Adult Moderate (Conscious) Sedation

(Procedural Sedation and Analgesia)

Educational Package for Registered Nurses and Registered Respiratory Therapists

Approved by
Winnipeg Regional Health Authority
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Developed by WRHA Medication Administration Policy Sub-Committee

REQUIRED PREPARATION

- Current Basic Life Support training in accordance with the Winnipeg Regional Health Authority Cardiopulmonary Resuscitation Training Policy 20.40.210 http://home.wrha.mb.ca/corp/policy/files/20.40.210.pdf
- Review the WRHA Code Blue Team Resuscitation in Acute Care Policy 110.050.010 http://home.wrha.mb.ca/corp/policy/files/110.050.010.pdf
- Read WRHA Moderate (Conscious) Sedation (Adult) Policy 110.000.010 http://home.wrha.mb.ca/corp/policy/files/110.000.010.pdf
- Review facility medication resources (i.e., Pharmacy drug manual) for commonly used medications administered during moderate conscious sedation, such as*: Fentanyl (Sublimaze), midazolam (Versed), and reversal agents such as flumazenil (Anexate) and naloxone (Narcan).

NOTE: This is not a complete list of all medications that may be used during moderate sedation; site and procedure/physician specific medications will require additional research on the part of the administering Registered Nurse (RN)/Registered Respiratory Therapist (RRT).

LEARNING OBJECTIVES

Prior to providing care to patients receiving moderate sedation, the RN, RRT will complete the WRHA Adult Moderate Sedation education package and will:

- Define moderate (conscious) sedation in adults.
- Identify the goals of therapy for moderate sedation in adults
- Demonstrate an understanding of the most common pharmacology of agents used for moderate (conscious) sedation including dosages, special considerations, side effects, monitoring requirements and available reversal agents (where applicable)
- Identify the assessments and appropriate interventions needed to ensure safe adult patient care, prior to, during and after the administration of intravenous (IV) moderate (conscious) sedation.
- Demonstrate an awareness of intraprocedure sedation assessment scales for adults receiving moderate (conscious) sedation (e.g. Ramsay, modified observers-Appendix A)
- Demonstrate an awareness of the pre and post discharge assessment scales for adults receiving moderate (conscious) sedation (e.g. Aldrete Scale-Appendix B)
- Demonstrate an awareness of the Clinical Practice Guideline for Pain assessment http://www.wrha.mb.ca/professionals/ebpt/files/PAM_CPG.pdf
- Demonstrate knowledge of the use of pulse oximetry.
- Identify the physiological parameters and the frequency of monitoring those parameters prior to, during and after moderate (conscious) sedation.
- Demonstrate an understanding of accurate documentation of the assessment data.
- Demonstrate knowledge of airway assessment and management
- Identify post-procedural criteria for the patient's safe discharge home/ transfer to inpatient unit.

Verification of competency in moderate (conscious) sedation in adults is achieved by:

- Annual review of this educational package and performing test to achieve an 80% test score.
- Following completion of this educational package, the RN or RRT will be held professionally accountable to seek further education/training to ensure and maintain competency of practice.

DEFINITION OF SEDATION LEVELS

NOTE: The use of opioid analgesics alone in analgesic dose range does not constitute moderate (conscious) sedation

1. Minimal Sedation (Anxiolysis) is a drug induced state in which the patient:
   - responds normally to verbal commands;
   - airway, ventilation, and cardiovascular status is unaffected; and
   - cognitive function and coordination may be impaired.

2. Moderate (Conscious) Sedation is defined as the IV administration of pharmacological agents to produce a controlled state of depressed consciousness that:
   - Allows protective reflexes to be maintained;
   - Retains the patients' ability to maintain a patent airway;
   - Permits appropriate responses by the patient to voice or touch; and
   - Cardiovascular function is usually maintained.

3. Deep Sedation is a drug induced depression of consciousness in which the patient:
   - Cannot be easily aroused;
   - Responds purposely after repeated or painful stimulation;
   - May require assistance in maintaining a patent airway;
   - Spontaneous ventilation may be inadequate; and
   - Cardiovascular function is usually maintained.

PURPOSE

- To provide sedation and analgesia to facilitate the performance of a procedure and return the patient to pre-treatment level of consciousness in a safe and effective manner. (as per policy)
- To promote safe patient care by providing the necessary theoretical components to RNs and RRTs caring for patients receiving moderate (conscious) sedation.

ADVANTAGES OF IV MODERATE CONSCIOUS SEDATION

- Allows the patient to receive treatments/procedures on an outpatient basis.
- Provides pain control in situations where previously no pain control was provided.
- Minimizes the use of general anesthesia or deep sedation.
- Provides for cost-effective treatment.
- Decreases the risk of side effects.

PRE-PROCEDURE PLANNING

The administration of IV moderate (conscious) sedation may proceed once the following has been ascertained:

- Patient's American Society of Anaesthesiologists (ASA) class as determined by the physician (ASA class IV or V shall be considered for anesthesia assistance)
- Availability of necessary equipment;
- A physician is credentialed in the administration of IV moderate (conscious) sedation;
- A RN or RRT who has successfully completed the moderate (conscious) sedation educational package is present during and after procedure;
- Personnel trained and experienced in resuscitation and advanced airway management are available to respond immediately in the event of an emergency;
- An appropriate space is available for the patient to be recovered; and
- Ensure consent is obtained by the physician prior to the administration of any procedural medications as per **WRHA policy 110.000.005 Informed Consent.**

ASA Classification	Class Description
Class I	The patient is normal and healthy
Class II	The patient has mild systemic disease that does not limit their activities (e.g. Controlled hypertension or controlled diabetes without systemic sequelae)
Class III	The patient has moderate or severe systemic disease, which does not limit their activities (e.g. Stable angina or diabetes with systemic sequelae)
Class IV	The patient has severe systemic disease that is a constant potential threat to life (e.g. Severe congestive heart failure, end-stage renal failure)
Class V	The patient is morbid and is at substantial risk of death within 24 hours (with or without the procedure)
Class E	Emergency status: in addition to indicating underlying ASA status (I-V), any patient undergoing an emergency procedure is indicated by the suffix "E"

Facilities and Equipment:

IV moderate (conscious) sedation shall be confined to those areas with appropriate equipment/drugs including:

- pulse oximeter;
- an oxygen supply;
- suction and suction equipment;
- automated non-invasive blood pressure machine;
- ECG monitor (for patients with significant cardiovascular disease);
- a surface which can promptly be placed in the head down position is recommended(such as a bed or operating room table);
- an emergency basket which contains appropriate airway equipment including a bag-valve mask, oropharyngeal and nasal airways, laryngoscopes and endotracheal tubes for the full size range of adult patients being sedated;
- an effective opioid narcotic antagonist (such as naloxone); and
- a benzodiazepine antagonist (such as flumazenil) in areas where scheduled or planned moderate (conscious) sedation occurs.

Staffing:

Adequate coverage of responsibilities must be arranged to allow complete and uninterrupted patient monitoring during the procedure. Coverage includes:

1) One RN or other qualified individual (i.e. physician, resident, RRT) must be in constant attendance for patient monitoring purposes. This person may perform other brief, interruptible tasks (e.g. assist during a gastrointestinal endoscopy with tissue acquisition). Note: ***the patient monitor must be visible at all times with appropriate basic vital signs alarms set and activated; which include the BP cuff, Pulse and Oxygen Saturation Probe.***
   - If it is determined, based on the nature of the specific procedure and/or patient characteristics, that there needs to be one person who has no other responsibility that would preclude her/him from continuously monitoring the patients response to sedation then a 3rd person will be required if the 2nd person is assisting the physician.

PRE-PROCEDURE PATIENT EDUCATION

Ensure the patient verbalizes an understanding of the following topics based upon written and oral information provided to the patient:

- the planned procedure - what will be done, how they will feel;
- the assessment and care that will be performed and provided before, during and after their procedure and importance of each;
- the effects of the medications to be given during the procedure;
- the discharge instructions as outlined in the discharge teaching/information sheets for the planned procedure specifically but not limited to;
  - outpatients must be discharged to the care of a responsible adult, who will escort the patient home either by car or taxi;
  - outpatients must make arrangements to be accompanied overnight the day of the procedure, if deemed necessary by the physician; and

- the effects of sedation on speed of their responses, memory, judgement, and that for 24 hours after discharge they will not:
  - drive a motor vehicle;
  - operate power tools;
  - smoke;
  - drink alcoholic beverages;
  - sign legal papers or make important decisions; or
  - take sedatives unless specifically advised by a prescribing health care provider.

