



**FACULTY OF  
PAIN MEDICINE**  
of the Royal College of Anaesthetists

# Surgery and Opioids

---

## Best Practice Guidelines 2020

**VERSION FOR OPEN CONSULTATION: SEPTEMBER 2020**

**TO BE ADDED IN FINAL VERSION:**

OVERALL FINAL DESIGN & FRONT COVER

FINAL PROOFREADING

ATTRIBUTES & ENDORSEMENTS

FINAL REFERENCE FORMAT

Faculty of Pain Medicine / Royal College of Anaesthetists  
Opioid Prescribing Project Working Party 2020

## Contents

<b>INTRODUCTION</b> .....	3
<b>MEMBERSHIP OF THE WORKING PARTY</b> .....	5
<b>EXECUTIVE SUMMARY</b> .....	6
<b>PREOPERATIVE RECOMMENDATIONS</b> .....	6
<b>INTRAOPERATIVE RECOMMENDATIONS</b> .....	7
<b>POSTOPERATIVE RECOMMENDATIONS</b> .....	7
<b>POST DISCHARGE MANAGEMENT</b> .....	8
<b>DETAILED RECOMMENDATIONS</b> .....	9
<b>PREOPERATIVE RECOMMENDATIONS</b> .....	9
<b>INTRAOPERATIVE RECOMMENDATIONS</b> .....	11
<b>POST OPERATIVE RECOMMENDATIONS</b> .....	12
<b>RECOMMENDATIONS FOR POST ANAESTHESIA CARE UNIT (PACU)</b> .....	12
<b>RECOMMENDATIONS FOR THE WARD</b> .....	13
<b>DISCHARGE PLANNING</b> .....	14
Additional recommendations for opioid tolerant patients .....	15
<b>POST DISCHARGE MANAGEMENT</b> .....	16
<b>APPENDIX A</b> .....	17
<b>Approximate equi-analgesic potencies of opioids for oral administration</b> .....	17
<b>Transdermal Opioids</b> .....	18
<b>REFERENCES</b> .....	19

## INTRODUCTION

There is a duty on all practitioners and professional bodies to be responsive to public and governmental concern and to be proactive in minimising public health risks relating to substances of misuse like opioids. The year-on-year reduction in general mortality has been reversed in the USA with opioid misuse being a major component of the increase in mortality.<sup>1</sup> One study in the USA found that the percentage of all deaths attributable to opioids increased by 292% (from 0.4% to 1.5%) between 2001 and 2016.<sup>2</sup>

Opioids are used widely intraoperatively and, used safely and appropriately, still play an important role in postoperative analgesia. Nonetheless, the post-surgical use of opioids is thought to be an important source of problems in the USA. Although we cannot quantify this problem in the UK, concern expressed by individuals and UK publications indicate that the perioperative period is an important source of new persistent opioid use and this cannot be ignored.<sup>3</sup>

We have a duty to act to minimise the role that anaesthesia, surgery and primary care may have in contributing to the “opioid load” in the community in the UK. It is imperative that all healthcare professionals involved in surgery and perioperative care work collaboratively to ensure robust opioid stewardship.<sup>4</sup>

Nearly 4 million surgical procedures are performed annually in the UK.<sup>5</sup> At present there are no national guidelines on perioperative opioid prescribing.

In principle, while ensuring the perioperative plan is drawn up in collaboration with the patient and reflects their choices and involvement in their surgical journey, all involved health practitioners have the following duties:

---

<sup>1</sup> Brandenburg MA. Prescription Opioids Are Associated With Population Mortality in US Deep South Middle-Age Non-hispanic Whites: An Ecological Time Series Study. *Front Public Health*. 2019;7:252. Published 2019 Sep 6. doi:10.3389/fpubh.2019.00252

<sup>2</sup> Gomes T, Tadrous M, Mamdani MM, Paterson JM, Juurlink DN. The Burden of Opioid-Related Mortality in the United States. *JAMA Netw Open*. 2018;1(2):e180217.

