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Pain management for minor procedures

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How much do you already know?

Try this quiz

1. **Morphine has a faster onset and shorter duration of action than fentanyl.**
   True/False
2. **Bupivacaine is a longer-acting local anaesthetic than lidocaine.**
   True/False
3. **Methoxyflurane can be used for pain relief during minor procedures, but no more than two doses are to be used in one day.**
   True/False

Answers on page 7

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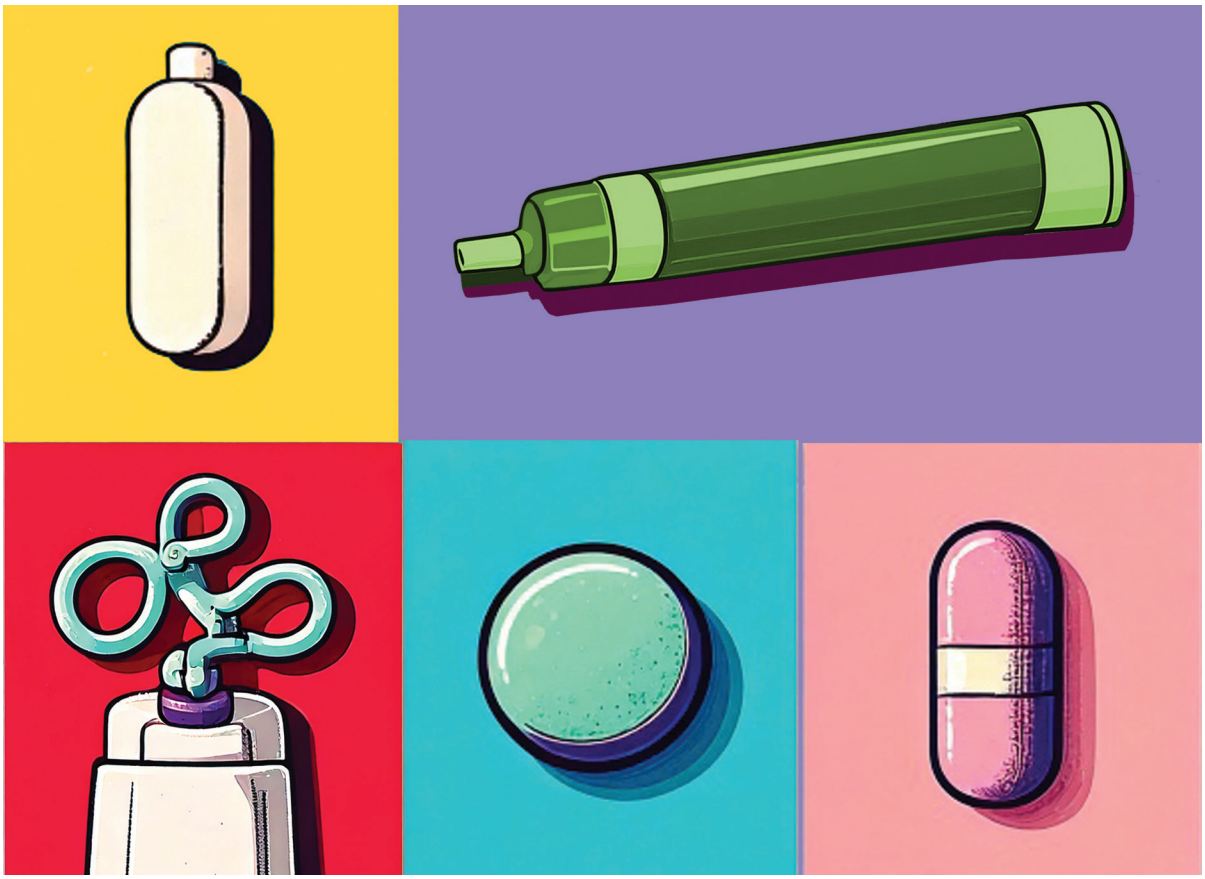
Acute pain management during emergency and planned procedures



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Optimal pain relief during minor surgical procedures often involves a combination of analgesics, anaesthetics, sedatives and non-pharmacological interventions. This article provides some examples

▶ **Vanessa Brown**

Acute pain is a direct result of nociception with or without inflammation. It is caused by a noxious stimulus (heat, cold, intense mechanical force, chemical irritant) that triggers a defence response to try to prevent us from harm.

Emergency procedures

Effective acute pain management during emergency procedures improves patient comfort and minimises complications. The approach depends on the type of injury or procedure, the patient's medical condition and the setting (eg, emergency department, GP practice, sports field). Below are common interventions for managing acute pain during emergency procedures.

Analgesics

Non-opioid analgesics:

- Paracetamol is often used for mild to moderate pain, typically as an adjunct to other medications. In most cases, this is safe as a one-off dose before the person can be assessed fully.