PRE-PROCEDURE PATIENT ASSESSMENT

Review the chart to ensure documentation is complete and available:

- Chief complaint;
- Physical exam findings;
- Current medical problems and pertinent medical history;
- Current medications;
- Drug allergies;
- Height, weight, age;
- Smoking and substance use/abuse history; and
- ASA classification (the physician is responsible to assess and document this in the patient chart pre-procedure).

Perform baseline assessment, which includes:

- An assessment based on an appropriate assessment scale (Appendix A&B);
- Level of consciousness/orientation;
- Barriers to communication or communication ability;
- Perception of the procedure and moderate (conscious) sedation;
- Emotional state;
- Last oral intake (NPO requirement depends on specific procedure and hospital policy);
- Vital Signs; and
- Oxygen saturation on room air using a pulse oximeter.

Document the assessment on the designated form used in the clinical setting.

RISKS OF MODERATE (CONSCIOUS) SEDATION

Patient must be closely monitored. While assessing for each adverse response in isolation, REMEMBER to review them in the context of the patient's overall status as well.

Potential Complication	Key points	Possible Signs & symptoms	Interventions
Respiratory Depression	▪ 0_2 saturation of a healthy adult on room air is 95-99%. ▪ 0_2 sat. on 3L/nasal prongs should be 98-100%. ▪ RR rates are normally 10-20 resp/min	▪ **Early signs of respiratory depression:** ▪ RR less than 10resp/min ▪ **Reduction in 0_2 saturation** ▪ **Late signs of respiratory depression:** ▪ **Cyanosis - if untreated cardio-respiratory arrest will develop**	▪ When 0_2 saturation starts to drop, tell the patient to take some deep breaths, increase oxygen delivery and alert physician. ▪ If LOC decreases, it may be necessary to assist the patient to maintain a patent airway. ▪ If patient status warrants, call a Code Blue.
Oversedation		▪ Drowsy, difficult to arouse ▪ Slurred speech ▪ Decreased respiratory rate and depth. ▪ Snoring/yawning ▪ Decreased 0_2 saturation.	▪ Stimulate patient ▪ Encourage deep breathing ▪ Increase oxygen delivery. ▪ Notify physician. ▪ Reversal agents may need to be given.
Hypotension	▪ BP may decrease from baseline during moderate sedation. Assess relative to patient's baseline	▪ **Decrease of 20% from baseline systolic BP if baseline is within normal range. e.g.:** **<20% of 110 mmHg= 88 (110 x 0.8)**	▪ **Physician must be notified.** ▪ Stimulate patient. ▪ Encourage deep breathing. ▪ Increase oxygen delivery. ▪ Elevate feet. ▪ Increase IV fluid as ordered. ▪ Administer drugs as ordered.
Hypertension	▪ May be caused by pain, anxiety or stress of procedure. Assess relative to patient's baseline	▪ **Increase of 20% from baseline systolic BP if baseline is within normal range. e.g.:** **>20% of 140 mmHg= 168 (140 x 1.2)**	▪ Report to physician. ▪ Administer sedation or analgesia as ordered. ▪ **If patient's base line is falls out of normal limits the physician MUST be made aware.**
Cardiac arrhythmia	▪ Heart rate may increase or decrease due to hypoxemia, pain, anxiety or hypovolemia.	▪ Difficult to rouse. ▪ Chest pain/ Pale and diaphoretic ▪ Shortness of breath. ▪ Respiratory rate or BP change ▪ New Irregular heart rate-. ▪ Decrease in 0_2 saturation.	▪ Notify physician if patient becomes symptomatic. ▪ Treat symptoms as ordered by physician. (12 lead ECG, increase 0_2 delivery). ▪ If patient status warrants, call a Code Blue.

INTRAPROCEDURE INTERVENTIONS

Preparation for Procedure

- Ensure IV is established. Venous access is necessary for the administration of IV moderate (conscious) sedation drugs and for emergency drugs should they be required.
- Position the patient as required;
- Apply non-invasive blood pressure device and pulse oximeter on **separate limbs**; the blood pressure cuff should go on the arm that does not have the IV in it so the inflation of the cuff will not interrupt the administration of medications.
- Apply cardiac monitoring device if applicable (patient with significant cardiovascular disease); and
- Establish O_2 (usually at a minimum of 3 L/min) as indicated by the patient's condition.

Administration of Medication

- Medication must be administered by a physician, RN, or RRT who has successfully completed the moderate (conscious) sedation education package.
- Moderate (conscious) sedation IV medication will only be administered when the physician is in the procedure room.
- Medications must be administered in accordance with the physician's order and the WRHA Drug Monographs.
- Reversal agents must be immediately available.
- Document on the applicable form for the clinical setting.

NOTE: The following information is for educational puposes ONLY. It does NOT supersede policy, WRHA Drug Monographs, Site Administration Policy or clinical judgement.

Medications

Medications used to induce and maintain procedural sedation ideally have several characteristics: have a sedative or analgesic properties, rapid onset and short duration of effect, and maintain hemodynamic and respiratory stability. Agents with anxiolytic and amnesic properties are also beneficial when the goal is to facilitate potential painful or unpleasant manoeuvres. In addition, the pharmacologic agent should not negatively affect the cardiac or respiratory systems such that significant support of these systems is required. There is no single agent which is ideal for all situations. When administered in combination, medications can work synergistically for beneficial sedation/analgesic/anxiolytic/amnesic outcomes. In addition, combination of medications can increase the risk for adverse respiratory (respiratory depression) and cardiovascular (hypotension) responses.

- **Benzodiazepines**
  - Sedative and hypnotic properties derived from their action on central GABA receptors to decrease excitatory impulses from the brain.
  - Have amnesic, anxiolytic, anticonvulsant and some muscle relaxant properties.
  - Do NOT have analgesic properties
  - Often used in combination with opiate analgesics
  - Used alone, in higher doses, or in combination with opiates, they have an increased potential to cause hypoventilation, hypoxemia and hypotension.

- Reversal agent: **Flumazenil** is available to antagonize the effects of benzodiazepines (e.g., sedation, respiratory depression). **(See WRHA Drug Monograph for additional information)**

- **Midazolam (Versed)**
  - the primary agent used for IV Moderate (Conscious) Sedation due to its rapid onset and short duration of effect.
  - Doses are usually administered slowly over 2 minutes and repeated every 2 -3 minutes as necessary.
  - Patients with renal or hepatic disease, the elderly or obese patients may experience prolonged sedation.
  - For the elderly, lower initial doses with slower rates of infusion and less frequent dosing intervals are usually required.
  - **See WRHA Drug Monograph for additional information**

- **Opioid Analgesic**
  - Bind to opioid receptors within the CNS and periphery to exert their analgesic and sedative effects.
  - Adverse effects include apnea, respiratory depression, decreased respiratory rate, nausea, vomiting, hypotension and constipation.
  - Should be used with caution in patients with COPD, asthma, morbid obesity, and cardiovascular depression.
  - Work synergistically with benzodiazepines allowing for lower doses of benzodiazepines.
  - When used alone, in higher doses, or in combination with benzodiazepines, there is an increased potential to cause hypoventilation, respiratory depression and hypoxemia.
  - A reversal agent: **Naloxone (Narcan)** is available to antagonize the effects of opiates (e.g., sedation, respiratory depression, sedation). **(See WRHA Drug Monograph for additional information)**
  - **Fentanyl (Sublimaze)**
    - Primary opioid used for IV moderate (conscious) sedation due to its rapid onset and short duration of effect.
    - Allow for easy titration of dose to effect.
    - Minimal histamine release; therefore hypotension is minimal.
    - Doses are usually administered via IV push every 2 – 5 minutes until satisfactory analgesia or sedation is achieved.
    - Patients with renal or hepatic disease and the elderly may experience prolonged sedation; therefore lower doses and longer dosing intervals is warranted.
    - **See WRHA Drug Monograph for additional information**

- **Sedatives**

- **Propofol** is an ultra-short acting sedative/amnesic agent with no analgesic properties. It has a rapid onset and short duration of effect. Propofol contains soy and egg lecithin and as such has the potential to cause anaphylactic reactions to patients allergic to these

substances. Avoid contamination of the vials as the lipid emulsion formulation promotes bacterial growth.

