
Management of anxiety during surgery



Learning Outcomes

- Describe non-pharmacological and pharmacological strategies for managing patient anxiety.
- Explain the difference between sedation levels and understand the limitations of training.
- Have knowledge of the prescriptions for oral anxiolysis.
- Justify selection of treatment.



Non-pharmacological management

Communication Strategies

- Use all of the tools and tips available to create a relaxing experience.
- Express empathy and reassurance.
- Provide clear explanations using non-threatening languages.

Environmental considerations

- Television on the ceiling – relaxing places
- Ambient sounds – music? Headphones?
- Ambient scents – consider diffusion and scent profiles to distract from clinical smells
- Alternate reality? VR?

Acupuncture

- Origins of >2500 years in Chinese medicine
- In 2003, the WHO endorsed acupuncture for pain in dentistry, including dental pain, TMJD, facial pain and postoperative pain as being a proven treatment.
- Benefits shown in reducing anxiety, suppressing gag reflex and reducing pain.
 - In suppressing the gag reflex, CV24 and PC6 were shown to be highly effective

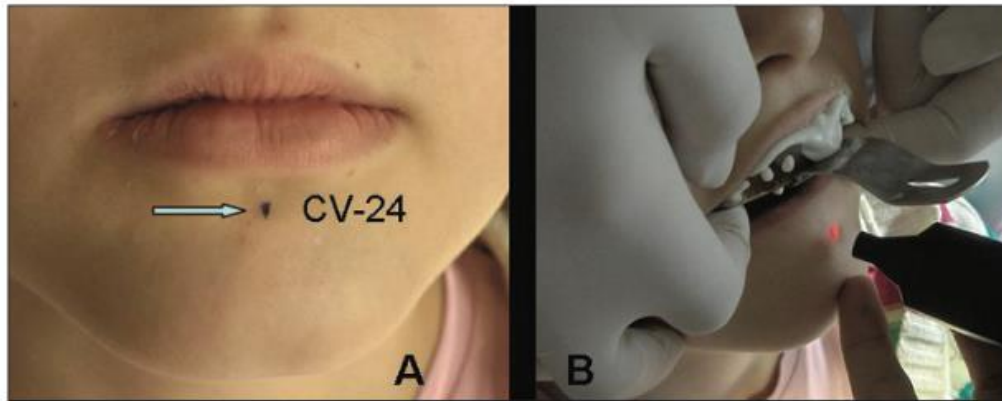


Fig. 1 The acupuncture point conception vessel 24 (CV 24). B. View of a red-light soft magnetic field laser stimulation on CV 24

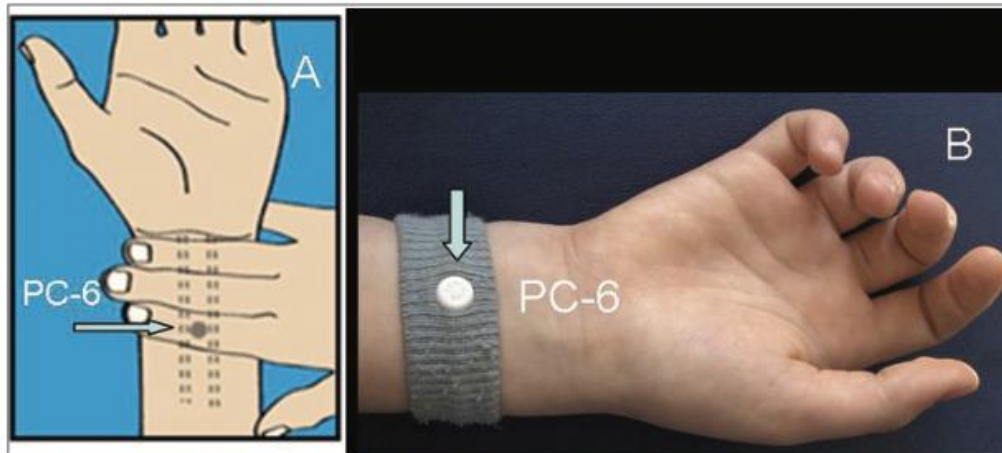


Fig. 2 The acupuncture point PC 6. B. The button on the band was placed over the PC 6

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Acupuncture alternatives

- Can consider low level laser stimulation instead of needling.
- Can use acupressure at the same point to suppress the gag reflex.