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- NSAIDs (eg, ibuprofen, diclofenac) are effective for musculoskeletal pain, inflammation and mild to moderate pain. Diclofenac can be given intramuscularly in emergency settings for more rapid action.

Depending on the severity of the pain, previous medications taken and medical history, it can be useful to use either a weak opioid (eg, codeine, tramadol) or a stronger opioid, such as:

- Fentanyl is a potent opioid that acts quickly and is often used for moderate to severe pain in emergency situations. It has a short duration of action and is typically administered intravenously. Transdermal patches are not to be used for acute pain.
- Morphine is another option for severe pain, although fentanyl is more commonly used due to its faster onset

and shorter duration of action. Morphine can be administered orally, intravenously, intramuscularly or subcutaneously. It may be more accessible than fentanyl depending on the situation.

Often, opioids are combined with non-opioid analgesics, local anaesthetics or sedatives to achieve better pain control and minimise the use of opioids, reducing potential side effects.

Anaesthetics

Topical anaesthetics such as lidocaine + prilocaine (EMLA 5 per cent cream) can be used for superficial procedures, such as intravenous cannula insertion or minor wound care.

Methoxyflurane (Penthrox, commonly known as the "green whistle") is an inhaled volatile halogenated anaesthetic. It disrupts neural transmission in the central nervous system by enhancing inhibitory postsynaptic ion channel activity and inhibiting excitatory postsynaptic ion channel activity. At sub-anaesthetic doses, this results in analgesia. It is indicated for moderate to severe pain associated with surgical procedures or trauma (under close medical supervision) and is most commonly used by emergency services. It is not currently funded in primary care but is available from Amtech Medical, or for further information, contact Douglas Pharmaceuticals.

For more invasive or painful procedures, nerve blocks or epidural anaesthesia can be considered. For example, brachial plexus block for upper-limb injuries, femoral nerve block for hip or knee injuries, or sciatic nerve block for leg pain. Epidural anaesthesia is sometimes used for procedures that involve larger areas or for trauma victims who need prolonged pain relief.

Lidocaine can be administered locally or regionally (eg, nerve blocks) to numb the area for procedures such as suturing or reducing fractures. Bupivacaine is a longer-acting local anaesthetic, only used in the hospital setting and often given via epidural or as an intra-articular block.

Sedatives and anxiolytics

Benzodiazepines (eg, lorazepam, midazolam) are used to reduce anxiety and provide sedation, especially in more invasive procedures or when conscious sedation (also known as procedural sedation) is required. Conscious sedation is used for patients who need to be calm but not fully unconscious during a procedure (eg, setting a fracture, removal of a foreign object). Medications such as midazolam are often used in combination with analgesics such as fentanyl.

Nitrous oxide (laughing gas) is a mild sedative that is inhaled, providing anxiolysis and pain relief. It is commonly used for dental procedures but is also helpful for minor medical procedures in an emergency setting or clinic.

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Topical anaesthetics are useful for intravenous cannula insertion

Non-pharmacological methods

Cryotherapy (eg, ice packs) can help reduce pain and inflammation in musculoskeletal injuries and minor trauma.

In the case of fractures or musculoskeletal injuries, proper immobilisation can reduce pain and prevent further damage.

Cognitive behavioural therapy and relaxation techniques can sometimes be used adjunctively for patients with anxiety, especially children or people with trauma-related disorders.

Distraction techniques (eg, talking to the patient, use of virtual reality in some cases) and a comforting environment can also be helpful.

A combination of medications (eg, opioid, NSAID, local anaesthetic) and non-pharmacological interventions (eg, distraction, cognitive behavioural therapy) is often the best strategy as it can reduce the reliance on any single medication and improve overall pain control.

Key considerations

- **Titration** – dosages should be adjusted based on patient response and the severity of pain. Start low and go slow, particularly with opioids and sedatives.
- **Monitoring** – constant monitoring of vital signs, especially respiratory rate and oxygen saturation, is crucial with opioids or sedatives.
- **Patient assessment** – consider the patient's age, medical history, allergies, other medications or substances consumed, and potential for substance misuse when choosing pain management strategies.

> "Cognitive behavioural therapy and relaxation techniques can sometimes be used adjunctively for patients with anxiety"

Summary

For acute pain in emergency settings, the choice of management will often involve:

- opioids (eg, fentanyl or morphine) for moderate to severe pain
- paracetamol and NSAIDs for mild to moderate pain or adjunctive management of pain
- local anaesthesia or nerve blocks for specific, localised pain
- conscious sedation for procedures requiring patient cooperation without full anaesthesia.

Planned procedures

For minor procedures, pain relief should be effective yet not overly complex. The best approach often involves a combination of local anaesthesia, non-opioid analgesics and, when necessary, sedation. The goal is to relieve pain and minimise complications while allowing the patient to remain awake and comfortable. Below are the best pain relief options in such cases.