Propofol can cause:

- Hypotension
- Respiratory depression
- Pain at the injection site

Propofol elimination from the body is not affected by renal or hepatic dysfunction. As Propofol has no analgesic effects, analgesia can be provided by another agent (e.g. fentanyl). When Propofol is used alone in higher dosages or in combination with benzodiazepines or opiates, there is an increased potential to cause hypoventilation, respiratory depression and hypoxemia. There is **no** reversal agent available for Propofol. **(See WRHA Drug Monograph for Propofol)**

Please note:

Prescribing of Propofol by **intravenous bolus or push in the non-intubated patient** is restricted to physicians trained in the administration of Deep Sedation/General Anesthesia and/or advanced airway management only. This includes physicians licensed in Anesthesiology, Emergency Medicine, and Intensive Care only. Even if moderate sedation is intended, patients receiving Propofol should receive care consistent with that required for deep sedation.

In the non-intubated patient, the physician prescribing the Propofol will have no other role apart from management of the patient's airway, vital signs monitoring and the administration of the sedative medications.

The administration of Propofol by intravenous bolus or push in the non-intubated patient should only be done in appropriately monitored settings i.e. OR, ICU, PACU and ER. The minimum requirements for monitoring consist of continuous ECG and HR, continuous SaO2, and NIBP monitoring. A standard intubation tray, Laerdal bag with mask, dedicated wall source oxygen, and dedicated airway suction is also required.

Prescribing of Propofol by **continuous intravenous infusion in intubated/ventilated patients** is restricted to physicians trained in the administration of Deep Sedation/General Anesthesia and/or advanced airway management. This includes physicians licensed in Anesthesiology, Emergency Medicine, and Intensive Care only. Propofol by continuous intravenous infusion in intubated/ventilated patients in an area supervised by a qualified physician is appropriate, in monitored settings i.e. OR, ICU, PACU and ER.

Administration of IV continuous infusion of Propofol is restricted to Registered Nurses (who have successfully completed the appropriate WRHA Moderate Sedation training and education courses) in Critical Care, Emergency Units and PACU areas with continuous ECG monitoring, continuous SaO2, and NIBP monitoring in intubated and ventilated patients only.

- **Ketamine** is a dissociative agent that causes a 'disconnection' between the thalamus and the limbic systems via its antagonism of the NMDA (N-methyl-D-aspirate) receptors. This 'disconnection' hinders the higher centers from perceiving visual, auditory or painful stimuli. At low doses it is primarily an analgesic with mild sedative actions, while higher doses produce a catatonic dissociative state. Once this state is reached, additional doses

will maintain but generally not deepen the level of sedation. Ketamine has a rapid onset and a relatively short duration of action.
Ketamine is uniquely useful in asthmatic patients as respiratory drive and airway reflexes are maintained as well as causing bronchodilatation. Laryngospasm may occur in 0.4% of patients.

Ketamine's stimulation of the sympathetic nervous system can cause increases in heart rate, cardiac output and blood pressure. This sympathetic stimulation makes Ketamine **contraindicated** in patients with increased intracranial or intraocular pressure or where a significant increase in blood pressure is hazardous.

Ketamine is associated with an 'emergence phenomena' in adults which includes hallucinations, nightmares and vomiting (with an incidence of up to 50% in some reports). Concurrent use of Midazolam may blunt the emergence phenomena as well as Ketamine's cardiovascular effect via the sympathetic nervous system. Blood pressure, heart rate, respiratory rate, oxygen saturation, and sedation must be monitored.
(See WRHA Drug Monograph for Ketamine)

NOTE: The following sections, " Information for selected Moderate Sedation Agent" is an education resource. It does NOT supersede policy, WRHA Drug Monographs, Site Administration Policy or clinical judgement. The intent is to provide information to those reviewing for test purposes ONLY.

INFORMATION FOR SELECTED MODERATE SEDATION AGENTS

Drug	Effect	Dose	Onset	Duration	Reversible	Comments
Midazolam (Versed)	Sedative hypnotic Anxiolytic Amnesic Muscle relaxant anticonvulsant	**Initial dose:** 0.5-2.5 mg IV, followed by titration with 1 mg every 2 min to a total maximum of 5 mg (for less than 60 yrs) or 3.5 mg (for greater or equal to 60 yrs) **IV Push: administer slowly over 2 min.** Reduce dosage by 30-50% if pre-medicated with narcotics	IV: 1-5 min	30-60min	Yes Flumazenil	**Respiratory Depression/Apnea** Use caution in combination with short acting opioids such as fentanyl and sufentanil due to increased risk (consult with pharmacist, physician and/or supervisor). Doses are highly individualized. Lower doses are required for geriatric patients or patients on narcotics or CNS depressants. **ELDER ALERT:** because the risk of apnea/respiratory depression is greater in the elderly, reduce dose by 50%, use with caution

INFORMATION FOR SELECTED MODERATE SEDATION AGENTS

Drug	Effect	Dose	Onset	Duration	Reversible	Comments
Fentanyl	Analgesic	**Initial dose:** 25-100 mcg, then titrate 25 – 50 mcg doses every 2-5 min to a usual total maximum of 2 mcg/kg (usual maximum total doses do not exceed 200 mcg) **IV push:** undiluted over 1-2min	1-3 min	30-60 min	Yes Naloxone	**POTENTIAL HAZARDS:** Respiratory, Depression/ Apnea: risk increased in combination with Midazolam. Bradycardia, hypotension, nausea, vomiting, muscle rigidity, urinary retention **ELDER ALERT:** Reduce dose in elderly, debilitated patients, especially in combination with other CNS depressants
Propofol	Sedative-hypnotic	0.1-0.5 mg/kg (usual dose 20-40 mg) slow IV push, then 0.1-0.5 mg/kg (usual dose 10-30 mg) IV every 3-5 min prn up to a usual maximum of 2.5 mg/kg (usual maximum total doses do not exceed 200 mg) **IV Push:** 0.5 - 1 mg/kg over 3-5 minutes	0.5-1 min	3-5 min	No	Hypotension and respiratory depression **Contraindicated in patients with Propofol, soybean, egg, or glycerol allergies** Do not mix Propofol in the same syringe with other medications (e.g. Ketamine). **ELDER ALERT**: Dose reduction of 50% may be required in the elderly. **Prescribing of propofol is restricted to physicians licensed in Anesthesiology, Emergency Medicine, and Intensive Care only**

INFORMATION FOR SELECTED MODERATE SEDATION AGENTS

Drug	Effect	Dose	Onset	Duration	Reversible	Comments
ketamine – low dose analgesia	Sedative-dissociative Analgesic Amnesic	Maximum Single Dose: IV Push: 0.2 mg/kg Maximum Daily Dose: IV Push: 0.6 mg/kg Usual: IV/Subcutaneous Continuous Infusion: 0.5 – 10 mcg/kg/min (5-20 mg/h). IV Push/Subcutaneous/IM: 0.1 – 0.2 mg/kg BID-TID Patient Controlled Analgesia (PCA): per site specific PCA protocols	1-2 min	Onset of anesthesia : 1-2 min Duration of anesthesia : 5-15 minutes. Note: that analgesia outlasts anesthesia	No	Emergence reactions-characterized by vivid dreams, dissociative or extra corporeal (out of body) experiences, floating sensations, hallucinations, delirium and confusion. Caution advised when used in patients with psychiatric illness. Do not mix ketamine with Propofol in the same syringe Contraindicated where significant elevation in BP is hazardous.(e.g. CHF, uncontrolled hypertension, recent MI, cerebral trauma and cerebrovascular accidents) ELDER ALERT: Because risk of respiratory depression may be greater in the elderly, dose increments should be smaller and rate of injection slower. **Prescribing of ketamine is restricted to physicians licensed in Anesthesiology, Emergency Medicine, and Palliative Care only.**