<sup>3</sup> E.M. Soffin, B.H. Lee, K.K. Kumar, C.L. Wu. The prescription opioid crisis: role of the anaesthesiologist in reducing opioid use and misuse. *Br J Anaesth*, 122 (2019), pp. e198-e208

<sup>4</sup> Varley PR, Zuckerbraun BS. Opioid Stewardship and the Surgeon. *JAMA Surg*. 2018;153(2):e174875. doi:<https://doi.org/10.1001/jamasurg.2017.4875>

<sup>5</sup> <https://www.rcseng.ac.uk/news-and-events/media-centre/media-background-briefings-and-statistics/surgery-and-the-nhs-in-numbers/>

- 1) To ensure that opioids started in the perioperative period are not continued unnecessarily. Recent data from the USA reports that approximately 6% of surgical patients (versus 0.4% of the non-surgical cohort) persistently use opioids 90-180 days after surgery (both major and minor).<sup>6,7</sup>
- 2) To ensure that patients taking opioids are identified before surgery.<sup>8</sup>
- 3) To identify risk factors for opioid misuse disorder (e.g. anxiety, depression<sup>9</sup> and use of other psychoactive drugs) and ensure patients have access to relevant preoperative and/or subsequent care.<sup>8,9</sup>
- 4) To ensure that deprescribing procedures/mechanisms exist at the interface between hospital and primary care (e.g. letter/ leaflet/ communication with GP) and that there is effective communication with both the patient and their GP and other relevant healthcare professionals such as nurse prescribers and pharmacists.<sup>10</sup>
- 5) To ensure that chronic post-surgical pain is recognised and treated appropriately.<sup>11</sup>

This document represents the work of a multi-organisational and multidisciplinary collaboration and sets out the guiding principles in opioid management in the perioperative period. As part of the implementation of this document, we will be seeking evidence of observed gaps in care from local and published audits, evidence of improved practice and any issues with implementation of any aspect of this guidance.

Dr Paul Wilkinson and Dr Devjit Srivastava

On behalf of the working party.

<sup>6</sup> C.M. Brummett, J.F. Waljee, J. Goesling, et al. New persistent opioid use after minor and major surgical procedures in US adults. *JAMA Surg*, 152 (2017), p. e170504

<sup>7</sup> Soneji N, Clarke HA, Ko DT, Wijeyesundera DN. Risks of Developing Persistent Opioid Use After Major Surgery. *JAMA Surg*. 2016;151(11):1083–1084. doi:<https://doi.org/10.1001/jamasurg.2016.1681>

<sup>8</sup> J. Goesling, M.J. Henry, S.E. Moser, et al. Symptoms of depression are associated with opioid use regardless of pain severity and physical functioning among treatment-seeking patients with chronic pain. *Pain*, 16 (9) (2015), pp. 844–851, 10.1016/j.jpain.2015.05.010

<sup>9</sup> Psychological preparation and postoperative outcomes for adults undergoing surgery under general anaesthesia. Rachael Powell, Neil W. Scott, Anne Manyande, Julie Bruce, Claus Vögele, Lucie M. T. Byrne-Davis, Mary Unsworth, Christian Osmer, Marie Johnston. *Cochrane Database Syst Rev*. 2016; (5): CD008646. Published online 2016 May 26. doi: 10.1002/14651858.CD008646.pub2

<sup>10</sup> Neuman, Mark D, Brian T Bateman, and Hannah Wunsch. "Inappropriate Opioid Prescription after Surgery." *The Lancet* 393.10180 (2019): 1547-557. Web.

<sup>11</sup> Hinrichs-Rocker, Anke, Schulz, Kerstin, Jarvinen, Imke, Lefering, Rolf, Simanski, Christian, and Neugebauer, Edmund A.M. "Psychosocial Predictors and Correlates for Chronic Post-surgical Pain (CPSP) - A Systematic Review.(Report)." *European Journal of Pain* 13.7 (2009): 719. Web.