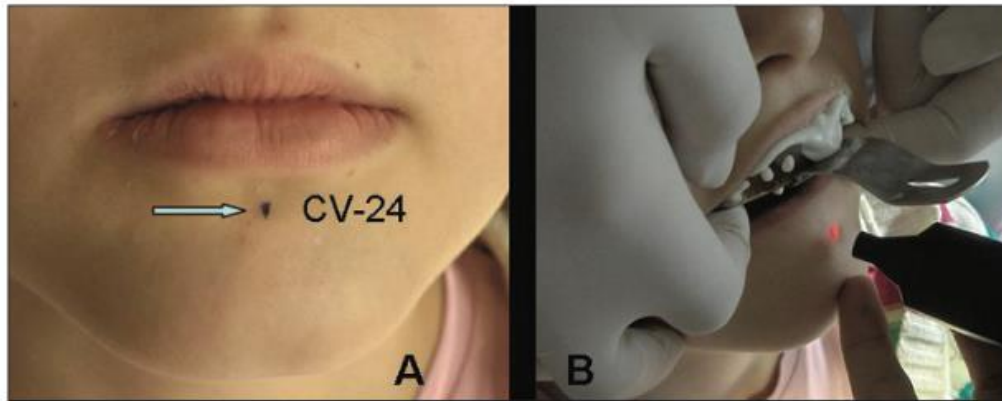


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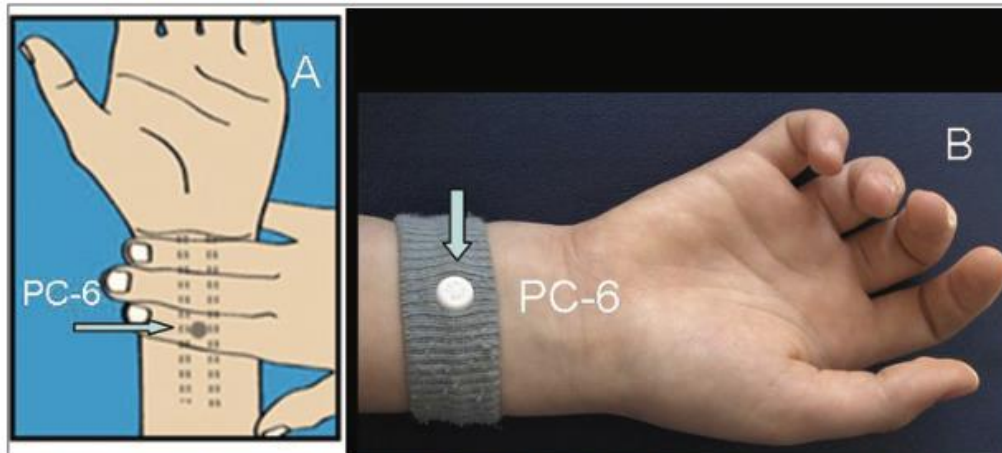


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Hypnosis

- Not necessarily the stage form that people think of.
- Can be as simple as hypnotic suggestion which plays to the use of calming language to focus patient thoughts.
- Hypnotic trance is similar to having a daydream.
- Can be as simple as:
 - “I want you to imagine that you are going to let yourself relax and breathe out deeply. With each breath I want you to imagine yourself to becoming more and more relaxed.”
- Professional hypnotherapy may play a role in managing severe dental anxiety and has been shown to have a positive effect on smoking cessation.
- However, not everyone is susceptible to hypnosis.