INFORMATION FOR SELECTED MODERATE SEDATION AGENTS

REVERSAL AGENTS

Drug	Effect	Dose	Onset	Duration	Reversible	Comments
Naloxone	Narcotic reversal	(Reversal of respiratory depression): 0.04-0.4 mg over 30 seconds repeating at 2-3 minute intervals until respiratory rate is greater than 10/minute to a maximum of 0.4 mg	30 sec – 2 min (IV)	20-30 min		**ELDER ALERT:** No specific precautions.
Flumazenil	Benzodiazepine reversal	0.2 mg IV over 30 seconds. Repeat at 60 second intervals to a maximum of 1 mg. Maximum single loading dose: 5 mg Administer undiluted over 15- 30 seconds.	1 min	0.5-4 hours		Nausea and vomiting common. Flumazenil may not completely reverse benzodiazepine-induced respiratory depression. It is intended as an adjunct to, not a substitute for, proper maintenance of an airway. **ELDER ALERT:** Use incremental doses of 0.1 mg, since elderly patients often receive smaller doses of benzodiazepines

Intra-procedure Monitoring

- Establish oxygen with consideration of patient's baseline oxygenation and clinical condition(s), usually at a minimum of 3 L /min.
- Monitor the following parameters continuously and record parameters minimally q15 minutes. More frequent monitoring may be performed as indicated by the patient's condition.
    - Level of consciousness.
    - Oxygen saturation.
    - Airway including patency, respiratory rate, and depth.
    - Blood pressure.
    - Heart rate.
    - Responses to procedure including pain and occurrence of any adverse events.
- Document on the applicable form for the clinical setting the level of sedation using an approved sedation scale e.g., Ramsay, Modified Observers, RASS scale, or AVPU (see appendix A) and all medications administered, including route, dose and responses to medications.

POST PROCEDURE INTERVENTIONS

Post-Procedural Monitoring/Recovery

- Following procedure, patient will be recovered in an appropriate area.
- Vital signs including blood pressure, pulse, respirations, oxygen saturation and level of consciousness will be monitored for a minimum of 15 minutes x 2 (30 minutes total) or until clinically stable as determined by the assessment scale used (Appendix A & B).
- Additional monitoring may include pain, occurrence of any adverse events and additional nursing assessments relevant to the procedure.
- Recovery time may vary depending on:
    - length of the procedure;
    - type of procedure;
    - medications administered;
    - use of reversal agents; and
    - patient response.
- Document the above on the applicable form for the clinical setting.

Post -Procedure Discharge/Transfer Criteria

- Patient assessment must include data reflecting the patient's recovery from both moderate (conscious) sedation and the actual procedure performed (e.g. Neurovascular limb assessment following reduction of a fracture)
- Patient's 0_2 saturation, vital signs, and level of consciousness is returned to baseline as determined in accordance with the sedation scoring system applicable to the practice setting (i.e. Aldrete).
- Outpatients must be able to ambulate without dizziness/orthostatic hypotension, tolerate sips of clear fluids without nausea or vomiting before being discharged.
- Provide and review written moderate (conscious) sedation discharge instructions and ensure patient/responsible adult understands same.
- Document readiness for discharge on the applicable form for the clinical setting.

Inpatient Transfer

Report to the receiving nurse must include:

- Allergies;
- The procedure performed, patient's tolerance, and the type of dressing, drains, or casts (if any);
- The type and amount of medications given;
- Any adverse reactions or complications;
- Presence of patent IV including the type and amount of solution infused;
- Current vital signs including oxygen saturation and oxygen requirements as applicable;
- Any special post procedural physician orders.

OXYGEN DELIVERY

Supplementing the patient with a low level of oxygen prior to, during and after the administration of I.V moderate (conscious) sedation is very important in maintaining acceptable levels of Oxygenation.

Device	O_2 Flow (LPM) Liters/min	O_2 Concentration Delivered (%) (approximate value)	Observations/Interventions
Nasal Cannula	1-6 L/min	24-44%	▪ Do not exceed 6 L/min as it is difficult to tolerate flow rates > 6 L/min ▪ > 6 L/min does not improve oxygenation.
Oxymask	1 L/min 2 L.min 3 L/min 4 L/min 5 L/min 7 L/min 10 L/min 12 L/min ≥15 L/min	24% - 27% 27% - 32% 30% - 60% 33% - 65% 36% - 69% 48% - 80% 53% - 85% 57% - 89% 60% - 90%	▪ For flow rates over 6 L/min please consult Respiratory therapy ▪ Ensure tight seal ▪ Direct oxygen flow to patient's mouth
O_2 Flow Mask or Simple Face Mask	5-10L/min	35%-50%	▪ Ensure Mask has a tight seal ▪ < 5 L/min may result in CO_2 accumulation
Partial Rebreathe mask (mask with reservoir bag attached and no valves on the ports)	Minimum 10L/min Set flow to prevent bag collapse on inspiration	40 – 70%	▪ Inflate reservoir with O_2 by placing thumb over reservoir outlet prior to establishing.
Non-Rebreathe mask (mask with reservoir bag attached and valves on the ports)	Minimum 10L/min	60%-80%	▪ Use only in areas where patient is constantly monitored (1:1). ▪ Ensure **only one** vent cover in place on the side of the mask. ▪ Use as a last resort before intubation. ▪ Inflate reservoir with O_2 by placing thumb over reservoir outlet prior to establishing.

Device	O_2 Flow (LPM) Liters/min	O_2 Concentration Delivered (%) (approximate value)	Observations/Interventions
Bag-valve mask (manual ventilation device)	▪ Minimum 10L/min Set flow so that reservoir bag stays inflated throughout respiratory cycle.	60%-100%	▪ Delivers highest concentration of oxygen ▪ Inflate reservoir with O_2 prior to establishing. ▪ Compress the bag to deliver air via positive pressure while ensuring mask has a tight seal. ▪ Should only be used by those with training and experience with the device.

Pulse Oximetry

- A method of monitoring the patient's oxygen saturation.
- Measures the percentage of haemoglobin saturated with oxygen (SpO_2). A SpO_2 of ≥ 95% is considered normal.
- Probe placement:
  - Depending on the type of pulse oximeter available, the probe will be attached to the patient's finger, toe, ear, or forehead.
  - Attach the probe to an area of good circulation.
  - Oxygen saturation (SpO_2) readings and waveform must correlate with the patient's pulse to be accurate.
  - Nail polish must be removed as it interferes with sensor transmission
- Conditions that may affect the accuracy of the pulse oximeter reading:
  - Patient movement or tremors may be interpreted by the oximeter as pulsation.
  - Extraneous light may interfere with the oximeter's sensors resulting in false or no readings.
  - Mal-placement of the probe may give false or no readings.
  - Vasoconstriction, hypothermia, hypotension and poor tissue perfusion, may result in inadequate pulsations; therefore resulting in a poor signal and false or no readings.
  - Arrhythmias (i.e. atrial fibrillation) may result in an inaccurate pulse reading or no pulse reading at all.

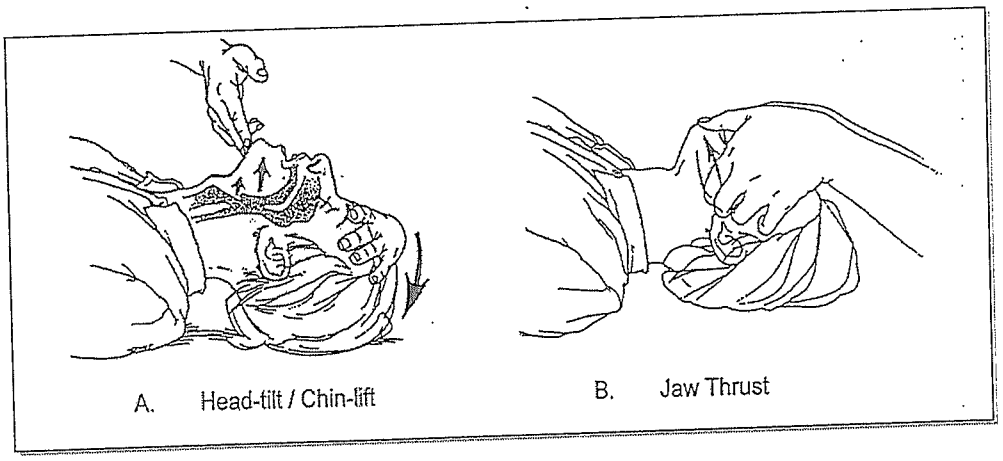
AIRWAY MANAGEMENT

- Administration of IV moderate (conscious) sedation will alter the level of consciousness and may result in respiratory depression. **Once the patient has received IV moderate (conscious) sedation, the risk for airway obstruction is greatly increased. The airway must be continuously monitored to ensure it remains patent.**

- Patients who are morbidly obese, have obstructive sleep apnea, are unable to lay flat, and/or have known or suspected difficult airways are at higher risk for respiratory complications and airway obstruction.

