Conscious Sedation/Analgesia

Workbook & Self Learning Package

Name: _____

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Learning Objectives

Following the review of this self-learning package the Nurse will be able to:

- Identify the key components that define sedation and analgesia
- Explain the differences of each level of sedation as per the “Sedation Continuum”
- Recognise indications for the use of conscious sedation/analgesia
- Identify the components of patient assessment prior to sedation/analgesia
- Identify the nursing responsibilities associated with conscious sedation/analgesia
- Identify the potential complications of conscious sedation/analgesia and their interventions
- Ensure that necessary emergency equipment is available
- Identify the indications/contraindications, action, onset, duration and side effects of the following:
    - Fentanyl
    - Midazolam
    - Naloxone
    - Flumazenil
    - Buscopan
    - Atropine

Adult Conscious Sedation and the Use of Analgesia in Endoscopy

Definitions

Conscious Sedation

Is defined as a drug-induced depression of consciousness during which patients are able to respond purposefully to verbal commands or light tactile stimulation.

Analgesia

Is reduction or elimination of pain perception, usually induced by drugs which act locally (by interfering with nerve conduction) or generally (by depressing pain perception in the central nervous system)

Purpose

Conscious sedation produces a condition in which the patient exhibits a mildly depressed level of consciousness and an altered perception of pain, but retains the ability to respond appropriately to verbal and/or tactile stimulation. The patient maintains protective reflexes, may experience some degree of amnesia and has a rapid return to daily living.

The desired level of sedation with or without analgesia is where the patient is able to tolerate diagnostic, therapeutic or invasive procedures through relief of anxiety and pain.

Sedation Continuum

Sedation occurs as a continuum of levels of consciousness ranging from minimal sedation (anxiolysis) to general anaesthesia. The patient's age, existing medical conditions and/or medications may interact with the medications used to induce sedation, resulting in deterioration along the sedation continuum.

Because the patient's status can change very quickly from minimal to deep sedation and even to complete anaesthesia, the patient must be monitored closely by staff with specialised knowledge/skill during sedation/analgesia.

The ASA (American Society of Anesthesiologists) has defined the various sedation depths in the table below:

Levels of sedation/analgesia	**Minimal sedation (i.e., anxiolysis)**	**Moderate sedation/analgesia (i.e., conscious sedation)**	**Deep sedation/analgesia**	**General anaesthesia**
Responsiveness	Normal response to verbal stimulation	Purposeful response to verbal or tactile stimulation	Purposeful response following repeated or painful stimulation	Unarousable even with painful stimulation
Airway	Unaffected	No intervention required	Intervention may be required	Intervention often required
Ventilations	Unaffected	Adequate	May be adequate	Frequently inadequate
Cardiovascular function	Unaffected	Usually maintained	Usually maintained	May be impaired
American Society of Anaesthesiologists, Park Ridge, IL.				

Risks and Precautions of Sedation and/or Analgesia

The nurse administering sedation and/or analgesia should be aware that the transition from complete consciousness through the various depths of sedation to general anaesthesia is a continuum not a set of discrete, well defined stages.

The margin of safety of drugs used, to achieve sedation and/or analgesia, varies widely between patients and loss of consciousness with the risk of loss of protective reflexes. This may **occur rapidly and unexpectedly,** therefore, the nurse must be prepared to manage the following potential risks:

Airway:

- Loss of protective reflexes (cough, gag, swallow)
- Aspiration
- Obstruction

Breathing:

- Respiratory depression – decreased respiratory rate
- Apnoea
- Desaturation

Circulation:

- Haemodynamic instability resulting in increased or decreased BP
- Cardiac arrhythmias

Consciousness:

Changes in/or decreased Level of Consciousness (LOC) ranging from agitation, restlessness, combativeness to unresponsive state

Other:

- Drug interactions or adverse reactions, including anaphylaxis
- Individual variations in response to the drugs used, particularly the elderly and those with pre-existing medical disease or history of drug use/abuse
- Risks inherent with the wide variety of procedures performed under conscious sedation and/or analgesia
- Unexpected extreme sensitivity to the drugs used for conscious sedation and/or analgesia which may result in unintentional loss of consciousness and respiratory or cardiovascular depression

Emergency equipment e.g. the amubag and reversal drugs should be checked and on hand in procedure room and the emergency trolley should be readily available

Patient Assessment

The purpose of a pre procedure assessment is to evaluate the status of the patient, obtain baseline physiologic parameters and identify factors that may increase the patients risk during the procedure.