## MEMBERSHIP OF THE WORKING PARTY

*Dr Paul Wilkinson, Faculty of Pain Medicine (Chair)*

*Dr Devjit Srivastava, Faculty of Pain Medicine*

*Dr Ruth Bastable, Royal College of General Practitioners*

*Dr Suzanne Carty, Faculty of Pain Medicine*

*Professor William Harrop-Griffiths, Royal College of Anaesthetists*

*Miss Susan Hill, Royal College of Surgeons of England*

*Dr Nicholas Levy, Royal College of Anaesthetists*

*Dr Mark Rockett, Royal College of Anaesthetists*

### Corresponding members:

*Dr Roger Knaggs, British Pain Society*

*Heather Randle, Royal College of Nursing*

*Dr Louise Sell, Royal College of Psychiatry*

*Professor David Lambert, University of Leicester and British Journal of Anaesthesia*

### **Acknowledgement**

*We would like to thank Mrs Emmy Kato-Clarke, Mr Daniel Waeland and Ms Caitlin McNulty from the Faculty of Pain Medicine for their untiring efforts in ensuring that this guideline was formulated, discussed and published in a reasonable timeframe.*

Website: <https://fpm.ac.uk>

Email: [contact@fpm.ac.uk](mailto:contact@fpm.ac.uk)

**To be reviewed 2023.**

## EXECUTIVE SUMMARY

### *Key aims:*

1. All healthcare professionals involved in perioperative care should collaborate to provide the highest standards of patient-centred care including opioid stewardship.
2. Opioids should be used judiciously by healthcare professionals. This means using opioids when necessary but stopping opioids when they are no longer required.

## PREOPERATIVE RECOMMENDATIONS

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

1. Preoperative assessment: Patients should be screened for chronic pain and opioid use in the preoperative period. The Oral Morphine Equivalent per 24 hours (OME) of prescribed opioids should be noted (see Appendix A).
2. Prehabilitation (optimisation before surgery) should ensure optimal management of preoperative pain including opioid prescribing, psychological preparation and education / expectation management.
3. Complex cases:
  - a. Referral to a pain specialist should be considered in complex pain cases.
  - b. Opioid weaning should be considered before surgery if feasible.
4. Perioperative management plan: A perioperative management plan should be formulated with the patient and communicated to the surgical and anaesthetic team.

## INTRAOPERATIVE RECOMMENDATIONS

*Action: anaesthetists, surgeons*

1. Intraoperative pain management should include multimodal analgesia and opioid-sparing analgesic techniques.
2. Evidence-based, procedure-specific analgesic techniques should be used when evidence is available.
3. Perioperative pain management techniques must be tailored to individual patients.

## POSTOPERATIVE RECOMMENDATIONS

*Action: anaesthetists, surgeons, other healthcare professionals*

1. Pain relief should be optimised before leaving the postoperative recovery area (PACU -post anaesthesia care unit). This includes ensuring that a proper handover of pain management plan to ward /HDU/ICU nurses is performed and signposting staff who could be called for resolving pain management issues if required.
2. Functional pain assessment: 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 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.
3. 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 or NSAIDs are not effective enough to allow the achievement of agreed functional goals.
4. Advice on medicine self administration: On discharge, patients must be advised how to self-administer medicines safely, wean analgesics, dispose of unused analgesic medications and of

the dangers of driving/operating machinery while taking opioid medicines. The dangers of mixing opioids with alcohol and other illicit drugs that increase risk of harm should be communicated. A patient leaflet should be provided to reinforce these messages.

5. Local protocols for the prescription of discharge medications after surgery (“TTOs”) should be developed to minimise the chances of subsequent inappropriate opioid use. Ideally this should be managed between the hospital and primary care.
6. The hospital discharge letter must explicitly state the recommended opioid dose, amount supplied and planned duration of use.
7. Identification of patients for de-escalation of opioids: 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 medications before surgery. These opioids should be gradually withdrawn, where possible, after surgery.
8. Medicine review post discharge: 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.

## **POST DISCHARGE MANAGEMENT**

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

1. Persistent post-surgical pain is defined by IASP (International Association for Study of Pain) as a clinical discomfort that lasts more than 2 months post-surgery without other causes of pain such as chronic infection or pain from a chronic condition preceding the surgery. This requires assessment either by a GP or pain specialist, and a possible referral to the operating surgeon. Opioids are not normally appropriate longer-term treatment for chronic pain including persistent post-surgical pain.



## DETAILED RECOMMENDATIONS

### PREOPERATIVE RECOMMENDATIONS

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

1. Preoperative assessment:

- a. Preoperative assessment for complex pain patients with pain 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 for assessment of pain.<sup>1,2-4</sup> This should include a psychosocial assessment and medication history, including psychiatric drugs, analgesics, alcohol and illicit drugs.