- **Airway obstruction** is often the result of the loss of tonicity of the submandibular muscles, which provide direct support to the tongue and indirect support to the epiglottis. The tongue and/or epiglottis may occlude the airway. Snoring or grunting may become evident. Absent breath sounds (apnea) may indicate complete airway obstruction.

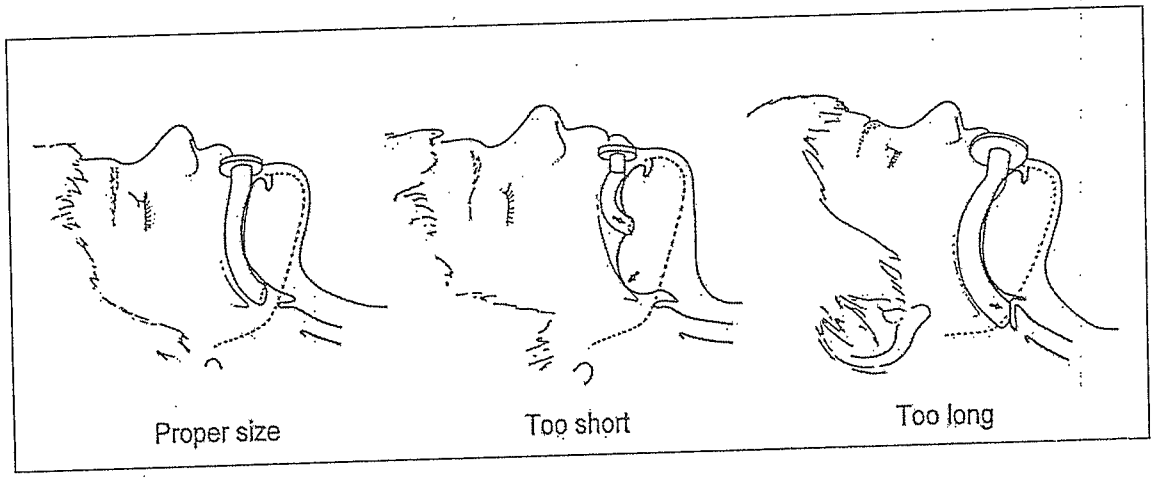
- Brief attempts to relieve mild airway obstruction may include stimulating the patient by voice and/or touching and encouraging them to take deep breaths. If the patient is unresponsive and showing signs of airway obstruction, immediately open the airway using a chin-lift or jaw thrust.



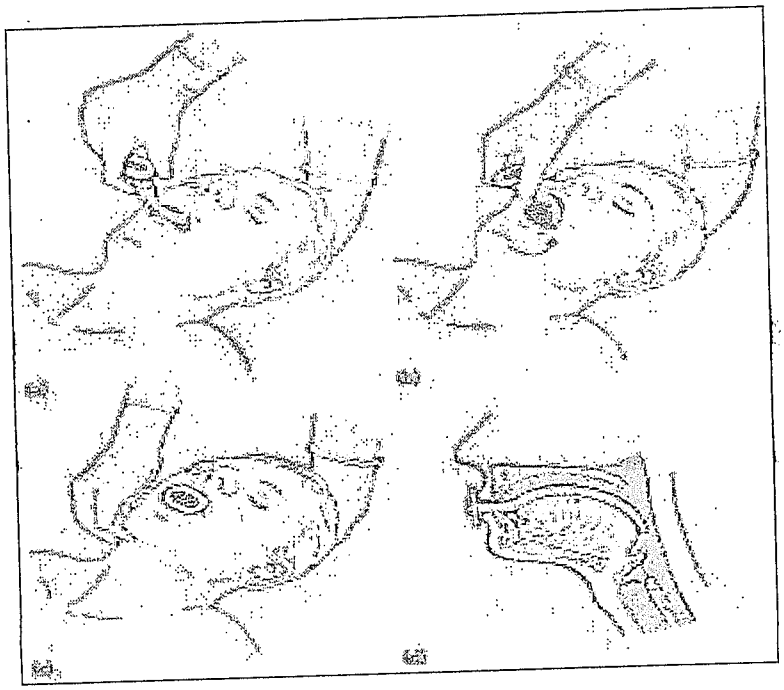
Airway Adjuncts

An airway adjunct (oropharyngeal or nasopharyngeal airway) may be required to achieve and maintain an open airway.

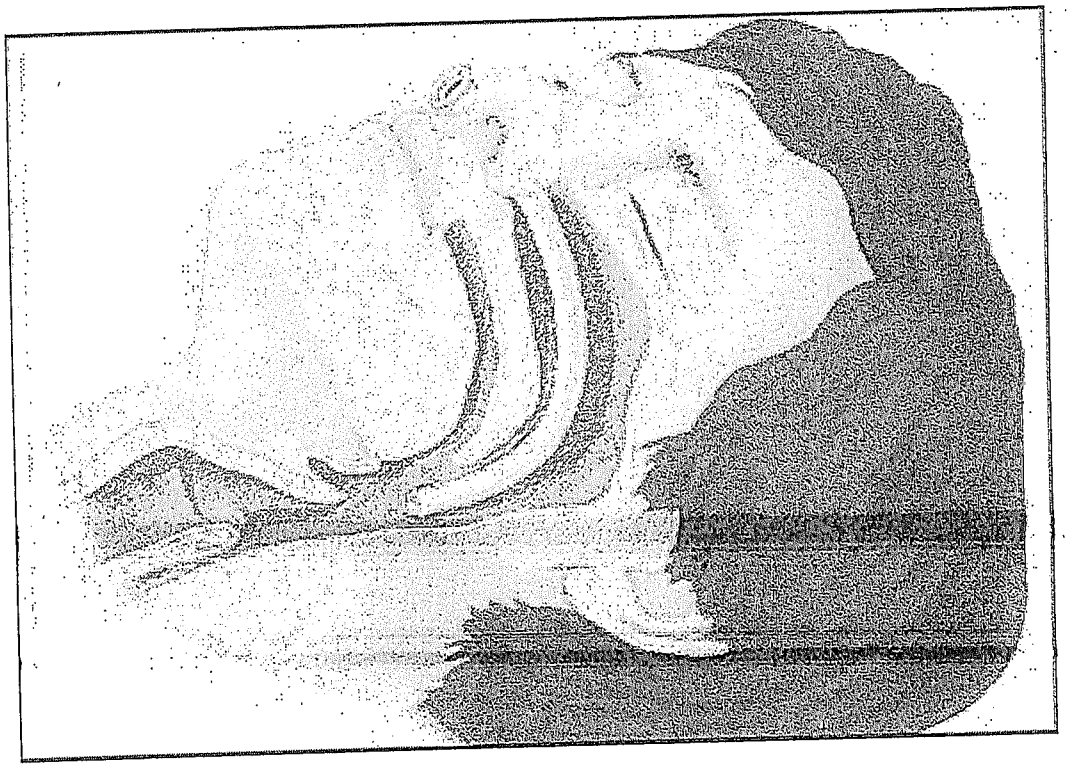
- **Oropharyngeal Airway**
  - used in an **unconscious** patient without a gag reflex. Risk of aspiration exists if used in a semi-conscious patient.
  - A semicircular device that holds the tongue away from the posterior wall of the pharynx.
  - Available in different sizes (large adult size 5, medium adult size 4, small adult size 3).
  - Appropriately sized airway reaches from the corner of the mouth to the tip of the ear when measured against the patient's face.



- **Incorrect size selection and/or improper placement can result in further obstruction of airway.**
- Insert the airway with the distal tip of the oropharyngeal airway turned upward towards the roof of the mouth. As the airway passes across the back of the tongue, gently rotate the airway 180 degrees.