Hypnosis

- Hypnosis has been used to induce anaesthesia, first recorded in 1829 for dental extraction.
- The deeper forms require significant more time and training for operators to do safely.
- More recent teams have shown the ability to remove wisdom teeth under hypnotic suggestion only¹

Cognitive Behaviour Therapy [CBT]

- CBT is the intersect of cognitive therapy and behavioural therapy.
- CBT does not aim to define the root cause of the problem but to solve the problem by identifying beliefs that lead to current thoughts and behaviours.
- Evidence suggests that it can not only help to reduce self-reported dental anxiety but it can also help to improve long term attendance¹.
- Requires referral to specialized psychology services.
- Requires the patient to actively want to manage their condition.
- Would be considered a complementary therapy to other forms of sedation.

Pharmacological management



Definitions

- **Minimal sedation** (also known as anxiolysis) is a drug-induced state of diminished anxiety, during which patients are conscious and respond purposefully to verbal commands or light tactile stimulation. The drugs used are oral benzodiazepines or inhaled agents (nitrous oxide or, less commonly, methoxyflurane). Cognitive function and coordination may be impaired during minimal sedation, but no interventions are required to maintain a patent airway, spontaneous ventilation or cardiovascular function.
- **Moderate sedation** is a drug-induced state of depressed consciousness, during which patients retain the ability to respond purposefully to verbal commands and tactile stimulation. It involves the use of intravenous drugs or a combination of oral drugs and inhalational techniques. In exceptional circumstances, interventions to maintain a patent airway, spontaneous ventilation or cardiovascular function may be required.
- **Deep sedation** is a drug-induced state of depressed consciousness, during which patients are not easily roused and may respond only to noxious stimulation. Features of deep sedation include impaired ability to maintain an airway, inadequate spontaneous ventilation and impaired cardiovascular function.

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- Dentists are restricted to providing minimal sedation (with appropriate training).
 - Dentists can provided moderate sedation if they are endorsed by the Dental Board, after completion of an approved course of study.
 - Currently limited to the University of Sydney Graduate Diploma in Clinical Dentistry (Conscious Sedation and Pain Control)
 - Deep sedation is restricted to trained medical practitioners and anaesthetists in approved facilities.

Stages of Anaesthesia

- Guedel (1937) described 4 stages of anaesthesia:
 - Stage 1 – Stage of analgesia (induction through to loss of consciousness)
 - Stage 2 – Stage of excitement (loss of consciousness to onset of automatic breathing)
 - Stage 3 – State of surgical anaesthesia (automatic breathing to respiratory paralysis)
 - This is the stage where general anaesthetic surgery takes place and patients are maintained
 - Stage 4 – Respiratory paralysis - death

Relative Analgesia – RA

- Commonly known as inhalation sedation – ADA Code 943 (per 30mins or part there of)
- Should be considered the first line option for children requiring sedation.
- Using nitrous oxide (N₂O)
 - Colourless, sweet smelling gas
 - 1.5 times heavier than air
 - Non-irritating
 - Stored as a liquid in a blue cylinder
 - Non-flammable BUT will support the combustion of other agents
 - Good analgesic agent – 50% N₂O is similar to 10-15mg of morphine

Nitrous Oxide

- An N-Methyl-D-aspartate (NMDA) receptor antagonist which produces a dissociative anaesthetic effect.
- Releases endogenous opioids acting on opioid receptors to produce analgesic effect.
- GABA-A activation produces anxiolytic effect.
- Due to rapid elimination at the end of the procedure, N₂O entering the alveoli can displace O₂ causing a diffusion hypoxia.
 - This is overcome by giving 100% O₂ for 2-5 minutes at the end of the procedure
- Acts in stage 1 of Guedel's stages (state of analgesia)

Indications for RA

- Fear and anxiety
- Pain control
- Medical conditions made worse by stress
- Gagging
- Traumatic or complex dental procedures*

Contraindications to RA

- Psychosocial
 - Claustrophobic patients
 - Lack of understanding of process – either age or learning difficulties
 - Severe anxiety
 - Complexity of dental treatment
- Medical
 - Nasal obstructions – upper respiratory tract infections
 - ASA III (IV or V) – severe systemic disease
 - COPD
 - Pregnancy (1st trimester)
 - Severe psychiatric disorders
- Dental
 - Upper anterior procedures*