2. Prehabilitation:

- a. Consideration should be given to reducing preoperative anxiety and catastrophising,<sup>5,6</sup> as this may have value in improving post-surgical outcomes including pain.
- b. Preoperative counselling must include working collaboratively with the patient and expectation management regarding opioid use and perioperative pain management.<sup>7</sup> 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: (Additional preoperative recommendations for opioid tolerant patients)

- a. For complex pain patients on high dose opioids, the opinion of a pain specialist<sup>7</sup> 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)<sup>8</sup> 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 60 mg of OME for  $\geq 7$  days.<sup>9,10</sup> Avoid escalating opioid doses before surgery.
  - d. If the oral route is unavailable immediately after surgery, opioid conversion should be made to parenteral morphine.
  - e. Prehabilitation (optimisation before surgery) should include optimal management of preoperative pain and optimisation of opioids and other pain/adjuvant medications. In selected cases, weaning of opioids should be considered before surgery.<sup>11,12</sup>
  - 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.<sup>13</sup>
  - h. Opioid-sparing adjuncts should be considered.
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.

## INTRAOPERATIVE RECOMMENDATIONS

*Action: anaesthetists, surgeons*

1. Intraoperative pain management should follow the principles of
  - a. Promotion of early functional return, i.e. drinking, eating and mobilisation.<sup>14</sup>
  - b. Multimodal analgesia- Multimodal analgesia has been shown to be opioid sparing and provides superior pain relief.<sup>15,16,17</sup>
  - c. Opioid sparing analgesia techniques- Opioid sparing techniques and use of opioid sparing adjuvants are encouraged.<sup>18</sup>
2. PROSPECT (Procedure specific analgesic techniques) recommendations for analgesia should be used rather than over reliance on the WHO pain ladder.<sup>19</sup>
3. Pain management techniques 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, taking into account the type of surgery, patient comorbidities and pre-existing medicines use.

## POST OPERATIVE RECOMMENDATIONS

*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.<sup>20</sup>
3. Postoperative pain assessment and pain management strategies must promote return of normal function, i.e. drinking, eating, movement and mobilisation.

## **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,<sup>21</sup> where

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

B — mild limitation of activity due to pain

C — unable to complete activity due to pain.

2. Patients with complex pain problems:
  - 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. <sup>22</sup>In patients with complex pain problems, an elevated pain intensity taken in isolation should not

be a sole indicator to administer further opioids. A pain assessment is needed. Repeated elevated pain intensity scores should trigger further assessment and experienced input. An elevated pain intensity score should not be a sole indicator for a delay to discharge from PACU.

- b) 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 medications.
  - 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.<sup>23-28</sup>
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.<sup>29</sup> The prescribed dose of the 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, 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 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.
4. The Inpatient Pain Service should be involved in the post-surgical care of the opioid tolerant patient.<sup>30</sup> In patient psychology input may be needed to manage these patients.<sup>31,32</sup>

5. Patients on gabapentinoids should be identified and the indication for the gabapentin / pregabalin reviewed. Gabapentinoids should be tapered off if no longer indicated.<sup>33</sup>

## 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 medication safely, wean analgesics and dispose of unused analgesic medications. 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.<sup>34</sup>
2. A protocol for discharge medication should be used as it reduces subsequent opioid use.<sup>35-39</sup>

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.
  - 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.<sup>40</sup>
3. The hospital discharge letter should be available in a timely way and provided to all healthcare professionals involved in 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.

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.<sup>37</sup>
  - 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.<sup>41,42</sup>

## POST DISCHARGE MANAGEMENT

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

1. Patients must be guided and informed to dispose of unused opioid medication safely to avoid both diversion and subsequent inappropriate use. Safe disposal must involve taking excess medication to the community or hospital pharmacy. Post operative opioids must not be added to a 'repeat' prescribing template. They should only ever be added to the patient's record as an acute medication and must be reviewed at each issue by the prescriber.<sup>43</sup>
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.<sup>44-46</sup>
3. Patients on gabapentinoids should be identified and the indication for the gabapentin / pregabalin reviewed.<sup>33</sup> Gabapentinoids should be tapered off if no longer indicated.
4. Pain related and opioid related readmissions should be notified to the Inpatient Pain team.<sup>47</sup>



## APPENDIX A

*Source: Opioids Aware:<sup>28</sup> Dose equivalents and changing opioids*

### Approximate equi-analgesic potencies of opioids for oral administration

	Potency	Equivalent dose to 10mg oral morphine
Codeine phosphate	0.1	100mg
Dihydrocodeine	0.1	100mg
Hydromorphone	5	2mg
Methadone	*	*
Morphine	1	10mg
Oxycodone	1.5	6.6mg
Tapentadol	0.4	25mg
Tramadol	0.1	100mg

\* The relative potency of **methadone** depends on the starting dose and the duration of administration.