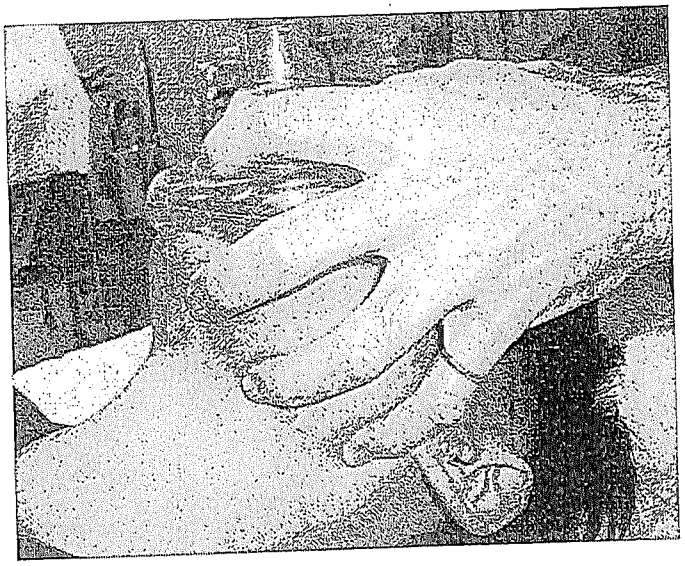


- **Nasopharyngeal Airway (NPA)**
  - Used to keep the tongue from obstructing the upper airway.
  - Used in a **conscious or semiconscious patient with a gag reflex, or in patients whose jaws cannot be separated** (e.g. seizures).
  - Contraindicated in patients with major facial trauma.
  - Available in different sizes. To determine the correct size: select an airway with a diameter smaller than the patient's nostril and long enough to extend from the tip of the patient's nose to the earlobe.
  - Lubricate the airway with water-soluble lubricant, position it perpendicular to the frontal plane of the patient's face and insert gently into the nare. If obstruction is met, gentle twisting may facilitate insertion. If the airway cannot be placed due to complete obstruction of the nare, consider attempting insertion into the opposite nare.
  - **Incorrect size selection and/or improper placement of an airway adjunct can result in further obstruction of the airway, trauma to the oral and nasal cavity, laryngospasm, gagging and vomiting.**



Ventilation Techniques

- One Person Bag-Valve Mask
  - Position self at patient's head.
  - Place the mask on the patient's face, using the bridge of the nose as a guide for correct position.
  - Use the E-C clamp technique to hold the mask in place while lifting the jaw to hold the airway open.
  - Perform head tilt.
  - Use thumb and index finger of one hand to make a "C", pressing the edges of the mask to the face.
  - Use remaining fingers to lift the angles of the jaw (3 fingers form an "E" and open the airway).
  - Compress the bag with the other hand to give breaths (1 second each at a rate of one breath every 5 seconds) while watching for the chest to rise.



- Two Person Bag-Valve Mask
  - One person stands at the patient's head and secures the mask using the E-C clamp technique (see above)
  - The patient's mandible is then grasped and lifted with the fingers of both hands
  - The second person stands to the patient's side and compresses the bag using one hand only at a rate of one breath every 5 seconds while watching for the chest to rise.

If patient does not rouse as a result of 1 minute of bag-mask ventilation, or if staff caring for the patient are otherwise unable to maintain a patient's airway and oxygenation, a Code Blue must be called (See WRHA policy 110.050.010 Code Blue Team Resuscitation in Acute Care)

Appendix A
Sedation Scales (Scale used dependent on clinical settings)

Ramsay Sedation Scale

1	Patient is anxious and agitated or restless, or both
2	Patient is co-operative, oriented, and tranquil
3	Patient responds to commands only
4	Patient exhibits brisk response to light glabellar tap or loud auditory stimulus
5	Patient exhibits a sluggish response to light glabellar tap or loud auditory stimulus
6	Patient exhibits no response

Ramsay MA, Savege TM, Simpson BR, Goodwin R. Controlled sedation with alphaxolone alphadalone. BMJ. 1974;2:656-659.

Modified Observer's Assessment of Alertness/Sedation Scale

Responsiveness	Score
Agitated	6
Responds readily to name spoken in normal tone (alert)	5
Lethargic response to name spoken in normal tone	4
Responds only after name is called loudly and/or repeatedly	3
Responds only after mild prodding or shaking	2
Does not respond to mild prodding or shaking	1
Does not respond to deep stimulus	0

Cohen LB, Delegge MH, Aisenberg J, Brill JV, Inadomi JM, Kochman ML, et al. AGA Institute review of endoscopic sedation. Gastroenterology 2007 Aug;133(2):675-701.

Richmond Agitation Sedation Scale (RASS)

Target RASS	RASS Description
+4	Combative , violent, danger to staff
+3	Pulls or removes tube(s) or catheters; aggressive
+2	Frequent nonpurposeful movement, fights ventilator
+1	Anxious, apprehensive, but not aggressive
0	Alert and calm
-1	Awakens to voice (eye opening/contact) >10 sec
-2	Light sedation, briefly awakens to voice (eye opening/contact)< 10 sec
-3	Moderate sedation, movement or eye opening. No eye contact
-4	Deep sedation, no response to voice, but movement or eye opening to physical stimulation
-5	Unarousable, no response to voice or physical stimulation

Appendix B

AVPU Sedation Scale (Emergency department)

A- Alert **V** – Responds to Verbal Stimuli **P** – Responds to Painful Stimuli **U** - Unconscious

Aldrete Scoring System:

Respiration	
Able to take deep breath and cough	2
Dyspnea/shallow breathing	1
Apnea	0
Oxygen saturation	
SaO2 > 95% on room air	2
SaO2 = 90 – 95% on room air/with supplemental O_2	1
SaO2 < 90% even with supplemental O_2	0
Consciousness	
Fully awake	2
Arousable on calling	1
Not responding	0
Circulation	
BP +/- 20 mmHg baseline	2
BP +/- 20 – 50 mm Hg baseline	1
BP +/- 50 mm Hg baseline	0
Activity	
Able to move 4 extremities	2
Able to move 2 extremities	1
Able to move 0 extremities	0

Chung F, Chan VW, Ong D. A post-anesthetic discharge scoring system for home readiness after ambulatory surgery. J Clin Anesth 1995 Sep;7(6):500-6.

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24. WRHA policy #110.000.005 Informed Consent

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MODERATE SEDATION TEST QUESTIONS

Prior to completion of the test ensure that you have reviewed the required preparation documents as indicated on page 2 of the learning package.

Please select the best answer for each question

Patient Safety Questions (15 marks)

1. Which of the following statements about moderate sedation is TRUE? (1 mark)

   i. Allows the patient the ability to maintain a patent airway.

   ii. Allows the patient the ability to maintain protective reflexes.

   iii. Cardiovascular function is usually maintained.

   iv. Requires administration of opioids alone in analgesic dose range.

   a. i, ii, iii

   b. i, ii, iv

   c. iii, iv

2. What is the **minimum** monitoring required during moderate sedation? (1 mark)

   i. Vital signs

   ii. 12 lead EKG

   iii. Level of consciousness

   a) i, ii
   b) i, iii
   c) ii, iii
   d) All of the above

3. Which of the following is NOT a potential complication of moderate sedation? (1 mark)

   a) Respiratory depression
   b) Hyperkinesia
   c) Cardiac arrhythmias
   d) Hypotension

4. Which of the following acts as an Opioid antagonist (reversal agent)? (1 mark)

   a) Flumazenil
   b) Naloxone (Narcan)
   c) Propofol
   d) Ketamine

5. Which of the following is given to reverse the effects of a benzodiazepine? (1 mark)

   a) Naloxone (Narcan)

   b) Propofol

   c) Ketamine

   d) Flumazenil

6. Which of the following intervention(s) is / are appropriate for treatment of a patient with hypotension? (1 mark)

   a) Notify the physician, stimulate the patient, increase 0_2 delivery, and administer Narcan.
   b) Notify physician, stimulate patient, increase IV fluids, increase 0_2 delivery.
   c) Increase IV fluids, encourage deep breathing, elevate feet, administer Flumazenil.
   d) Notify physician, increase 0_2 delivery, increase IV fluids, turn patient on their side.