Local anaesthetics

Local anaesthesia is the first-line approach for most minor procedures. It numbs the specific area being treated without affecting the patient's consciousness:

- Lidocaine is the most commonly used local anaesthetic for minor procedures. It works quickly and has a short duration of action, making it ideal for procedures such as minor skin surgeries, suturing, wound care or abscess drainage.

With Penthrox® you're free to focus on the procedure.

Take a closer look at Penthrox and you'll see it's ideally suited for both the ED and in many planned procedures.[1,2,3,5]

- Convenient, patient controlled pain relief – limited monitoring and post-procedural observation[1,2,4]
- Rapid onset within 6-10 breaths[3]
- Well tolerated, with fast recovery[6] (*psychomotor and cognitive performance resumed within 30 mins after a 15- min inhalation)

MINIMUM PRODUCT INFORMATION - Penthrox® (methoxyflurane 99% ww) Inhalation, Prescription Medicine. Before prescribing, please review Approved Datasheet. Penthrox is not funded and patients will have to pay for this medicine.

INDICATIONS: For emergency relief of pain by self-administration in conscious haemodynamically stable patients with trauma and associated pain, under supervision of personnel trained in its use and for the relief of pain in monitored conscious patients who require analgesia for surgical procedures such as change of dressings. **CONTRAINDICATIONS:** Use as an anaesthetic agent Renal impairment renal failure; hypersensitivity to fluorinated anaesthetics (including familial history of hypersensitivity); cardiovascular instability, respiratory depression; head injury or loss of consciousness; malignant hyperthermia. **PRECAUTIONS:** Not to be used as an anaesthetic agent; Liver disease and liver damage after previous methoxyflurane or halothane anaesthesia; diabetic patients (may have an increased likelihood of developing neuropathy): daily use of methoxyflurane is not recommended; treatment with enzyme inducing drugs (e.g. barbiturates): cautious use of adrenaline or noradrenaline during methoxyflurane administration; caution in hot climates; use in the elderly and regular exposure to health workers. **INTERACTIONS:** Do not use with tetracyclines or other antibiotics having nephrotoxic potential. Caution with ß-Blocker due to increased risk of hypotension. **SIDE EFFECTS:** Adverse Events reported in literature with analgesic doses include euphoria, drowsiness, sleepiness, agitation, restlessness, headache, dizziness, dissociation, amnesia, cough, choking, hypotension, nausea, vomiting. hepatitis, increased liver enzymes, increased serum uric acid, urea, nitrogen and creatinine, diplopia and nystagmus. Hepatic toxicity in association with methoxyflurane is rare but has been observed with analgesic use. **DOSAGE AND ADMINISTRATION:** Up to 6 ml per day, vaporised in an Inhaler. The total weekly dose should not exceed 15 ml. Administration on consecutive days is not recommended

REFERENCES: 1. NZ Penthrox (methoxyflurane) Data Sheet www.medsafe.govt.nz/profs/Datasheet/p/penthroxinh.pdf **2.** Young L, et al. Adv Ther. 2020;37(5):2520-2527. **3.** Coffey F, et al. Emerg Med J 2014;31:613–618. **4.** Nguyen et al. Gastrointest Endosc 2013; 78: 892e901. **5.** Nguyen et al. Endosc Int Open 2015;3: E487e93. **6.** Nguyen et al. Endosc Int Open. 2016 Nov; 4(11): E1171–E1177

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Always consider patient anxiety levels when choosing pain relief methods for emergency and planned procedures

> "For minor procedures, pain relief should be effective yet not overly complex"

- Bupivacaine is a longer-acting anaesthetic, often used when longer pain relief is required, such as for wound closure or minor joint procedures. Normally, these procedures are performed in a hospital or specialist clinic.
- Topical anaesthetics are particularly useful for superficial procedures. Products such as lidocaine + prilocaine cream are used to numb the skin before needle insertion (eg, for IV starts or minor injections).

Analgesics

Non-opioid analgesics are useful for managing mild to moderate pain, often in combination with local anaesthesia. Paracetamol is often used as a first-line option for mild pain and in conjunction with other medications. NSAIDs (eg, ibuprofen, naproxen, diclofenac) are effective for minor musculoskeletal pain, inflammation and discomfort from minor trauma or procedures.

With its quick onset and short duration of action, methoxyflurane can also be used for pain relief during minor surgical procedures, such as intrauterine device (IUD) insertion, drainage of abscesses, and wound or burn care. One dose (3ml) provides approximately 20 to 25 minutes of pain relief when inhaled continuously, or it can be inhaled intermittently as needed for a longer duration. No more than two doses are to be used in one day.