*Conversions to and from methadone should always be undertaken with specialist advice*

**Transdermal Opioids****A. Buprenorphine***Transdermal buprenorphine changed at weekly intervals*

	5 microgram/hr	10 microgram/hr	20 microgram/hr
Codeine phosphate (mg/day)	120mg	240mg	
Morphine sulphate (mg/day)	12mg	24mg	48mg

*Transdermal buprenorphine changed every three or four days (twice weekly)*

	35 microgram/hr	52 microgram/hr	70 microgram/hr
Morphine sulphate (mg/day)	84mg	126mg	168mg

**B. Fentanyl**

Fentanyl patch strength (microgram/hr)	Oral morphine (mg/day)
12	30
25	60
50	120
75	180
100	240

**Further Reading***Faculty of Pain Medicine ANZCA. Opioid Dose Equivalence.*<https://fpm.anzca.edu.au/documents/opioid-dose-equivalence.pdf>

## REFERENCES

1. Faculty of Pain Medicine. Conducting Quality Consultations in Pain Medicine. 2018. Available online at <https://fpm.ac.uk/media/286>.
2. Perioperative Medicine – The Pathway to Better Surgical Care” Royal College Anaesthetists (2015). Available online at <https://www.rcoa.ac.uk/sites/default/files/documents/2019-08/Perioperative%20Medicine%20-%20The%20Pathway%20to%20Better%20Care.pdf>
3. Kalkman CJ, Visser K, Moen J et al Preoperative prediction of severe postoperative pain. *Pain* 2003; 105: 415-23 3.
4. Janssen K, Kalkman CJ, Grobbee DE et al The risk of severe postoperative pain: modification and validation of a clinical prediction rule. *Anesth Analg* 2008; 107:1330-9 )
5. Faculty of Pain Medicine, PHE. Opioids Aware: Dose equivalents and changing opioids. Available online at <https://fpm.ac.uk/opioids-aware-structured-approach-opioid-prescribing/dose-equivalents-and-changing-opioids>.
6. Nielsen S, Degenhardt L., Hoban B, Gisev NA. Synthesis of oral morphine equivalents (OME) for opioid utilisation studies. *Pharmacoepidemiol Drug Saf* 2016;25(6):733-737. doi:10.1002/pds.3945 [doi]
7. Colvin, L.A., Bull, F. & Hales, T.G. "Perioperative opioid analgesia-when is enough too much? A review of opioid-induced tolerance and hyperalgesia", *Lancet* (London, England), 2019;vol. 393, no. 10180, pp. 1558-1568.
8. Faculty of Pain Medicine, PHE. Opioids Aware: Dose equivalents and changing opioids. Available online at <https://fpm.ac.uk/opioids-aware-structured-approach-opioid-prescribing/dose-equivalents-and-changing-opioids>.
9. Nielsen S, Degenhardt L., Hoban B, Gisev NA. Synthesis of oral morphine equivalents (OME) for opioid utilisation studies. *Pharmacoepidemiol Drug Saf* 2016;25(6):733-737. doi:10.1002/pds.3945 [doi]
10. Colvin, L.A., Bull, F. & Hales, T.G. "Perioperative opioid analgesia-when is enough too much? A review of opioid-induced tolerance and hyperalgesia", *Lancet* (London, England), 2019;vol. 393, no. 10180, pp. 1558-1568.
