record of analgesics taken, as research has shown that this results in better pain control.[55]

c. New prescriptions of modified-release opioid preparations (including transdermal patches) should be avoided without specialist consultation. If specialist consultation is required, a key feature of this consult would be to exclude chronic post-surgical pain.

3. The hospital discharge letter should be provided in a timely way to all healthcare professionals caring for the patient, including community pharmacists, to avoid an acute prescription of opioids inadvertently becoming a repeat prescription. The hospital discharge letter must explicitly state the recommended opioid dose, amount supplied and planned duration of use. The opioid treatment plan should be agreed with the patient (see MHRA- Medicine and Healthcare regulatory agency guidance on opioids).[57]

4. Guidance should be given about medicine review following discharge from hospital:

a. Usually 5 days and no more than 7 days of opioids (including tramadol) should be prescribed.[55]

b. The hospital discharge letter must explicitly state the recommended opioid (including tramadol) dose and duration.

Additional recommendations for opioid tolerant patients

5. De-escalation of opioids after pain relieving surgery:

a. For opioid-tolerant patients whose surgery was pain relieving, e.g. knee surgery, the discharge letter should provide advice on any further weaning of analgesics taken before surgery. Secondary care outpatient pain services or transitional pain services may be able to assist if difficulties arise. [58,59]

POST DISCHARGE MANAGEMENT

Action: surgeons, general practitioners, other healthcare professionals

1. Patients must be guided and informed to dispose of unused opioid medicines safely to avoid both diversion and subsequent inappropriate use. Safe disposal must involve taking excess supplies of medicines to the community or hospital pharmacy. Postoperative opioids must not be added to a 'repeat' prescribing template. They should only ever be added to the patient's record as an acute medicine and must be reviewed at each issue by the prescriber.[60]

2. If a patient not usually on long term opioids is still taking opioids (including tramadol) 90 days after surgery and is still in pain, this should trigger further assessment in

primary or secondary care which may include referral to a pain service, for investigation of persistent pain following surgery or sometimes to a substance misuse service. [61-63]

3. Patients on gabapentinoids should be identified and the indications reviewed. [51] Gabapentinoids should be tapered off if no longer indicated.

4. Pain-related and opioid-related readmissions should be notified to the Inpatient Pain team.[64]

For a summary of post-operative recommendations, refer to Figure 2. Pain relief should be optimised before leaving the postoperative recovery area (PACU -post anaesthesia care unit). For patients with complex pain problems, an elevated pain intensity taken in isolation should not be a sole indicator for the administration of further opioids and should not hinder discharge to the ward. A holistic pain assessment is recommended. Postoperative pain assessment and pain management strategies must promote return of normal function, i.e. drinking, eating, movement and mobilisation. Do not treat according to pain intensity but to improve function and mobility. Immediate-release opioids are preferred in the management of postoperative pain (to decrease risk of respiratory impairment and long term continuation), when simple analgesics such as paracetamol (acetaminophen) or NSAIDs are not effective enough to allow the achievement of agreed functional goals. On discharge, patients must be told how to self-administer medicines safely, wean analgesics, and dispose of unused analgesic medicines as well as being told of the dangers of driving while taking medicines. A patient leaflet should be provided to reinforce these messages. Some painful conditions, such as osteoarthritis of the knee, may require surgical procedures

to treat pain and improve function. Patients with these conditions may be taking opioid medicines before surgery. These opioids should be gradually withdrawn, where possible, after surgery. Local protocols for the prescription of discharge medicines after surgery should be developed to minimise the chances of subsequent inappropriate opioid use. Ideally this should be managed between the hospital and primary care. The hospital discharge letter must explicitly state the recommended opioid dose, amount supplied and planned duration of use. Guidance should be given about necessary medicine review following discharge from hospital. Usually 5 days and no more than 7 days medication should be prescribed.

Limitations and future directions

This is an expert based consensus guidance (practice advisory) using the best available research on the topic. Though this may be viewed as inferior in the hierarchy of 'evidence' due to paucity of high grade evidence, the 'expert consensus based on evidence' of an expert panel has been shown to have real world applicability in clinical practice and has served our profession well.[65,66] Perioperative pain interventions are often 'complex' and are made up of a number of active ingredients or components that interact with each other and other factors to bring about an emergent change to outcomes and are considered to have inherent heterogeneity.[67] The lack of grading of the evidence of each individual recommendation remains a major weakness of this guidance though supporting evidence is quoted for each recommendation and the recommendations and underlying evidence have been rigorously reviewed by experts in this field.

This guidance is a pragmatic synthesis of available evidence on this topic presented in a very practical way. One of the challenges faced was how to handle 'indirect evidence' or evidence regarding opioid use that had been demonstrated in other health systems. The experts had to use their judgement in assessing the direction, magnitude and applicability of the research data prior to applying them within a guidance meant for the United Kingdom. The panel consensus was reached in a phased, deliberate, systematic and transparent manner as shown in Figure 1.

For the future, a few questions need to be answered. These are :

a] What is the population impact of surgical opioid prescribing on the long term use or misuse of opioids in the United Kingdom?

b] What is the population burden of chronic pain patients taking opioids who require surgery in the United Kingdom?

c] Do chronic pain patients taking opioids presenting for surgery need more healthcare input, experience more complications, and have poor outcomes?

d]What is the best method of prehabilitation for chronic pain patients taking opioids prior to surgery?

e] What is the best time and method of opioid de-escalation prior to and after surgery?

f] Does intraoperative opioid use influence long term persistent post surgical pain and opioid use?

We understand the heterogeneity of health systems (structure and delivery) worldwide and outside of the United Kingdom the principles of this guidance should be applied keeping in mind unique local healthcare system characteristics and resources available.

Author contribution:

DS and PW were involved in conceptualisation, design, rapid review, forming the working group for the guideline , formulating the structure and content of the document, collection of expert comments, revising the guidance, resolving disagreements and revising/producing the final manuscript.

SH,MR,RB,RK,NL,SC were members of the expert working party for this guideline and contributed content, ideas and critiques for the document and also were involved in the revision /production of the final manuscript.

JH,DL commented and contributed content as external members on this document and were involved in the revision and production of the final manuscript.

DS wrote the manuscript with help from all authors.

All authors approved the manuscript.

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Disclosure of interest

The authors have no conflicts of interest to report

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