

Adverse Outcomes In Non-Operating Room Anesthesia

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Introduction

Non-operating room anesthesia (NORA) is an expanding field that is great for the field of medicine but can be associated with adverse outcomes when providers are careless and unprepared. It is important to understand the environment, procedure, and patient population for each case . NORA cases often present providers with unfamiliar locations and procedures that they are not comfortable with. It is important for anesthesiologists to implement a systemic checklist to ensure that all provisions of all categories of anesthetic care are present in the institute to be certain that safe and qualified anesthetic care will be given. Complications frequently arise with NORA. A complication such as respiratory depression is quite frequent. It is important for providers to understand the algorithms for controlling adequate ventilation/oxygenation. Hypothermia is another frequent outcome with these procedures due to unfamiliarity of the location. All of these adverse outcomes can be prevented with appropriate preparation and vigilance. Post operative nausea/vomiting can be prevented by taking a multimodal approach with antiemetics.

TABLE 44–13 Continuum of depth of sedation/analgesia/anesthesia.

Level	Type	Responsiveness	Airway	Spontaneous Ventilation	Cardiovascular Function
1	Minimal	Normal to verbal stimulation	Unaffected	Unaffected	Unaffected
2	Moderate	Purposeful response to verbal or tactile stimulation	No intervention required	Adequate	Usually maintained
3	Deep	Purposeful after repeated or painful stimulus	Intervention may be required	May be inadequate	Usually maintained
4	General Anesthesia	Unarousable to painful stimulus	Intervention often required	Often inadequate	May be impaired

Data from American Society of Anesthesiologists.

Considerations

Patient

- ASA status, co-morbidity, emergent/elective
- Airway assessment
- Allergies – contrast
- Anesthesia plan – sedation/anesthesia
- Monitoring –
 - Basic/Standard: oxygenation, ventilation, circulation, temperature
 - Advanced: invasive hemodynamic, TEE, BIS

Environment

- Anesthesia equipment
- Anesthesia monitors
- Suction
- Resuscitation equipment
- Personnel
- Technical equipment
- Radiation hazard
- Magnetic fields
- Ambient temperature
- Warming blanket
- Portable transport monitors
- Oxygen cylinders

Procedure

- Diagnostic or therapeutic
- Duration
- Level of discomfort/pain
- Patient position
- Special requirements, e.g. monitoring
- Potential complications
- Surgical support

Data from American Society of Anesthesiologists.



Equipment and Monitoring

The minimal requirements for safe anesthesia include first and foremost, availability of a reliable oxygen source and delivery method. Adequate suction is an essential part of the case and should always be present. There are times when the location will have the suction connected to a wall outlet or machine in the room, but there are other times when a suction cannister will have to be manually carried down on your person. There should be some form of an anesthesia cart stocked with appropriate anesthetic drugs, monitoring equipment, and emergency supplies for the case. The room in which the procedure will be performed should be equipped with adequate lighting and electrical outlets. There should be availability of adequately trained staff for immediate assistance in case of an emergency. Finally, it is important that there is adequate postanesthesia care equipped with trained staff to monitor the patient and guide them through the recovery process.

TABLE 44–11 Location/space requirements for nonoperating room anesthesia.

- Adequate size with good access to the patient
- Uncluttered floor space
- An operating table, trolley or chair which can be readily tilted into Trendelenburg position
- Adequate lighting including emergency lighting
- Sufficient electrical outlets including clearly marked electrical outlets connected to an emergency back-up power source
- Suitable clinical area for recovery of the patient which must include oxygen, suction, resuscitation drugs and equipment
- Emergency back-up call system to summon assistance from the main operating room

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Patient Safety

Patients presenting for NORA procedures are often older patients that are more medically complex and have numerous comorbidities. Studies performed by the ASA closed claims database have shown that NORA was associated with a higher number of deaths compared to anesthesia being performed in the operating room. Respiratory depression secondary to over sedation was the most common type of adverse event. This exemplifies the importance of keeping the same standard of care that is given in operating rooms should be implemented In NORA locations as well. Anesthesia provides should be educated on the continuum of sedation. As sedation deepens, it is important to recognize blunting and loss of airway reflexes and patency, together with depression of spontaneous ventilation and cardiovascular function. It is common for sick, unstable patients to be transferred back and forth between the ICU, operating rooms, and NOR locations. Therefore, it is important to have the patient accompanied by a member of the anesthesia team to evaluate, monitor, and support the patient’s medical condition. For the anesthesia provider to be capable of doing this, he/she must be properly equipped with a self-inflating bag, spare anesthetic and emergency drugs, equipment for intubation, portable suction, and oxygen.

References

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