Advantages of RA

- Safe
- Rapid onset and recovery (low blood solubility of 0.47)
- Easily regulated
- Drug not metabolized
- No adverse effects on CVS, RS. Liver or kindeys
- Analgesic
- Limited amnesia

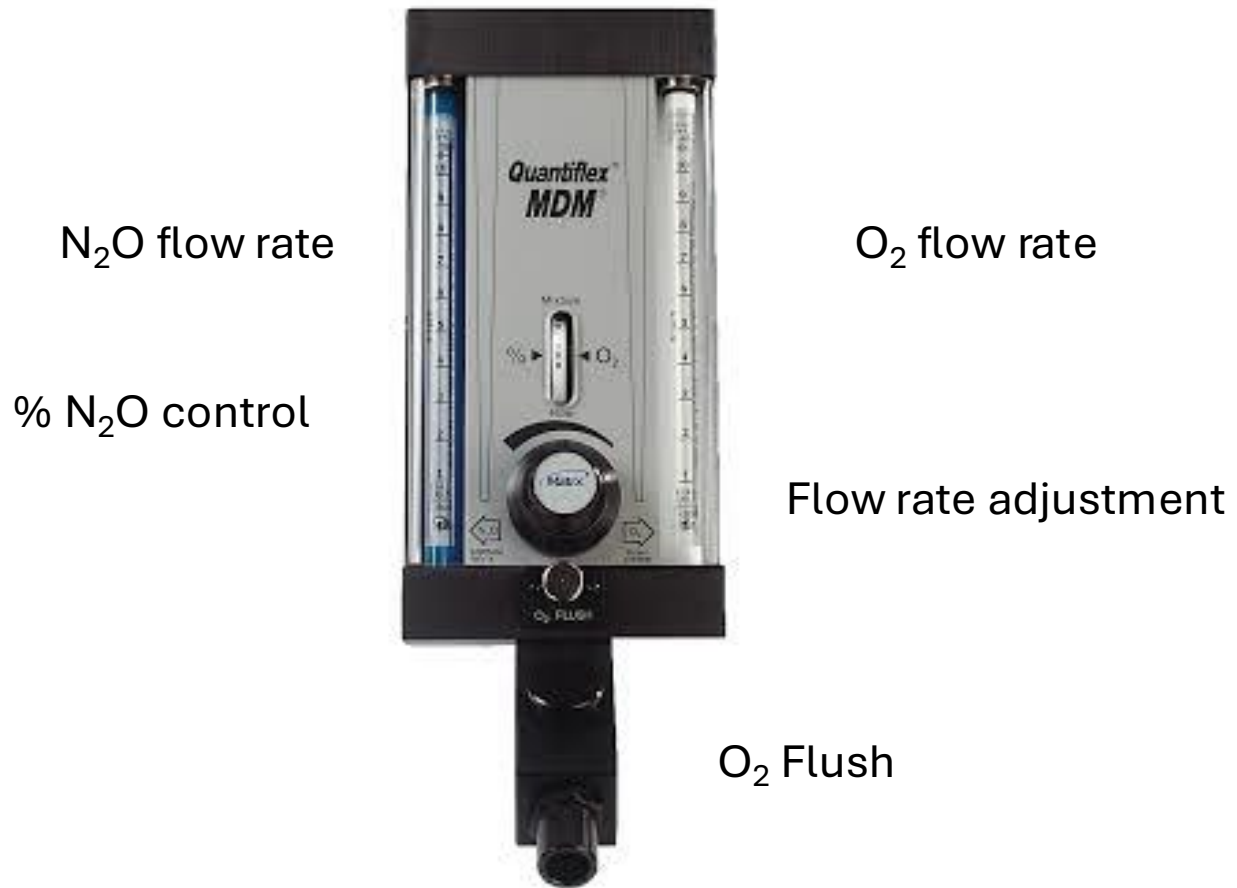
Disadvantages of RA

- Special equipment required
- Large variation in response
- Care if chronically exposed (staff)
- Potential for abuse
- Limited amnesia

Risks of chronic exposure

- More likely associated with healthcare workers in operating theatres but long-term exposure can cause:
 - Deactivation of vitamin B12 causing neurological symptoms (peripheral neuropathy)
 - Toxic hepatic effects (inhibition of liver enzymes)
 - Depression of leukocyte production
 - Spontaneous abortion and reproductive issues

The general setup



- Gas:
 - Bottled gas on a trolley
 - Piped gas
- Control unit (similar for both delivery methods)
 - Different to Entenox unit in delivery suites.

