Sedation: Texts

Text A

Procedural sedation and analgesia for adults in the emergency department

Patients in the emergency department often need to undergo painful, distressing or unpleasant diagnostic and therapeutic procedures as part of their care. Various combinations of analgesic, sedative and anaesthetic agents are commonly used for the procedural sedation of adults in the emergency department.

Although combinations of benzodiazepines and opioids have generally been used for procedural sedation, evidence for the use of other sedatives is emerging and is supported by guidelines based on randomised trials and observational studies. Patients in pain should be provided with analgesia before proceeding to more general sedation. The intravenous (IV) route is generally the most predictable and reliable method of administration for most agents.

Local factors, including availability, familiarity, and clinical experience will affect drug choice, as will safety, effectiveness, and cost factors. There may also be cost savings associated with providing sedation in the emergency department for procedures that can be performed safely in either the emergency department or the operating theatre.

Text B

Levels of sedation as described by the American Society of Anesthesiologists

Non-dissociative sedation

- Minimal sedation and analgesia: essentially mild anxiolysis or pain control. Patients respond normally to verbal commands. Example of appropriate use: changing burns dressings
- Moderate sedation and analgesia: patients are sleepy but also aroused by voice or light touch. Example of appropriate use: direct current cardioversion
- Deep sedation and analgesia: patients require painful stimuli to evoke a purposeful response. Airway or ventilator support may be needed. Example of appropriate use: major joint reduction
- General anaesthesia: patient has no purposeful response to even repeated painful stimuli. Airway and ventilator support is usually required. Cardiovascular function may also be impaired. Example of appropriate use: not appropriate for general use in the emergency department except during emergency intubation.

Dissociative sedation

Dissociative sedation is described as a trance-like cataleptic state characterised by profound analgesia and amnesia, with retention of protective airway reflexes, spontaneous respirations, and cardiopulmonary stability. Example of appropriate use: fracture reduction.

Text C

Drug administration: General principles

International consensus guidelines recommend that minimal sedation – for example, with 50% nitrous oxide-oxygen blend – can be administered by a single physician or nurse practitioner with current life support certification anywhere in the emergency department. Guidelines recommend that for moderate and dissociative sedation using intravenous agents, a physician should be present to administer the sedative, in addition to the practitioner carrying out the procedure.

For moderate sedation, resuscitation room facilities are recommended, with continuous cardiac and oxygen saturation monitoring, non-invasive blood-pressure monitoring, and consideration of capnography (monitoring of the concentration or partial pressure of carbon dioxide in the respiratory gases).

During deep sedation, capnography is recommended, and competent personnel should be present to provide cardiopulmonary rescue in terms of advanced airway management and advanced life support.

Text C

Drugs used for procedural sedation and analgesia in adults in the emergency department

Class	Drug	Dosage	Advantages	Cautions
Opioids	Fentanyl	0.5 - 1 µg/kg over 2 mins	Short acting analgesic; reversal agent (naloxone) available	May cause apnoea, respiratory depression, bradycardia, dysphoria, muscle rigidity, nausea and vomiting
	Morphine	500 - 100 1µg/kg then 0.8 - 1 µg/kg	Reversal agent (naloxone); prolonged analgesic	Slow onset and peak effect time; less reliable
	Remifentanil	0.025 - 0.1 µg/kg	Ultra-short acting; no solid organ involved in metabolic clearance	Difficult to use without an infusion pump
Benzodiazepines	Midazolam	Small doses of 0.02 - 0.03 µg/kg until clinical effect achieved; repeat dosing of 0.5 - 1 mg with total dose ≤ 5 mg	Minimal effect on respiration; reversal agent (flumazenil)	No analgesic effect; may cause hypotension
Volatile agents	Nitrous oxide	50% nitrous oxide - 50% oxygen mixture	Rapid onset and recovery; cardiovascular and respiratory	Acute tolerance may develop; specialised equipment needed
Propofol	Propofol	100 µg/kg/min over for 3 - 5 min then reduce to ~ 50 µg/kg/min	Rapid onset; short-acting; anticonvulsant properties	May cause rapidly deepening sedation, airway obstruction, hypotension
Phencyclidines	Ketamine	0.2 - 0.5 mg/kg over 2 - 3 min	Rapid onset; short-acting; potent analgesic even at low doses; cardiovascular stability	Avoid in patients with history of psychosis; may cause nausea and vomiting
Etomidate	Etomidate	0.1 - 0.15 mg/kg, may re-administer	Rapid onset; short-acting; cardiovascular stability	May cause pain on injection, nausea, vomiting; caution when using in patients with seizure disorders

END OF PART A
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