The extent of key complications such as decreased LOC and cardiorespiratory depression can be difficult to assess if the patients pre sedation status has not been determined. There are some essential components to be assessed in **any** patient who will be receiving conscious sedation/analgesia that would be part of your baseline assessment. These include:

Health History and Physical Assessment:

- Verification of consent for conscious sedation and understanding of the procedure to be performed
- Past medical and surgical history e.g. Respiratory conditions, renal, hepatic, cardiac, diabetes dysfunction, pacemaker
- Previous surgery/procedures and response to sedation/anaesthetic
- History of sleep apnoea and evidence of potential airway problems i.e. short fat neck, obesity
- Baseline observations (blood pressure, heart rate, respirations)
- Level of consciousness
- Warmth, colour, dryness of skin
- Fasting time – last oral intake
- Verify that the patient has a person responsible for transportation back home

Medications:

- Current medications particularly anticoagulants, cardiac medications
- Also include over the counter drugs or herbal remedies as these could also result in drug interactions

Allergies:

- Should include drug and food allergies as some drug preparations are based on food products i.e. eggs, soya

Substance Misuse:

- History of alcohol, tobacco or other substance abuse as these may have implications for not only drug interactions and potential complications but also for the doses required to achieve sedation and how these drugs may be metabolized.

Height and Weight:

- Drugs dosages may be ordered by weight i.e. paediatrics

Age and Size:

- It is important to be aware of the general physiological difference between paediatrics, adult and geriatric patients as these have implications on the metabolism of medications, airway management and resuscitation protocols.

Nursing Responsibilities

Sedation and analgesia are administered upon the order of a Medical Specialist.

There must be a minimum of three appropriately trained staff present, the Consultant, the practitioner administering sedation and monitoring the patient (may be a registered nurse), and at least one additional staff member to provide assistance to the Consultant and/or the practitioner providing sedation as required.

The Registered Nurse should know the recommended dose, recommended dilution, onset, duration, effects, potential adverse reactions, drug compatibility and contraindications for each medication used during conscious sedation/analgesia. The nurse must have completed Southern Endoscopy Centre approved:

- Basic IV certification and IV Medications & Fluids certification. (HealthLearn Medication &Fluid Foundation 3 Programme)
- IV cannulation & phlebotomy
- Advanced cardiac life support
- ALERT Post anaesthetic course
- Emergency Simulations

The Registered Nurse/Enrolled Nurse/Anaesthetic Technician monitoring the patient receiving conscious sedation/analgesia should have no other responsibilities that would require leaving the patient unattended or would compromise continuous monitoring during the procedure.

Intravenous sedation/analgesia should be given in **small incremental doses** and **titrated** to the desired end points of sedation and analgesia, while maintaining intact protective reflexes. Sufficient time must elapse between each dose as each dosage has a cumulative effect and therefore a dose given too soon could push the threshold of the patient's tolerance.

On commencement of sedation oxygen therapy is commenced usually via nasal prongs with capnography capability at 2-3 litres.

Monitor and document the patient throughout the entire procedure at 5 minute intervals during titrations of medications and at least every 15 minutes during the procedure.

Monitoring includes:

- Blood pressure
- Heart rate
- Respiration rate, Capnography
- Oxygen saturation
- ECG may be indicated according to patient status
- Level of consciousness and verbal commands
- Patients tolerance to procedure (e.g. pain)

- Other events such as :
  - Cardiorespiratory depression and/or distress
  - Emesis
  - Vasovagal reaction
  - Diaphoresis

- Interventions and subsequent patient response
- Documentation of:
  - Time, dosage, route and response for all medications administered
  - Early warning score (EWS) and Sedation score

Facilities and Equipment

The procedure must be performed in a location which is of an adequate size, and is staffed and equipped to deal with a cardiopulmonary emergency.

At a minimum this must include:

1. Adequate room to perform resuscitation should this prove necessary.
2. Appropriate lighting.
3. A procedure trolley which can be tilted head down.
4. An adequate suction source, catheters and hand piece.
5. A supply of oxygen and suitable devices for the administration of oxygen to a spontaneously breathing patient.
6. Access to emergency equipment for advanced airway management, ECG and defibrillator.
7. Access to appropriate drugs for cardiopulmonary resuscitation and drugs for reversal of benzodiazepines and opioids.
8. A monitor to measure Oxygen saturation, capnography, pulse, Blood pressure.
9. A means of summoning emergency assistance

