Preventing progression to persistent pain

CATAG Teaching Tool

Each day in Australia there are...

3
deaths involving opioids

12
emergency department presentations with a principal diagnosis of opioid poisoning

75
hospitalisations involving a side effect of a pharmaceutical opioid[1]

Introduction

Opioid analgesics are high-risk medicines widely used in hospitals to manage acute pain. However, they carry significant potential for harm and misuse.

The progression of postoperative opioid use from short to long-term (>3 months) use is influenced by several factors, including opioid-induced dependence and hyperalgesia as well as inappropriate use and overuse of opioids after surgery.[3] Medicines and Therapeutics Advisory Committees are encouraged to support opioid analgesic stewardship programs and provide patient-centred education across the perioperative continuum of care:

- Preadmission
- Recovery
- Postoperative
- Preoperative
- Intraoperative
- Discharge
- Follow-up

These programs should incorporate a multidisciplinary approach to patient-centred education and include discussion about pain expectations and perception, along with a pain management plan.

This case scenario should be used as a teaching tool by clinical educators in education sessions for medical officers, nurses, pharmacists, and students. It provides a clinical example of an opioid analgesic stewardship program and optimising perioperative pain management in acute care settings, across all phases and providers throughout the perioperative continuum of care.[2]

It can be used by educators to stimulate discussion of current practice and opportunities for quality improvement. Medicines and Therapeutics Advisory Committees should share this Teaching tool along with the Practice tool with clinical educators.

Case Scenario for prevention of persistent pain

The case below occurs in a hospital that has an opioid analgesic stewardship program in place. The opioid analgesic stewardship program involves a multidisciplinary team of healthcare professionals, including physicians, pharmacists, nurses, allied health and pain management specialists, who work collaboratively to promote safe and judicious opioid use. The hospital has several tools in place to support best practice, such as guidelines and protocols for pain assessment and management, including multimodal analgesics, risk assessment tools, discharge plans, systems for follow-up, audit and feedback tools, and educational resources for patients.

Preadmission clinic

Mike Green is a 28-year-old male presenting to the preadmission clinic with his wife Kym. Two weeks ago, he sustained a distal tibial and fibula plafond fracture jumping from scaffolding at work; he has been in a back slab for immobilisation. He will undergo open reduction and internal fixation surgery and is reviewed by the preadmission clinic team consisting of a nurse, physiotherapist, pharmacist and anaesthetist.

Discussion Points

What are the potential roles of the multidisciplinary team in the preadmission clinic?

When reviewing pain preoperatively, what questions can you ask to help assess risk for persistent pain and optimise perioperative pain management?

The **preadmission clinic nurse** records Mike's observations, assesses his skin and circulation around the back slab, and goes through his self-completed history form. The nurse also explains to Mike and Kym what to expect on the day of surgery and what to bring with them (the hospital's admission brochure is provided to them). The nurse recommends mindfulness and meditation, such as Meditation for Pain – Headspace, and encourages Mike to make sure he meets his sleep requirements and eats well leading up to surgery. The nurse provides Mike with the hospital's 'How to prepare for surgery' leaflet.

Preadmission clinic nurse notes

Observations

- *Nil abnormalities detected. Pain score 4/10 at rest, 9/10 on movement*

Site of injury

- *Pink warm sensation, full under 2 seconds capillary return*
- *Back slab ill-fitting, very loose*

Self-completed history form

- *Obstructive sleep apnoea, patient refuses to use continuous positive airway pressure*
- *Smoking 4 cigarettes daily*
- *Mike has been keeping his leg mostly elevated*
- *Reports pain improved as swelling decreased*
- *Bowels have not opened in last 5 days*

Social

- *Mike needs WorkCover* certificate*
- *Mike and Kym are anxious about the surgery and Mike being off work affecting their income*

Meditation for Pain - Headspace

*WorkCover may be known as different entities in different jurisdictions such as SafeWork, ReturntoWork, WorkSafe.

Table 1: Mike Green's medication history and action plan

Medication history		Action
Paracetamol 1000 mg four times daily when required	Mike is unaware of the benefit of taking regular paracetamol and admits he doesn't take it	**The pharmacist changes the paracetamol to modified release (MR) to improve adherence; paracetamol education given**
Ibuprofen 400 mg three times daily when required	Mike reports using intermittently "if tapentadol doesn't cut it"	**Ibuprofen education given, including temporarily withholding prior to surgery**
Tapentadol 50 mg slow release (SR) twice daily	Mike started taking this 10 days ago, as prescribed by his GP. Mike reports regular use, at the prescribed dose	**Usage confirmed using Real Time Prescription Monitoring program and evidence of this review documented**
Tapentadol 50 mg immediate release (IR) when required, up to 4 per day	Mike started taking this 10 days ago, as prescribed by his GP. Mike reports using 1 tablet, when required, at an average of 2 doses per day. Not covered by Pharmaceutical Benefits Scheme; Kym concerned about ongoing costs.	**Usage confirmed using Real Time Prescription Monitoring program and evidence of this review documented**
Smoking daily	Mike admits escalating cigarette use due to "being bored" and anxious	**Smoking cessation education given, and nicotine replacement therapy recommended**
Aperients	Mike denies using any aperients, despite constipation	**Laxatives recommended and written information provided**