11. Nguyen LC, Sing DC, Bozic KJ. Preoperative reduction of opioid use before total joint arthroplasty. *J Arthroplasty* 2016; 31(9 Suppl): 282e7
12. McAnally, H. Rationale for and approach to preoperative opioid weaning: a preoperative optimization protocol. *Perioper Med* 2017;6,19 doi:10.1186/s13741-017-0079-y
13. Quinlan, J. & Cox, F. "Acute pain management in patients with drug dependence syndrome", *Pain reports*, 2017; vol. 2, no. 4, pp. e611.
14. Levy N, Mills P, Mythen M. Is the pursuit of DREAMing (drinking, eating and mobilising) the ultimate goal of anaesthesia? *Anaesthesia* 2016; 71: 1008–12
15. Pitchon DN, Dayan AC, Schwenk ES, Baratta JL, Viscusi ER. Updates on multimodal analgesia for orthopedic surgery. *Anesthesiol Clin* 2018;36(3):361-373. doi:S1932-2275(18)30051-X [pii]
16. Memtsoudis SG, Poeran J, Zubizarreta N, et al. Association of multimodal pain management strategies with perioperative outcomes and resource utilization: A population-based study. *Anesthesiol* 2018;128(5):891-902. doi:10.1097/ALN.0000000000002132 [doi]
17. Tan M, Law LS, Gan TJ. Optimizing pain management to facilitate enhanced recovery after surgery pathways. *Can J Anaesth* 2015;62(2):203-218. doi:10.1007/s12630-014-0275-x [doi]
18. Sultana A, Torres D, Schumann R. Special indications for opioid free anaesthesia and analgesia, patient and procedure related: Including obesity, sleep apnoea, chronic obstructive pulmonary disease, complex regional pain syndromes, opioid addiction and cancer surgery. *Best Pract Res Clin Anaesthesiol* 2017;31(4):547-560. doi:S1521-6896(17)30082-4 [pii]
19. PROSPECT Procedure Specific Postoperative Pain Management. Better Postoperative Pain Management. Available online at <http://www.postoppain.org/>
20. Maureen V. Hill, et al. Wide Variation and Excessive Dosage of Opioid Prescriptions for Common General Surgical Procedures. *Ann Surg*. 2016 Sep 14.
21. N Levy, J Sturgess, P Mills. "Pain as the fifth vital sign" and dependence on the "numerical pain scale" is being abandoned in the US: Why? *British journal of anaesthesia*, 2018; 120 (3), 435-438.
22. Joshi GP, Kehlet H, Beloeil H et al. Guidelines for perioperative pain management: need for re-evaluation. *British Journal of Anaesthesia*. 2017; 119:703-6.e Leon-Casasola OA. Cellular mechanisms of opioid tolerance and the clinical approach to the opioid tolerant patient in the post-operative period. *Best Pract Res Clin Anaesthesiol* 2002;16(4):521-525. doi:S1521-6896(02)90257-0 [pii].
23. Frederickson TW, et al. Reducing Adverse Drug Events Related to Opioids Implementation Guide. Philadelphia: Society of Hospital Medicine, 2015.