The general setup

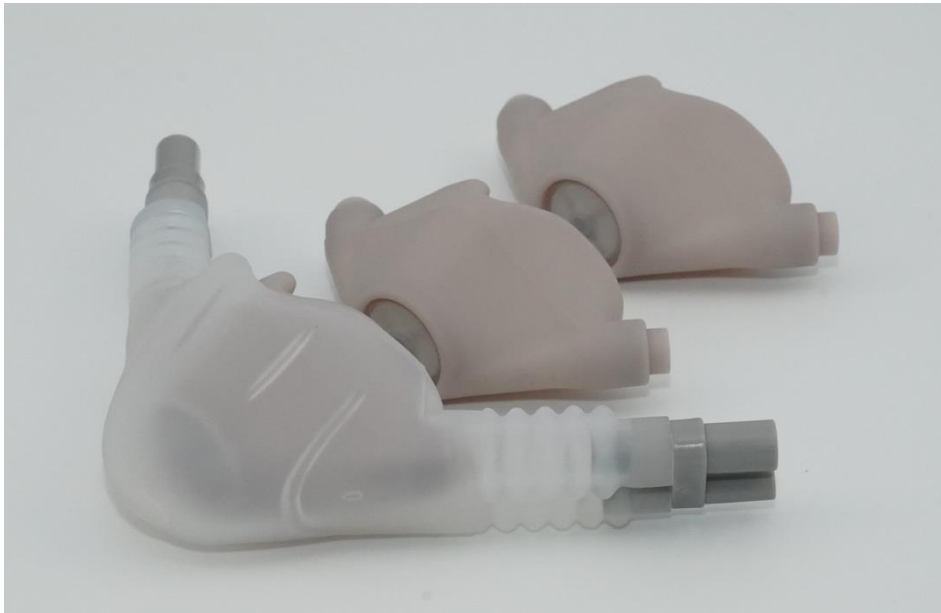


Reservoir bag

Nasal hood +
scavenging

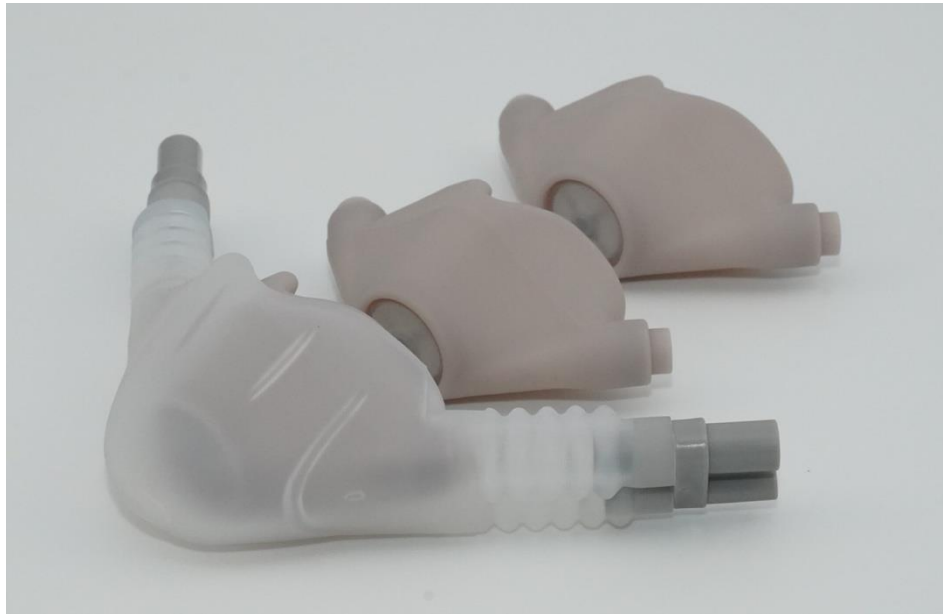
- Reservoir bag attached
- Nasal hood to patient
- Scavenging is an important part of the setup
- In general, active scavenging is used by connecting suction hose to the hood
- Requires a good fit – different sizes available