The **preadmission pharmacist** obtains a Best Possible Medication History, and prepares a perioperative medication management plan, taking into consideration Mike's history of pain and pain management strategies. Mike's medicines are detailed in Table 1.

The **preadmission physiotherapist** discusses the use of non-pharmacological strategies with Mike to manage his pain, including the use of cold therapy, elevation and relaxation techniques. The physiotherapist encourages Mike to use the hand weights he has at home to maintain his strength for the use of crutches after surgery. The physiotherapist provides a clear plan for mobility and rehabilitation.

Best Possible Medication History

The **preadmission anaesthetist** assesses anaesthetic risks and appropriateness of low-opioid anaesthesia techniques such as intravenous (IV) local anaesthetic infusion, IV dexmedetomidine, IV ketamine infusion, IV clonidine, IV parecoxib or IV paracetamol. The anaesthetist talks with Mike about the anaesthesia process, what he should expect on the day of surgery, and the postoperative plan. The discussion includes the likely severity and duration of postoperative pain, and the questions that will be used to assess his pain postoperatively.

The anaesthetist emphasises that poorly managed preoperative pain can result in up-regulation of pain pathways and, together with Mike, designs a pain management plan with the aim of reducing his opioid use leading up to surgery. The Faculty of Pain Medicine ANZCA Opioid Calculator[4] is used to compare his tapentadol dose to other available opioids:

> Tapentadol 200 mg daily ≈
> 60 mg oral morphine equivalent daily ≈
> oxycodone 40 mg daily[4]

Mike's preoperative analgesia regimen:

- Paracetamol MR 1330 mg three times daily (maximum daily dose)
- Ibuprofen 400 mg three times daily
- Oxycodone IR 5 to 10 mg three times daily when required

This regimen is communicated to Mike and his GP in writing. The preadmission pharmacist provides counselling on the difference between paracetamol and paracetamol SR dosing and maximum doses, as well as counselling on ibuprofen: side effects, when and how to take, and to ensure no doses are taken in the 24 hours prior to surgery. The pharmacist also counsels on the change from SR tapentadol to IR oxycodone, taken when required, and explains how this change is a dose reduction. The pharmacist reminds Mike of the best way to use opioids, the possible side effects, and advises that reducing their use prior to surgery can be beneficial.

Mike is assessed for **risk of developing persistent pain**. While there are several resources that discuss possible risks for progression to persistent pain, it is important to note there is currently no validated, universally accepted assessment tool for chronic postsurgical pain or persistent postoperative pain.[5]

There are several resources that discuss risks for progression to persistent pain:

- ANZCA Acute pain management: scientific evidence[6]
- ANZCA Position statement on acute pain management 2023[7]
- Therapeutic Guidelines[8]
- The Flag System[9]

The risk factors for developing persistent postoperative pain are often grouped based on people's characteristics, psychological variables, pain history and type of surgery. In this case scenario, the team use the locally endorsed list to document the risks for progression of acute to persistent pain for Mike.[9,10]

Discussion Points

Consider how your hospital identifies and addresses the risk of progression from acute to persistent pain.

What strategies does your hospital employ for early identification of preoperative anxiety and catastrophising?

How does each member of the multidisciplinary preadmission clinic team at your hospital contribute to preventing persistent pain?

Table 2: Mike's identified risk factors for persistent postoperative pain and clinical team actions