Technique

- Reliable venous access should be in place for all conscious sedation.
- Intravenous sedation/analgesia should be given in small incremental doses and titrated to the desired end points of sedation and analgesia, while maintaining intact protective reflexes. Sufficient time must elapse between each dose to allow the effect of each dose to be assessed.
- On commencement of sedation oxygen therapy is commenced usually via nasal prongs with capnography capability at 2-3 litres or as directed by Medical Practitioner.
- All patients undergoing procedural sedation and/or analgesia must be monitored continuously with pulse oximetry and capnography. This equipment must alarm when set limits are transgressed.
- Monitoring of the patient and documentation throughout the procedure takes place at intervals of every 5 minutes during titrations of medications and at least every 15 minutes during the procedure. Monitoring includes:

    - Blood pressure
    - Heart rate
    - Respiration rate, Capnography
    - Oxygen saturation
    - ECG may be indicated according to patient status
    - Level of consciousness and verbal commands
    - Patients tolerance to procedure (e.g. pain)
    - Other events such as :
        - Cardiorespiratory depression and/or distress
        - Emesis
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        - Diaphoresis
    - Interventions and subsequent patient response
    - Documentation of:
        - time, dosage, route and response for all medications administered
        - Early warning score (EWS) and Sedation score

Managing Complications

Airway Obstruction and Respiratory Depression:

Airway management is a priority. When the first dose of sedation is given commence the patient on 2-3 litres of oxygen via capnography nasal prongs. Note nasal prongs are only suitable for administration up to 3 litres; a capnography mask will be required for high flow oxygenation.

If signs of respiratory depression are observed (respirations ↓ 10 per minute and oxygen saturations ↓ 95%) ensure that the patients airway is patent by positioning the head in neutral position. Ask the patient to take deep breaths, stimulate them by rubbing their arm and administer oxygen as per protocol. Be prepared to administer reversal agents as per recommended doses under the direction of the Medical Specialist.

Cyanosis is a late sign of respiratory depression therefore action to reverse respiratory depression must be taken before these signs occur.

Over sedation:

The line between minimal and deep sedation is a fine one therefore ongoing assessment is essential. If the patient fails to respond as per the Sedation Continuum they may be reaching deep sedation levels. Maintain ABC's (airway, breathing, circulation) and prepare to administer reversal agents as per recommended doses.

Bradycardia

Some medications may interact with Fentanyl to cause bradycardia.

Post Procedure

- Recovery time will depend on the type and amount of sedation/analgesia given, patient's response to the medication and procedure performed.
- All endoscopy patients who receive conscious sedation/analgesia will be transferred post procedure to endoscopy recovery with continuation of oxygen therapy with capnography if required.
- Recovery should take place under appropriate supervision in a properly equipped and staffed area.
- A ratio of 1:1 registered nurse-to- patient for unconscious patients and a 1:3 registered nurse to-patient for conscious patients in the recovery area should be observed.
- The post anaesthetic recovery room must be staffed by registered nurses (RN's/EN'S) competent in the care of patients recovering from sedation.
- A second registered nurse should be immediately available in the department within ear-shot of the emergency call system or mobile phone to attend in person to assist the nurse in the recovery area if required.
- The patient can be discharged when Vital signs, level of consciousness and mobility have returned to the patients normal pre admission level
- Discharge of the patient should be authorised by the consultant. The patient should be discharged into the care of a responsible adult to whom written instructions should be given, including advice about eating and drinking, pain relief, and resumption of normal activities.
- Patients are advised to avoid operating any machinery, drive or make important/legal decisions until at least 12 hours after sedation

Pharmacology

The most desirable medications to be used are those that will produce relaxation, amnesia and analgesia with little effect on blood pressure, heart rate, respirations and are rapidly eliminated from the body.

It is important that the nurse has knowledge of the medications commonly used – the action, dosages, administration, contra-indications and adverse effects.

A short-acting benzodiazepine (eg, midazolam), either alone or in combination with an opioid analgesic (eg, fentanyl), is commonly selected for concious sedation. Combining use of a benzodiazepine and an opiate may be preferable for longer procedures but increases the risk of oxygen desaturation and cardiorespiratory complications. Specific reversal agents for opiates (naloxone) and benzodiazepines (flumazenil) must be readily available during the procedure. Some of the commonly used drugs are listed below.

Midazolam (Hypnovel)

Is a short acting benzodiazepine most commonly used for concious sedation, since it produces a faster onset of sedation, more complete amnesia, less pain on injection, and improved awakening when compared with diazepam.