The general setup



- Different types of hood exist, but this type is the most effective
- Inner hood delivers mixture
- One way valve allows gases into the outer hood where the scavenging system is connected

The general setup



^more common double hood



^newer style Silhouette mask

Important safety features

- Pin index system on gas bottles
- Colour coding
- Oxygen flush
- Oxygen fail safe
- Reservoir bag
- Minimum O₂ delivery of 30%
- One-way valves

A brief overview of the steps

- Consent should be done at a prior visit.
- Chaperone in the room.
- Patient places the hood and a low flow rate of 4-6L/min O₂ is started. Hood is adjusted for comfortable and sealed fit. Checking limited leakage over eyes.
- Ensure nasal inspiration and expiration only - may need practice.
- Good practice for pulse oximetry monitoring.
- Start to increase % nitrous, 5-10% in increments 1-2mins until desired level reached (usually 35-45%).
- Effects of nitrous oxide are rapid with peak brain levels in 5-7mins.
- Hypnotic suggestion can help to improve the sedative effect.

Signs of adequate levels

- Relaxed and appearing comfortable
- Tingling in hands and feet
- Reduction in movements
- May be lightly giggly or feelings of euphoria
- Reduced awareness of physical stimuli
- Patient indicating happy to proceed with treatment

Monitoring during procedure

- Ensure remain responsive.
- Colour and pulse oximetry from time to time.
- Main difficulty is monitoring and assessing flow rate so as not to under or over deliver.

Recovery stage

- Once treatment complete, or nearing completion, 100% O₂ delivered for 5 minutes.
 - Preventing diffusion hypoxia.
- Remove the nasal hood, sit the patient up and make sure they don't feel dizzy.
- Children must be accompanied by an adult and supervised for the rest of the day.

If N₂O is used in your practice, you will need practical training to support its use.

Once per year the ADA WA run a course that would be sufficient for you to introduce it into practice.



6.5
CPD hours

Discount

5
SEP

Anxiolysis and Relative Analgesia
(N₂O) in Modern Dental Practice

📍 PERTH

From \$1,095.00 incl. GST

Methoxyflurane (Penthrox)



-
- An inhaled analgesic indicated for the emergency relief of pain associated with trauma, and for analgesia in monitored conscious patients during surgical procedures.
 - Used off-label in a dental setting and has a limited role.
 - It may have a role in pain mitigation in short procedures, such as treating alveolar osteitis.
 - Absorbed into fatty tissues, so slower reversal of effects.
 - Ensure patients exhale through the activated carbon filter in the device.
 - Maximum recommended use is 6mL/week or 15mL/week.

Oral Benzodiazepines

Advantages

- Well-accepted by patients
- Cost effective
- Easy to administer
- Provides anxiolysis prior to the procedure

Disadvantages

- Slow onset and long duration of action
 - Supervision required post procedure
- Variable response
- Cannot be titrated rapidly
- Used in caution with certain patients
 - Older / frail / cognitively impaired / OSA
- Cannot be used if patient does not have an escort/carer to look after them

Oral Benzodiazepines

Indications

- Dental anxiety
- Short procedure 1-2hrs maximum

Contraindications

- Prolonged procedures
- Severely limiting heart, cerebrovascular, lung, liver or kidney disease.
- Allergies or other adverse events in relation to drugs used in sedation, analgesia or anaesthesia.
- Severe anxiety that has not been managed effectively with minimal sedation.
- Substance abuse.

