Premedication

Premedication is the administration of medication before a treatment or procedure. It is most commonly used prior to anaesthesia for surgery, but may also be used prior to chemotherapy.

This article relates to the use of premedication to prepare the patient for anaesthesia and to help provide optimal conditions for surgery. Specific needs will depend on the individual patient and procedure. Purposes may include [1]:

- Reduction of anxiety and pain.
- Promotion of amnesia.
- Reduction of secretions.
- Reduction of volume and pH of gastric contents (to avoid Mendelson's syndrome).
- Reduction of postoperative nausea and vomiting.
- Enhancing the hypnotic effects of general anaesthesia.
- Reduction of vagal reflexes to intubation.
- Specific indications - eg, prevention of infective endocarditis with antibiotics.

Premedication is traditionally given intramuscularly but the oral route is preferred for children and those with bleeding disorders. Premedication is usually given 20 minutes to three hours pre-operatively. Topical anaesthetic creams (eg, EMLA®) are often prescribed for children before cannulation.

The practice of premedication has changed over the last few decades. The use of strongly sedative drugs (eg, morphine and hyoscine) to aid smooth induction and reduce salivation has been abandoned with the advent of modern intravenous and inhalational anaesthetic agents, which have far fewer side-effects and a faster onset of action [2]. Other factors that have reduced the use of a sedative premedication include:

- Increasing use of day-case surgery.
- Same-day admissions - patients often do not get a confirmed bed until just before surgery.
- Changes to the surgical list, making the timing of drug delivery difficult.

The choice of drug(s) used for premedication depends on the procedure, patient and anaesthetic technique. Some patients prefer not to have premedication and potential benefits may be outweighed by potential problems (except for specific indications), especially with day-case surgery. A Cochrane review found no evidence of a difference in time to discharge from hospital following adult day surgery in patients who received anxiolytic premedication [3].

Anxiety, amnesia and sedation [1]

- Careful discussion of the patient's concerns is essential, including at the pre-operative assessment.
- Benzodiazepines are the usual agents used as they provide anterograde amnesia, relief of anxiety and light sedation. If given orally 1-2 hours before surgery they have only a small effect on cardiorespiratory function but large doses can interfere with the speed and quality of recovery. In day-care cases, short-acting benzodiazepines (eg, temazepam) are often preferred. Temazepam is given orally. Lorazepam is longer acting and effective for amnesia. Midazolam is also commonly used, and is associated with a faster recovery time than diazepam, although this may be longer in elderly patients. Diazepam use is not recommended for premedication in children.
- Clonidine (unlicensed) is also increasingly used for sedation, orally or IV.

- Dexmedetomidine is also used as a sedative with anxiolytic and analgesic properties, and clonidine and dexmedetomidine are considered to be effective alternatives to benzodiazepines, particularly in children [4].
- Relieving anxiety and sedation may also be achieved by opioids such as morphine, pethidine and fentanyl.

Analgesia

Analgesic drugs given pre-emptively reduce the required dose of anaesthetic agent and improve patient comfort in the immediate postoperative period. Options used include opioids, paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs) and gabapentin [5].

- NSAIDs are commonly used, particularly in day surgery, unless there are contra-indications.
- Opioids are usually the agents of choice in the presence of acute severe pain. In the absence of pain, some people may experience intense dysphoria. Opioids also cause variable sedation and cardiorespiratory depression. All opioids can cause nausea and vomiting and this may outweigh any beneficial effects. Opioids may also precipitate bronchospasm or anaphylaxis.
- Clonidine given as a premedication has been shown to reduce postoperative pain in children [6].
- Relevant pre-emptive pain relief naturally depends on the nature of the procedure as well as factors relating to the individual patient.

Antimuscarinics [1]

These may be used to dry secretions in the mouth and airways, and to help reduce vagally mediated bradycardia and hypotension. They are required less commonly than in the past.

- Hyoscine has strong sedative, amnesic and anti-salivation properties. It is a moderately effective antiemetic and potentiates opioids. Intramuscular atropine or hyoscine is therefore often prescribed together with an opioid.

- Hyoscine is the most potent agent available, with the added advantage of amnesia and sedation. However, it can cause significant perioperative confusion in elderly patients.
- Anti-sialogogues (eg, glycopyrrolate intramuscularly or IV) are rarely needed but may be indicated for awake fibre-optic intubation or before ketamine anaesthesia[2]. Anti-sialogogues may cause unpleasant dry mouth.

Antiemetics and anti-acidity[1]

- Antiemetics are used either to reduce the emetic effects of anaesthetic agents (antihistamines, butyrophenones, hyoscine) or to enhance gastric emptying (metoclopramide).
- Those with a risk of regurgitation of gastric contents or undergoing procedures with a high incidence of nausea and vomiting should receive agents to reduce gastric acidity. Routine use of antiemetics and agents to reduce acidity in those not at risk is not recommended[7].
- An H2-receptor antagonist may be used 1-2 hours pre-operatively and/or oral non-particulate antacids such as sodium citrate 15-30 minutes before induction.

Further reading

- Gelb AW, Morriss WW, Johnson W, et al; World Health Organization-World Federation of Societies of Anaesthesiologists (WHO-WFSA) International Standards for a Safe Practice of Anesthesia. Can J Anaesth. 2018 Jun;65(6):698-708. doi: 10.1007/s12630-018-1111-5. Epub 2018 May 7.
- FitzSimons J, Bonanno LS, Pierce S, et al; Effectiveness of preoperative intranasal dexmedetomidine, compared with oral midazolam, for the prevention of emergence delirium in the pediatric patient undergoing general anesthesia: a systematic review. JBI Database System Rev Implement Rep. 2017 Jul;15(7):1934-1951. doi: 10.11124/JBISRIR-2016-003096.

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Originally Published: 20/11/2023	Next review date: 23/08/2019	Document ID: doc_575

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