24. Jarzyna D, et al. American Society for Pain Management Nursing Guidelines on Monitoring for Opioid-Induced Sedation and Respiratory Depression. *Pain Management Nursing: Official Journal of the American Society of Pain Management Nurses, American Society for Pain Management Nursing*, 2011;12(3):118-45.
25. Chris Pasero. Assessment of sedation during opioid administration for pain management. *J Perianesth Nurs*. 2009 Jun; 24(3): 186–190. doi: 10.1016/j.jopan.2009.03.005
26. Sessler CN, Grap MJ, Ramsay MA. Evaluating and monitoring analgesia and sedation in the intensive care unit. *Crit Care*. 2008;12 Suppl 3(Suppl 3):S2. doi:10.1186/cc6148
27. Ramsay MAE, Savage TM, Simpson BRJ, et al: Controlled sedation with alphaxalone. *BMJ* 1774;2:656-650.
28. Mascarenhas M, Srivastava D et al. Using the Model for Improvement to implement the Critical-Care Pain Observation Tool in an adult intensive care unit *BMJ Open Quality* 2018;7:e000304. doi: 10.1136/bmjopen-2017-000304
29. N. Levy, P. Mills. Controlled-release opioids cause harm and should be avoided in management of postoperative pain in opioid naive patients. *Br J Anaesth*, 122 (2019), pp. e86-e90.
30. Rockett M et al. Guidelines for the Provision of Anaesthesia Services (GPAS). Guidelines for the Provision of Anaesthesia Services for Inpatient Pain Management 2019 <https://www.rcoa.ac.uk/system/files/GPAS-2019-11-PAIN.pdf>
31. Sussman M, Goodier E, Fabri I, et al. Clinical benefits, referral practice and cost implications of an in-hospital pain service: results of a service evaluation in a London teaching hospital. *Br J Pain*. 2017;11(1):36-45. doi:10.1177/2049463716673667
32. Childs SR, Casely EM, Kuehler BM, et al. The clinical psychologist and the management of inpatient pain: a small case series. *Neuropsychiatr Dis Treat*. 2014;10:2291-2297. Published 2014 Dec 2. doi:10.2147/NDT.S70555
33. Medicines and Healthcare products Regulatory Agency. 2017. Gabapentin (Neurontin): risk of severe respiratory depression. <https://www.gov.uk/drug-safety-update/gabapentin-neurontin-risk-of-severe-respiratory-depression>.
34. Faculty of Pain Medicine. Opioids Aware resource. Available online at <https://fpm.ac.uk/opioids-aware>.
35. Clarke H, Soneji N, Ko, DT, Yun L, Wijeyesundera DN. Rates and risk factors for prolonged opioid use after major surgery: Population based cohort study. *BMJ* 2014;348: g1251. doi:10.1136/bmj.g1251 [doi]
36. Sun EC, Darnall BD, Baker LC, Mackey S. Incidence of and risk factors for chronic opioid use among opioid-naive patients in the postoperative period. *JAMA Intern Med* 2016;176(9):1286-1293. doi:10.1001/jamainternmed.2016.3298 [doi]
37. Brat GA, Agniel D, Beam A., et al. Post surgical prescriptions for opioid naive patients and association with overdose and misuse: Retrospective cohort study. *BMJ* 2018;360;j5790. doi:10.1136/bmj.j5790 [doi]
38. Calcaterra SL, Yamashita, TE, Min SJ, Keniston, A, Frank JW, Binswanger IA. Opioid prescribing at hospital discharge contributes to chronic opioid use. *J Gen Intern Med* 2016;31(5):478-485. doi:10.1007/s11606-015-3539-4 [doi]
39. Wetzel M, Hockenberry J, Raval MV. Interventions for postsurgical opioid prescribing: A systematic review. *JAMA Surgery* 2018;153(10):948-954. doi:10.1001/jamasurg.2018.2730 [doi]
40. Huang CC, Sun WZ, Wong CS. Prevention of chronic postsurgical pain: The effect of preventive and multimodal analgesia. *Asian J Anesthesiol* 2018;56(3):74-82. doi:10.6859/aja.201809\_56(3).0002 [doi]
41. Hah JM, Bateman BT, Ratliff J, Curtin C, Sun E. Chronic Opioid Use After Surgery: Implications for Perioperative Management in the Face of the Opioid Epidemic. *Anesth Analg*. 2017;125(5):1733–1740. doi:10.1213/ANE.0000000000002458
42. Joel Katz, Aliza Z. Weinrib, Hance Clarke. (2019) Chronic postsurgical pain: From risk factor identification to multidisciplinary management at the Toronto General Hospital Transitional Pain Service. *Canadian Journal of Pain* 3:2, pages 49-58.
43. Mark D Neuman, Brian T Bateman, Hannah Wunsch. Inappropriate opioid prescription after surgery. *Lancet*. 2019 Apr 13; 393(10180): 1547–1557. doi: 10.1016/S0140-6736(19)30428-3
44. Maureen V. Hill, et al. Wide Variation and Excessive Dosage of Opioid Prescriptions for Common General Surgical Procedures. *Ann Surg*. 2016 Sep 14.
45. Gilron, I., Carr, D. B., Desjardins, P. J., & Kehlet, H. (2018). Current methods and challenges for acute pain clinical trials. *Pain reports*, 4(3), e647. doi:10.1097/PR9.0000000000000647.
46. Hemmings, Hugh C. et al. The good, the bad, and the ugly: the many faces of opioids. *British Journal of Anaesthesia*, Volume 122, Issue 6, 705 – 707
47. Levy, Nicholas et al. Post-surgical pain management: time for a paradigm shift. *British Journal of Anaesthesia*, Volume 123, Issue 2, e182 - e186