Oral Benzodiazepines

Name of drug	Dose (for >13yrs)	Notes
Temazepam 10mg tablet	10mg, orally, 1 hour prior to the procedure. To be taken at the dental practice.	If ineffective, to consider increasing the dose to 20mg (caution in >75yrs or frail)
Lorazepam 1mg tablet	1mg, orally, 1 hour prior to the procedure. To be taken at the dental practice.	If ineffective, to consider increasing the dose to 2mg (caution in >75yrs or frail)
Diazepam 2mg tablet	2-5mg, orally, 1 hour prior to the procedure. To be taken at the dental practice.	Use the lower end of the dose range for >75yrs or frail

Oral Benzodiazepines

Technique

- Written consent prior to the day of the procedure.
- Thorough medical history – ensure not already taking.
- Clear instructions for the day of the procedure, including someone to drive home.
- Prescription to dispense the medication for the procedure only.
 - If multiple visits are required then give prescription at each visit.
 - This will ensure patients are only supplied with one dose and can adjust dose if necessary.
- Schedule the patient to arrive at the practice one hour beforehand to take the medication.

Oral Benzodiazepines at E Block

- If required, Temazepam 10mg is the benzodiazepine dispensed.
- It is dispensed on site, 1 hour prior to the procedure.

IV Sedation

- Can only be provided by a suitably trained individual as this is now moderate sedation.
 - Dentist – limited to single drug sedation.
 - Medical practitioner – Anaesthetist or GP Anaesthetist.
- Must have at least 3 staff members present in the room – proceduralist, sedationist and assistant.
- Facilities must allow for rapid access of emergency services if required.
 - Enhanced dental team training should be undertaken – advanced life support with oxygen therapy (HLTAID015 or similar).
 - AED and airway adjuncts must be available.
- Sufficient patient monitoring should be performed:
 - HR, BP, O₂ saturation, ideally expired capnography¹

IV Sedation

- Midazolam
 - Drug used for dentist sedation (single pharmacy), used in combination with other drugs when given by anaesthetist.
 - Benzodiazepine acting on GABA_a receptors and enhancing the affinity for GABA
 - No pain on injection
 - Metabolised in the liver
 - Short half life (2hrs)
 - Clinical working time of approximately 45mins
 - Some amnesia, but effect decreases with time
 - Reversible with Flumazenil
 - Caution with rebound sedation (half life of 50minutes)

IV Sedation

- Propofol
 - Anaesthetic induction agent
 - Short half life (2-5minutes) so given as a continuous infusion (on a pump)
 - Provides the sedation
- Remifentanyl
 - Short acting synthetic opioid
 - Used synergistically with propofol
 - Provides a level of analgesia
- Other drugs
 - May also want to give antibiotics, steroids or other analgesics IV

IV Sedation

Advantages

- Operator can focus on dentistry.
- Well tolerated.
- Suppresses gag reflex.
- Suppresses anxiety.

Disadvantages

- Cost
 - If dentist – 942 code (sedation – IV – per 30min)
 - If anaesthetist – operator charges 949 and anaesthetist bills separately (\$\$)

MEDICARE - STANDARD REBATES

After the sedation has finished and payment is finalised, we will give you a receipt to claim any Medicare rebate. The table below shows an extract from our current fee schedule with expected **standard** Medicare rebates as at 1 July 2024. Note that as an out-of-hospital service, it is not usually covered by Private Health Insurance.

TIME	45 mins	1 hour	1 hr 30 m	2 hours	2 hr 30 m	3 hours
FEE	\$1,090	\$1,220	\$1,480	\$1,740	\$2,010	\$2,280
REBATE	\$214.90	\$234.05	\$272.40	\$310.70	\$368.20	\$425.70

TIME	3 hr 30 m	4 hours	4hr 30 m	5 hours	5 hr 30 m	6 hours
FEE	\$2,550	\$2,820	\$3,090	\$3,360	\$3,630	\$3,900
REBATE	\$483.20	\$540.70	\$598.25	\$655.75	\$713.25	\$780.25

MEDICARE - EXTENDED MEDICARE SAFETY NET

Medicare may also provide an **additional rebate** once an annual (calendar year) threshold of out-of-pocket costs for out-of-hospital medical services has been reached by you or your safety net family. Medicare will then reimburse up to 80% of out-of-pocket costs for out-of-hospital medical services for you and your family for the rest of the calendar year. Check with Medicare to confirm your safety net rebate eligibility and the current expected rebate for this sedation.