Observation	Actions
Signs of serious pathology	
Fracture	Explanation by team using appropriate health literacy level for Mike and Kym. Areas explained include injury, surgery, postoperative expectations such as pain, mobilisation and recovery time frames
Excessive swelling	This is resolving. Physiotherapist and nurse communicate to Mike that waiting to operate improves outcomes
Ongoing high-level pain 9/10	Leg assessment, cast adjusted by physiotherapist. → Opioid rotation by anaesthetist and plan for low-opioid anaesthetic
Pain poorly responsive to opioids	Opioid rotation, changed to oxycodone by anaesthetist. → Referral made to acute pain service for postoperative pain management
Psychiatric symptoms	
Depression risk if ongoing	Mike is highly stressed and catastrophising; aim to decrease his stressors → Nurse recommends meditation as a relaxation technique → Refer to social worker to provide opportunity to talk to counselling professional, understand WorkCover, to learn stress reduction strategies and relaxation techniques
Perceptions of relationship between work and health	
WorkCover	Injury compensation benefits are associated with higher risk of persistent pain[11]
System or contextual obstacles	
Kym is aggressive and defensive with health providers and unhappy waiting for surgery.	With Mike's consent, include Kym in all interactions → Team reiterates reason for waiting to operate is for swelling to reduce
Climbing job; difficult to modify work	Physiotherapist to provide clear mobility and rehabilitation plan with time frames
Beliefs, appraisals and judgements	
Mike believes his pain has increased because surgery is not occurring immediately; he is worried about increased tissue damage	Clear explanation of reason for delay in surgery after injury → Education provided by anaesthetist that pain is a protective mechanism occurring due to ongoing 'overprotection' of the injury, not increased tissue damage. Anaesthetist reassures Mike that his surgery is curative and, over time, his pain will reduce as he heals → Physiotherapist assures Mike that increasing his function and activity will help decrease the 'overprotective system' as he gets stronger
Mike feels "it's stuffed"	Physiotherapist discusses the outcomes for surgery and explains most patients regain full function with rehabilitation
Emotional responses	
Mike is highly worried and fearful	Team provides education and reassurance (relating to surgery, analgesia and rehabilitation) to reduce stress
Pain behaviour including pain coping strategies	
Mike is concerned about having limited physical activity, and is worried about pain when mobilising after surgery	Physiotherapist reassures Mike with an explanation of healing, mobility and timeline
Mike has relied on opioids for pain; he has not been taking paracetamol	Pharmacist provides medicines education (e.g. role of paracetamol) and provides suggestions of other analgesic modalities, including distraction, relaxation, cold therapy and elevation.

Adapted from the Flag System developed by Butler and Moseley[9, 10]

Day of surgery

As per the hospital's protocol, Mike and Kym's expectations and education regarding perioperative analgesia are revisited prior to the administration of sedatives or anxiolytics on the day of surgery. Mike and Kym participate in shared decision-making to finalise the perioperative anesthetic and analgesic plan and complete consent documentation.[2]

Discussion Points

Does your hospital have any pathways to guide best practice for management of postoperative pain?

What strategies are used in the local pathway?

Intraoperative

Anaesthetic pathways, such as Enhanced Recovery After Surgery (ERAS) pathways, should be developed by perioperative teams at the institutional level, with quality procedure-specific reviews and recommendations available (e.g. Guidelines - ERAS® Society, Prospect – procedure specific postoperative pain management).[2, 12, 13]

Recovery and postoperative

Mike wakes on arrival to the post-anaesthesia care unit with a ketamine infusion. His pain is 8/10 (on a numeric rating scale) and he is administered oxycodone 10 mg IV and paracetamol 1 g orally. His pain on the ward is managed by the acute pain service; he continues oral IR oxycodone 10 to 15 mg four times daily as needed, regular paracetamol MR 1330 mg three times daily and celecoxib 200 mg twice daily (to be reviewed after 5 days).

A multidisciplinary team approach is used to encourage Mike to be independent and provide a positive prognosis with Mike's participation in rehabilitation. Mike's pain assessment focuses not only on pain scores, but functional assessment (using hospital-validated tools. Tools can be found in the Opioid Analgesic Stewardship in Acute Pain Clinical Care Standard Quality statement 2 - Acute pain assessment resources).

Mike's pain management is guided by the expected severity of pain, assessment of patient-reported pain intensity and the impact of pain on his function. Whilst an inpatient, Mike uses oxycodone for analgesia prior to physiotherapy and showering. The acute pain service provides pain and analgesia education, including relaxation strategies.

The physiotherapist encourages Mike to use his crutches to mobilise and provides management strategies such as pacing his activities.

The social worker addresses Mike and Kym's concerns about WorkCover and assists with stress management strategies. The team monitors Mike regularly for treatment-related side effects and reviews his response. Mike reports his pain is currently under control. Mike has continued with nicotine patches, and his bowels are working. The team has documented Mike's pain management plan in the medical record.

Guidelines - ERAS® Society

Prospect – procedure specific postoperative pain management

Quality statement 2 - Acute pain assessment resources

Discharge

Mike has used oxycodone 40 mg orally in the last 24 hours. He can be discharged on day 3 postoperatively with the following PMDP:

- Paracetamol MR 1330 mg three times daily
- Ibuprofen 400 mg three times daily
- Oxycodone IR 5 to 10 mg up to four times daily when required (maximum 40 mg daily)

Discussion Points

Does your hospital have a standardised pain management discharge plan?