Sedatives (if needed)

For procedures that may cause anxiety or if the patient has difficulty staying still, light sedation can be considered. Benzodiazepines (eg, midazolam, lorazepam) and nitrous oxide can reduce anxiety and help the patient relax. They are typically used for procedures such as wound debridement, abscess drainage or IUD insertion.

Other techniques

The use of ice or cold packs before or after a minor procedure can reduce pain, swelling and inflammation, especially for minor musculoskeletal procedures.

Distraction techniques (eg, talking, videos, music) are particularly useful in paediatric or anxious patients and can significantly reduce the perception of pain.

Transcutaneous electrical nerve stimulation uses a non-invasive device to manage mild pain from superficial procedures such as minor skin treatments.

Combination therapy

In some cases, combining anaesthetics and analgesics can provide optimal pain relief. For example, a combination of topical anaesthetic with an oral analgesic (eg, paracetamol, ibuprofen), or using lidocaine locally for the procedure with an oral NSAID for ongoing pain

relief during and after the procedure.

The following examples give the ideal pain relief for a selection of minor procedures.

Minor skin excisions, biopsy or suturing:

- Local anaesthesia with lidocaine.
- Oral paracetamol or ibuprofen for additional control of pain.
- Midazolam for anxiety relief, if necessary.

Abscess drainage or wound debridement:

- Local anaesthesia (eg, lidocaine).
- Topical anaesthetic (eg, lidocaine + prilocaine cream) for very superficial procedures.
- NSAID for post-procedural pain.

IV insertion or venipuncture:

- Topical anaesthetic (eg, lidocaine + prilocaine cream) applied before the procedure.
- Ice packs applied before needle insertion to reduce discomfort.

Key considerations

- **Patient factors** – consider the patient's age, medical history, allergies and anxiety levels when choosing pain relief methods.
- **Duration of procedure** – shorter procedures may only require local anaesthesia, while longer ones may benefit from sedation and analgesia combined.
- **Risk of adverse reactions** – always monitor the patient for potential allergic reactions, especially when using local anaesthetics or sedatives.

Summary

For minor procedures, local anaesthesia is usually the most effective and preferred approach. In combination with an NSAID or paracetamol, pain can be effectively managed. For anxiety or discomfort, light sedation may be added. This multimodal approach helps ensure comfort while minimising the need for more invasive or potent pain management methods.

IUD insertion

Pain management during IUD insertion is important due to the potential discomfort and pain that can occur during and immediately after the procedure. This should not be underestimated or undermanaged as pain is a major obstacle to the successful completion of the procedure. The complexity of the procedure can vary, such as in cases where the cervix is difficult to access or the patient has had previous trauma.

Local anaesthetics

The most common approach for IUD insertion is local anaesthesia to numb the cervix and uterus. This can help reduce pain during the insertion process.

Topical anaesthetic (eg, lidocaine gel applied to the cervix) is a less invasive option for women who may not tolerate injections.

Elen Sher on Unsplash

For intrauterine device insertion, it is important to alleviate anxiety by fully explaining the procedure

Analgesics

An oral NSAID (eg, ibuprofen, naproxen) taken 30 to 60 minutes before the procedure can help reduce pain and inflammation, both during and after the insertion, and can help reduce post-procedural cramping. Ibuprofen (400–800mg) is typically recommended.

Paracetamol can be an alternative if NSAIDs are contraindicated (eg, for patients with stomach ulcers, bleeding disorders or kidney issues).

Methoxyflurane is used in some clinics as a non-invasive, short-acting option to cover IUD insertion. This comes at additional cost to the patient as it is not funded.

Sedatives (if needed)

For complex IUD insertions, where the patient may be particularly anxious or the procedure is expected to be more painful, light sedation or anxiolysis may be helpful. Oral sedatives such as midazolam or lorazepam can be used to relax the patient and reduce anxiety. Nitrous oxide is another relatively safe option that can provide both analgesia and sedation.

For more complex cases, combining local anaesthesia with oral analgesics and light sedation can provide the best pain relief.

> "This multimodal approach helps ensure comfort while minimising the need for more invasive or potent pain management methods"

Patient comfort

Encourage deep breathing or relaxation techniques, especially if light sedation is not used. Ensure the patient and speculum are positioned comfortably and explain the procedure fully to alleviate anxiety.

The approaches discussed here can be tailored to the patient's preferences, previous experience with IUD insertion and underlying health considerations.

Pain after IUD insertion is common, often in the form of cramping, and can last for a few hours to a day or two. NSAIDs (eg, ibuprofen) are generally effective for managing post-procedural cramps. Heat therapy (eg, heating pads or warm compresses) can also be helpful. ■

Quiz answers

1. False **2.** True **3.** True

This publication has been reprinted with the support of Douglas Pharmaceuticals to provide an update on the management of pain during minor procedures. The content is entirely independent and based on published studies and the author's opinion.

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