IV Sedation

Advantages

- Operator can focus on dentistry.
- Well tolerated.
- Suppresses gag reflex.
- Suppresses anxiety.

Disadvantages

- Cost
 - If dentist – 942 code (sedation – IV – per 30min)
 - If anaesthetist – operator charges 949 and anaesthetist bills separately (\$\$)
- Trained staff required
- Requirements for facilities
- Procedural time significantly increased

IV Sedation

Technique

- Consent forms signed ahead of procedure
- Patient is fasted prior to attending
- Person providing the sedation gains IV access and establishes the operating conditions (5-20mins)
- Required treatment takes place (generally taking 20-40% longer than without sedation)
- Recovery – variable time 10-30mins to leave the surgery
- Will recover for a further 20-30mins in a safe and supervised environment
- Discharged home with a responsible person who will look after them
 - No driving, operating heavy machinery or signing legal documents for 24hrs

IV Sedation at E Block

- There is no current IV Sedation service available at E block

General Anaesthetic

- “The primary goal of general anaesthesia is to render a patient unconscious and unable to feel painful stimuli while controlling autonomic reflexes”¹
- Will take place in specialized facilities
 - Private or public
 - May be day case or require overnight stay
- Decision for GA may be based on several factors:
 - Procedural difficulty and ability to anaesthetise with LA
 - Procedural length
 - Procedure unpleasantness
 - Patient preference

General Anaesthetic

- In Perth – general dentists can only be accredited to a small number of private day hospital facilities
 - If performing restorative treatment, it all must be brought from the clinic
- OMF surgeons are accredited across both private and public hospitals
- Special needs dentists may operate within their departmental configurations at RPH and FSH
- Paediatric dentists may operate across public and private facilities depending on job role

General Anaesthetics at E Block

- OHCWA use Southbank Day Surgery as their operating facility
- Southbank Day Surgery has specific criteria that must be met for acceptance
 - Weight <130kg
 - BMI <40 (exceptions can be made up to 42)
 - No OSA

Weight in KG		BMI Must be calculated	Accepted for surgery	Conditions
Weight greater than 130 kg		N/A	Not Accepted	Not Negotiable
Any weight (even under 100kg)	AND	BMI 40 - 42	Must meet criteria below to be accepted and in consultation with GM/DON and Operations Director WA or National Clinical Governance Director	
Any weight (even under 100kg)	AND	BMI 38 - 40	Must meet criteria below to be accepted and in consultation with GM/DON	
Weight less than 130kg	AND	BMI Equal or less than 35	Accepted	If Clinically accepted by Anaesthetist
Any Weight Less than 130kg	AND	BMI 35-38	Must meet criteria to be accepted	Criteria: <ul style="list-style-type: none"> • ASA 1 or 2 (BMI should not be included as part of ASA criteria) • No Sleep apnoea • No respiratory disease of any significance. • No anticipated airway difficulty. • Patient is normally ambulant with minimal assistance. • Patients should be booked as morning cases or first on afternoon list. • All patients must be reviewed by Anaesthetist prior to surgery and approved by DON /Clinical Nurse • Early consultation (Anaesthetist's rooms) prior admission is preferable.

Manual Handling

- All patients over 90kg (if capable and not sedated) should self-ambulate to the operating table at the beginning of a case.
- The Hovermat should be considered in all patients over 100kg
- The Hovermat MUST BE USED IN ALL PATIENTS over 115kg
- Refer to Policy "MANUAL HANDLING OF THE BARIATRIC PATIENT"

General Anaesthetics at E Block

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- Southbank Day Surgery has specific criteria that must be met for acceptance
 - Weight <130kg
 - BMI <40 (exceptions can be made up to 42)
 - No OSA
- If a patient needs or requests GA and is unsuitable for Southbank, then they will be referred to colleagues within the public systems at RPH, SCGH or FSH depending on their postcode.
- It is vitally important if you are referring patients to E Block, do not promise them GA as it can make our conversation harder and more confrontational.

How do you decide?