7. What would be the first intervention appropriate for a suspected airway occlusion during a procedure? (1 mark)

   a) Apply oxygen face mask
   b) Perform mouth to mouth rescue breathing
   c) Perform the head-tilt chin lift maneuver
   d) Ventilate with a bag-valve mask

8. Patient instructions should include which of the following? (1 mark)

   i. A responsible adult must escort the patient home.

   ii. A responsible adult should remain with the patient overnight if deemed necessary by the physician.

   iii. The patient should not drive a motor vehicle for 24 hours after discharge.

   iv. The patient should not eat or drink for 24 hours. (1 mark)

a) i only
b) i, ii, iii
c) ii, iv
d) all of the above

9. Which of the following <u>are always</u> required to safely administer moderate conscious sedation? (1 mark)

i. Oxygen

ii. An infusing IV

iii. An RN or other qualified individual in attendance for patient monitoring

iv. Foley catheter

a) ii, iii
b) ii, iii, iv
c) i, ii, iii
d) all of the above

10. Which of the following are <u>true</u> for Fentanyl (sublimaze)? (1 mark)

i. Administered undiluted over 1-2 minutes IV push ✓

ii. May cause respiratory depression/apnea ✓

iii. May cause hypotension.

iv. Dose should be reduced in elderly or debilitated patients. ✓

v. Risk of respiratory depression increased if used in combination with Midazolam (Versed). ✓

a) i, ii, iii

b) i, ii, v

c) ii, iii, iv

d) All of the above

11. Which of the following statements regarding Midazolam (Versed) are true? (1 mark)

i. The maximum single does is 5mg

ii. Potential hazards of IV administration include respiratory depression/apnea.

iii. Onset of action per IV is 1-5 minutes.

iv. Dosage increments should be smaller in the elderly.

a) i, iii

b) ii, iv

c) i, ii, iv

d) All of the above

12. What is the minimum oxygen requirement for a patient before, during and after procedural sedation? (1 mark)

a) 15 litres of oxygen via non rebreathe

b) Nasal prongs at 8 litres

c) There is no minimum requirement

d) 3 litres via nasal prongs

13. An oral airway can be used in a semiconscious patient? (1 mark)
a) true
b) false

14. Which of the following are necessary steps the nurse or RT must perform during the pre-procedural sedation assessment? (1 mark)

i) An appropriate patient recovery area is determined prior to the start of the procedure.
ii) Notify the physician if the patient has controlled diabetes with a presently normal blood sugar.
iii) Ensure the patient understands the procedure, what will be done and how they will feel.
iv) Baseline assessment is performed and documented including allergies, LOC, vital signs and oxygen saturation level on room air.
a) i, ii, & iii
b) i, iii & iv
c) iii, iv & v
d) All of the above

15. Which statement is true? (1 mark)

a) Nail polish is allowed prior to application of the pulse oximeter probe.

b) incorrect placement of the probe may provide false SpO_2 readings

For the following clinical areas listed below. Please answer the clinical scenario applicable to you:

- **Critical Care**
- **Emergency Department**
- **Womens Health**
- **Post Anesthesia Care Unit**
- **Operating Room and Endoscopy**

Critical Care

Mrs. D is in the ICU, with community acquired pneumonia. CXR today revealed a large RLL pleural effusion, requiring a chest tube. In rounds, the decision was made to drain the pleural effusion to improve gas exchange. She is A & O x 3, CAM –ve, RASS 0. She is currently intubated and mechanically ventilated on PSV 12 PEEP 10. FiO2 .5.

1. As a nurse preparing for this procedure, which 2 interventions are most important to consider. (1 mark)

   i. RRT notified of impending procedure to be available ✓
   ii, Arterial line monitoring is in place
   iii. Dressing supplies are prepared
   iv. Medication has been ordered and is available. ✓

   a. i, iv
   b. ii,iii
   c. iii,iv
   d. i,ii

2. Mrs. D is aware of the procedure, and consent has been gained. Pre-procedural assessment. VSS are: BP 90/ 60 MAP 70, P 78, PSV 12 RR 18, VT 500ml, VE 9.0 L/min, and SpO2 unable, T 36.5 (oral). Potential causes of this include all of the following **EXCEPT**:

   (1 mark)

   a. Finger probe not covering the patent's nail bed ✓
   b. Finger probe attached to a finger with poor circulation ✓
   c. Hyperthermia
   d. Patient movement or tremors.

3. In preparation for this procedure the physician requests the RN to administer initial doses of Midazolam 6 mg IV and Propofol 80 mg IV. Are these appropriate doses to deliver for this situation? (1 mark)

Yes____
No____

4. Your patient indicates they have pain; you administer Fentanyl 50 mcg IV for relief. Post administration patient's Bp is 90/45, and the apnea alarm has been triggered and you assess her RASS as-4. Your priority actions should include the following EXCEPT: (1 mark)

a. Communicate change to RRT/MD, and ensure the appropriate vent settings are made and switch patient to control mode
b. Administer Flumazenil 2 mg IV over 30 seconds
c. Ensure patient is ventilating
d. Documentation as appropriate

5. Considering the above case what level of sedation is this patient? (1 mark)

a. Minimal sedation b. Moderate sedation c. Deep Sedation

Emergency Department:

Mrs. Brown is a 75 year old who dislocated her left shoulder after a fall at home. Her pre-procedural assessment includes BP 145/85, HR 80, RR 22, Oxygen Saturation 98% on room air, Temp 36.7; she is healthy and does not take any medication. She has signed the consent form and the procedure begins at 2300H.

1. For patients receiving moderate sedation in the **Emergency Department**, which of the following is/are true:
(1 mark)

a. all patients should have continuous cardiac monitoring
b. airway equipment (including but not limited to a NRB and BVM) must be at patient's bedside
c. reversal agents must be at patient's bedside
d. vital signs including SpO_2 are obtained q5min and prn during procedure
e. all of the above

2. Intravenous medications that can be administered for moderate sedation include:
(1 mark)

a. Propofol
b. Fentanyl
c. Midazolam
d. Ketamine
e. all of the above

3. Mrs. Brown's received 60mg of Propofol for the procedure. The physician has already left the room when you notice her breathing is shallow at a rate of 8/min, all other vital signs are within normal limits. What should you do? (1 mark)

a. stimulate patient, notify physician, prepare to administer reversal agent
b. stimulate patient, notify physician, provide assisted ventilations with BVM
c. stimulate patient, increase O2 via nasal prongs
d. attach a NRB mask at 12 - 15L and wait it out as Propofol has a short half-life

4. How long must you wait before transferring Mrs. Brown to the radiology department for post-procedural x-rays? (1 mark)

a. a minimum of 5 min as Propofol has a short half-life
b. the patient can be transferred immediately with a Health Care Aide/Unit Assistant
c. when vital signs and level of consciousness nears/approximates pre-procedural assessment
d. as soon as the requisition is filled out by the physician it's safe to transfer

The procedure is completed with subsequent x-rays and application of a shoulder immobilizer. Mrs. Brown is awake and the physician tells you she's ready for discharge. It's 0200H and Mrs. Brown states she has keys to her apartment and would rather take a taxi home than disturb her family.

During your discharge assessment you note that lab results are still pending, cognition is at baseline, vital signs are within normal limits, and she ambulates with a steady gait. You provided Mrs. Brown with verbal and written discharge instructions, as well as faxed her Rx of Tylenol #3; the pharmacy will deliver her medication in the morning.

5. Is Mrs. Brown ready for discharge? (1 mark)

A. yes B. no

Women's Health Procedure Room

Miss T. is a 23 year old woman who presents to the Women's Health Procedure Day Surgery area for a Therapeutic D & C. Her pre-procedure assessment indicates: that she is healthy and taking no medications; vital signs are: Pulse: 74, B/P: 110 / 70, Respiratory Rate: 12, O_2 Sat: 99%, Temperature 36.8◦C

Miss T. indicates that she has not had anything to eat or drink since midnight. She states that she understands the Doctor's explanation about the planned procedure and the consent is signed.

1. In the procedure room, you are unable to get an oxygen saturation reading on the monitor. Potential causes of this include all of the following except: (1 mark)

a. Finger probe not covering the patient's nail bed.

b. Finger probe attached to a finger or toe with poor circulation.

c. Hyperthermia.

d. Patient movement or tremors.

At the start of the procedure you administer Fentanyl (Sublimaze) 100 micrograms IV push and Midazolam (Versed) 2 mg IV push as ordered. During the procedure Miss T. suddenly becomes unresponsive. Her Vital Signs are: BP 100 / 60, P 72 and regular, Oxygen saturation 90%, Respiratory rate 8 with shallow respirations.