What is your hospital's policy with regards to postoperative discharge planning and the amount of oxycodone dispensed?

What is your hospital's policy with regards to IR versus SR opioids? Should people go home on SR opioids?

Write a PMDP for Mike. What key elements would you include?

Are there barriers to providing such a discharge plan? How could they be overcome?

The PMDP considers the judicious use of analgesics informed by the anticipated trajectory of pain, response, side effects and use in the preceding 24 hours. It is crucial to communicate and discuss the PMDP with Mike, his GP, and other community clinicians to ensure safe ongoing management and care tailored to the individual. A clear PMDP is provided (see below). A hospital discharge letter is sent to Mike's GP and the surgical resident medical officer discharging Mike, Dr Ahmad, advises Mike to make an appointment with his GP in 5 days for ongoing review.

The ward pharmacist supplies the medicines and provides counselling so that Mike and Kym understand the PMDP, including intended duration of use. The pharmacist revisits the expected adverse effects of oxycodone, how to treat these and when to contact his doctor, and provides written information on the use of oral analgesia. Appropriate storage and disposal of medicines is also discussed.

Follow-up

Mike sees his GP 5 days after discharge for review of his pain medicine plan. He has found meditation greatly beneficial for pain management and relief of anxiety. The GP discusses some function-based goals that are achievable for Mike over the next 2 to 3 months.

The hospital pharmacist follows up with Mike 90 days after discharge, according to the hospital's local policy. Mike reports he is recovering well, with minimal pain, only requiring paracetamol.

Pain medicine discharge plan for Mike Green

This plan tells you what medicine to take for your pain when you leave hospital and what to do next. The medicine has been prescribed for you after your admission on 11 June 2024 for postoperative pain after an open reduction and internal fixation of distal tibia fracture.

Please take this plan to show your GP Dr Yu at your next visit on 19 June 2024. He will discuss your analgesia use and ongoing plan. You may require a few more days of stronger medication then be able to cease this kind of medication.

STOP SECOND	**Regular pain medicine**	**Take these medicines at regular intervals to help with pain**		
	Paracetamol modified release (MR) 665 mg tablet	**How many tablets:**	2	**You will probably need this medicine for:** 1 to 2 weeks
		How often/times a day:	Three times each day	
		Maximum tablets each day:	6	
	Anti-inflammatory medicine: Ibuprofen 200 mg	**How many tablets:**	2	**You will probably need this medicine for:** 7 days
		How often/times a day:	Three times each day	
		Maximum tablets each day:	6	
STOP FIRST	**As-needed pain medicine**	**Take these medicines only if needed for strong pain**		
	Opioid (or morphine-like) medicine	**These medicines are for strong pain, take if needed. Take these medicines if pain makes it too hard for you to do things like: get out of bed, go for a walk, do physiotherapy or other activities you enjoy**		
	Oxycodone immediate release (IR) 5 mg tablet	**How many tablets:**	1 to 2	**You will probably need this medicine for:** 7 days
		How often/times a day:	Up to four times each day **IF NEEDED**	
		Maximum tablets each day:	8	
Opioid (or morphine-like) pain medicines can cause constipation. If you are constipated, you can take laxatives. You can get laxatives from supermarkets and pharmacies. Brands include Coloxyl™ with Senna™ and Movicol™. You can ask a pharmacist for more information about laxatives. → DO NOT DRIVE WHILE TAKING THESE MEDICINES				**Number of opioid tablets dispensed on discharge:** 20

Original plan developed by the Australian Society of Anaesthetists, the Opioid Stewardship Working Party and St Vincent's Public Hospital Sydney APS. Adapted by CATAG with permission.

IMPORTANT POINTS

Where should I keep my medicine?

- Always keep your medicine in a safe place, away from children and animals.
- Never share your medicine with others.
- Store at room temperature and away from direct sunlight.

What should I do with any medicines I don't need?

- Take any unused or unwanted medicines to your local pharmacy for safe disposal. Do not keep for future use.
- Do not throw any medicine in the bin or flush down the toilet or sink.

Other things to try which are also helpful for managing pain:

- Practise slow deep breathing exercises.
- Increase how much exercise and activity you do as directed by your surgeon and physiotherapist.
- Have a comfortable and well supported position in bed.
- Consider the use of cold packs.
- Try psychological and spiritual practices such as mindfulness, prayer, relaxation.
- Use distractions: watch TV or a movie, listen to music, spend time with friends.

If you have ongoing pain, or pain that is getting worse despite taking the medicine as prescribed in this plan OR if you have other signs and symptoms such as a temperature, swelling or redness around a wound – contact your doctor.

Dr Ahmad, Surgical RMO 14 June 2024

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