Onset of action is 1-5 minutes, peak effect 5-7 minutes and duration is 20-30 mins and can be titrated to effect by repeating doses every 2-3 minutes with the usual total dose being 5 mg

Fentanyl

Opioid analgesia - opiates provide analgesia and sedation during painful procedures. Fentanyl is favored because of its prompt onset and short duration of action. Unlike morphine, fentanyl has minimal cardiovascular depressive effects and hypotension rarely occurs.

Onset of action is 2-5 minutes and duration is 30-60 minutes. It should be noted that any respiratory depressant effect may last longer than analgesic effect.

Naloxone (Narcan)

Opioid antagonist (opioid reversal) that has a short duration of action (20 minutes), repeat doses may be necessary as the duration of action may be less than the half life of the narcotic. Use with caution with patients who are known to be or are suspected to be dependant on opiates as Naloxone may precipitate severe withdrawal symtoms.

Onset of action is within 2 minutes and duration of action 20-60 minutes. Repeat dose may be needed after 20-60 minutes as opioid may be longer acting.

Flumazenil (Anexate)

Benzodiazepine antagonist (reversal) that has a rapid clearance and short duration of action. Benzodiazapine duration of action may exceed that of Flumazenil therefore repeated doses may be required if sedation occurs after reawakening. Doses however should be administered in a series of small increments and not in a single bolus.

Onset of action is 1-3 minutes (80% response within 3 minutes) and peak affects 6-10 minutes.

Conscious Sedation in the Endoscopy Procedure Room

1. What equipment will you need to assemble and check as the Sedation Nurse before the list commences?

2. In the event of an emergency where/how would you get extra help and the defibrillator

3. Where is the emergency call bell located?

4 List the usual dosages, dilutions, administration, indications, actions and adverse reactions for the following drugs:

Fentanyl:	
Dose:	
Dilution:	
Administration:	
Indications:	
Action:	
Adverse Reactions:	
Midazolam (Hypnovel):	
Dose:	
Dilution:	
Administration:	
Indications:	
Action:	
Adverse Reactions:	

Anexate (Flumazenil):	
Dose:	
Dilution:	
Administration:	
Indications:	
Action:	
Adverse Reactions:	
Naloxone (Narcan):	
Dose:	
Dilution:	
Administration:	
Indications:	
Action:	
Adverse Reactions:	
Buscopan	
Dose	
Dilution	
Administration	
Indications	
Action	
Adverse Reactions	

Atropine	
Dose	
Dilution	
Administration	
Indications	
Action	
Adverse Reactions	
Adrenaline	
Dose	
Dilution	
Administration	
Indications	
Action	
Adverse Reactions	

5 If you are asked to administer Midazolam and Fentanyl together, which would you administer first and why?

6. What information would you give to the patient prior to administering sedation?

Preceding sedation a range of information and observations need to be completed

List these below and the rationale for each

8. Describe the effects of sedation on:

Elderly patients:

Patients with liver disease:

Opioid tolerant/dependent or substance abusers:

Prescription medications:

9. Choose 3 observations you will be monitoring and recording and describe why these are important.

1.

2.

3.

10 Why is airway maintenance important during conscious sedation?

11. Describe your actions in the event of oxygen desaturation

12 How would you know if your patient is oversedated and what actions would you take?

13 Describe your actions when laryngeal stridor occurs

14 Briefly describe patient checks and observations you would perform post procedure before handover to endoscopy recovery

References:

Donnelly, Cunningham, Baughman 200-2001 Anaesthesiology & Critical Care Drug Handbook 3rd Edition

AORN – Perioperative Standards and Recommended Practices 2011 Recommended Practices for managing the Patient Receiving Moderate Sedation/Analgesia

Australian and New Zealand College of Anaesthetists Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures PS09, ANZCA 2014

NZNO Gastroenterology Nurses Section – 2008 Guidelines for Nursing Care of the Patient Receiving Sedation and Analgesia in the Endoscopy Setting

Shaikh Khalifa Medical Centre Nursing Services 2003 Procedural Sedation-Analgesia Self Learning Package

New Zealand Health Care Pharmacists Association Inc 2010 Notes on Injectable Drugs, 6th Edition

Associated Documentation:

Care pathways	
Conscious Sedation/Guidelines	KB 16159
Medication Management	KB 11011
IV Narcotics in Recovery/Ward	KB 11023
Informed Consent for Treatment	KB 11202
Safe Staffing Policy and Guidelines	KB 5866

Conscious Sedation/Analgesia Workbook KB 15904

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