2. You anticipate that the physician will order administration of reversal agent(s). Which of the following would be correct? (1 mark)
   a. Naloxone (Narcan) 0.04 - 0.4 mg over 30 seconds repeating at 2 - 3 minute intervals until respiratory rate is greater than 10 / minute to a maximum of 0.4 mg and/or Flumazenil (Anexate) 0.2 mg IV over 30 seconds, repeated at 60 second intervals to a maximum of 1 mg.
   b. Vasopressin 0.01 - 0.04 units /min IV.
   c. Flumazenil (Anexate) 1 mg IV repeated at 60 second intervals to a maximum of 5 mg.
   d. Naloxone (Narcan) 0.02 mg to 0.04 mg IV over 2 - 3 minutes every 2 to 4 hours.

3. Miss T now shows signs of an airway obstruction, which of the following steps should be performed? (1 mark)
   a. Stimulate the patient by voice and or touch
   b. Encourage the patient to take deep breaths
   c. If the patient is unresponsive, immediately open the airway using a chin lift or jaw thrust
   d. If patient becomes apneic, immediately establish ventilation with bag-valve-mask
   e. All of the above.

4. When performing one-person bag-valve mask ventilation, which of the following steps is necessary? (1 mark)
   a. Use E – C clamp technique to hold the mask in place and maintain an open airway
   b. Compress the bag with one hand to give ventilations every 20 seconds, with oxygen flow set at 10 L / min
   c. Compress the bag with one hand to give ventilations every 5 seconds, with oxygen flow set at 15 L / min
   d. Both a and c
   e. All of the above.

5. At the conclusion of the procedure Miss T.'s vital signs return to baseline and she is assisted to the recovery area. What information would you report to the receiving nurse? (1 mark)
   a. The procedure performed and the patient's tolerance of same.
   b. All medications including dosages given.
   c. Any complications and management of same.
   d. All of the above.

Post-Anesthesia Care Unit

Mr. X is a patient on an in-patient unit. He is 55 years old and has a history of diabetes, hypertension, and obstructive sleep apnea. Arrangements have been made between the Surgical Service and Anesthesia to have Mr. X come to PACU for a dressing change under conscious sedation. Please answer the following five questions.

1. Upon arrival to PACU, Mr. X angrily says to you, "I don't know why they just don't change my dressing on the ward. All this moving around from unit to unit can't be good for a sick guy like me." The best response would be:
(1 mark)

a. In PACU we have the staff and equipment to appropriately monitor you during and after your conscious sedation. Conscious sedation should help you to better tolerate your dressing change.

b. Well, if you feel that strongly against coming here, I will arrange for you to go back to your ward.

2. Mr. X settles and you begin your pre-procedural assessment. VS are: BP 140/60, P 86, RR 16, T 36.0 (oral). You are unable to get an oxygen saturation reading on the monitor. Potential causes of this include all of the following **EXCEPT**:
(1 mark)

a. Finger probe not covering the patient's nail bed.

b. Finger probe attached to a finger or toe with poor circulation.

c. Hyperthermia.

d. Patient movement or tremors.

3. Mr. X undergoes his dressing change. During the procedure, the anesthesiologist administers Midazolam and Fentanyl and monitors the patient while you assist the surgeon. Immediately following the procedure, Mr. X responds to you when you call his name. His VS are: BP 105/63, P68, RR 12, T 36.1 (oral). Oxygen Saturation is 96% 3 L NP. Satisfied with the patient's condition, the anesthesiologist writes an order for IV Fentanyl should the patient start complaining of pain and leaves the unit. About 10 minutes later, the patient tells you that he is feeling sharp pain to the area of his dressing change (7/10). You decide to give him a dose of Fentanyl. About 3 minutes after receiving Fentanyl, the patient's becomes apneic. You decide to perform a head-tilt chin lift but he remains apneic. You then decide to bag-valve-mask the patient. The proper technique to do this includes all of the following **EXCEPT**:
(1 mark)

a. Position yourself at the patient's side.

b. Place the mask on the patient's face, using the bridge of the nose as a guide for correct position.

c. Use the E-C clamp technique to hold the mask in place while you lift the jaw to hold the airway open. Perform a head-tilt.

d. Compress the bag with the other hand to give breaths (1 breath every 5 seconds, each breath over 1 second) while watching for chest rise.

4. After about 1 minute of performing the bag-valve-mask maneuver the patient remains unresponsive. The next thing that you should do is:
(1 mark)

a. Try bagging for another minute.

b. Call a Code Blue.

5. After receiving a dose of Naloxone, Mr. X begins to breathe on his own again. You monitor him for 90 minutes following this complication and there are no further issues. At present, Mr. X is alert and oriented. His VS are: BP 150/53, P 70, RR 16, T 36.3 (oral). His oxygen saturation is 98% on 3 L NP. You decide to send Mr. X back to the Burn Unit. In report you would relate to the receiving nurse:
(1 mark)

a. The procedure performed and the patient's tolerance of same.

b. All medications with dosages given during and after the procedure.

c. Any complications and management of same.

d. All of the above.

Endoscopy and/or Operating Room (if applicable)

Mrs. Smith is an alert oriented 68 year old woman who is having a colonoscopy. She has a history of hypertension, MI, and has previously been diagnosed with congestive heart failure. She has been treated with medication and diet and has had no hospital admissions in the past year for any of her medical conditions:
During your pre-procedure assessment you find the following information:

a) She has no escort and plans on taking a taxi home

b) BP 102/55mmHg

c) Heart Rate 110 and irregular (new finding)

d) Oxygen saturation 95% on room air

e) Pt reports she mistakenly took her blood pressure meds twice this AM

f) She reports that she has been feeling dizzy for two days, and has been unable to eat or drink anything.

g) The consent is signed and the procedure listed corresponds with pt understanding and slate for the day.

h) The physician has documented she is a ASA class IV

1. What information should be communicated to the physician prior to starting the procedure? (3 marks)

Mrs. Brown is a 65 year old having a Gastroscopy and Colonoscopy. Her pre-procedure assessment included BP 138/85, HR 70; oxygen saturation 97% on room air, respiratory rate 14, and is a well-controlled asthmatic. **Her pre-op Aldrete score is 9.**

She received 5 mg of Midazolam and 100 mcg of Fentanyl for her procedure. Her vital signs post procedure is as follows: BP102/55, heart rate 60, oxygen saturation 95 % on 3 L/min using nasal prongs, respirations 12 and shallow. She is slightly drowsy but arousable and is oriented to person, place, and time. She moves All limbs purposefully.

2. Calculate Mrs. Brown Aldrete score using the "Aldrete Scoring System" (1 mark for total score)
   Respirations_____ O_2 Sat_____ Circulation_____ LOC_____ Movement_____
   Total Score_____

3. Is Mrs. Brown ready for discharge? YES_____ NO_____ Discuss why: (1 mark)

Aldrete Scoring System:

Respiration	
Able to take deep breath and cough	2
Dyspnea/shallow breathing	1
Apnea	0
Oxygen saturation	
SaO2 > 95% on room air	2
SaO2 = 90 – 95% on room air/with supplemental O_2	1
SaO2 < 90% even with supplemental O_2	0
Consciousness	
Fully awake	2
Arousable on calling	1
Not responding	0
Circulation	
BP +/- 20 mmHg baseline	2
BP +/- 20 – 50 mm Hg baseline	1
BP +/- 50 mm Hg baseline	0
Activity	
Able to move 4 extremities	2
Able to move 2 extremities	1
Able to move 0 extremities	0

ADULT MODERATE SEDATION

Quiz Answer Sheet

Name: _____

Date:

Please circle the correct answer:

General Questions:

1. A B C
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11 A B C D
12. A B C D
13. A B
14. A B C D
15. A B

SCORE:
General Questions:
15 marks Total: /15

Case Study
5 marks Total: /5

Case Studies:

Critical Care:

1. A B C D
2. A B C D
3. Yes or No
4. A B C D
5. A B C

Emergency Department:

1. A B C D E
2. A B C D E
3. A B C D
4. A B C D
5. Yes or No

Women's Health:

1. A B C D
2. A B C D
3. A B C D E
4. A B C D E
5. A B C D

Post Anesthesia Care Unit:

1. A B
2. A B C D
3. A B C D
4. A B
5. A B C D

Endoscopy / Operating Room

1. _____

2. Respirations_____
O2 Sat_____
Circulation_____
LOC_____
Movement_____
Total Score_____

3. Yes or No

Why: