

Unintended Awareness during General Anesthesia

Position Statement, Policy and Practice Considerations

Position

The American Association of Nurse Anesthetists (AANA) is concerned for the safety and optimal outcome for each patient receiving anesthesia services. Although the risk of unintended awareness during general anesthesia is low, the identification of risk and prevention and management of unintended awareness is critical to the wellbeing of patients. The AANA recommends that facilities work in collaboration with the interdisciplinary team to develop a comprehensive policy addressing prevention and management of unintended awareness during general anesthesia.

Introduction and Background

Unintended awareness is rare, occurring in 1 to 2 patients per 1,000 general anesthetics.¹⁻³ The duration and severity of unintended awareness varies.² The patient may become aware for a brief or extended period of time during the general anesthetic.⁴ Recall of the events or sounds heard during general anesthesia may occur immediately after surgery or be delayed for months.⁵ Patients may develop anxiety disorders of varying severity, including flashbacks, panic attacks, anxiety, depression, nightmares and posttraumatic stress disorder, which may persist long-term and require psychological health treatment.^{4,6,7} Patients who receive monitored anesthesia care or sedation may believe that they experienced unintended awareness during the procedure. Therefore, it is important to help them understand that periods of awareness may occur during sedation using analgesia and anxiolysis. Patients who believe they have experienced awareness during general anesthesia are encouraged to disclose and discuss their feelings about the experience with their anesthesia professional as soon as they suspect they have experienced or are aware of an occurrence.

Risk Factors

Episodes of unintended awareness may occur as a result of an inadequate level of anesthesia, equipment malfunction, or patient-related factors, such as alcohol use, substance use disorder, or hemodynamic instability. Unintended awareness may also be related to specific procedures, including trauma surgery, cardiac surgery, cesarean-section, and craniotomy.⁸ Some of the risk factors for unintended awareness are outlined in Table 1

Table 1. Risk factors for unintended awareness^{3,4,8-11}

Patient-Related	Procedure-Related	Anesthesia-Related
<ul style="list-style-type: none"> • Past history of awareness • Hemodynamic instability • Pediatric and elderly • Chronic opioid, anxiolytic medications • Substance use disorder • Tobacco, alcohol use 	<ul style="list-style-type: none"> • Cardiac surgery • Cesarean Section • Trauma surgery • Craniotomy • Difficult airway management • Surgery occurring at night 	<ul style="list-style-type: none"> • Inadequate dose of medication • Neuromuscular blockade • Equipment issue

Policy Considerations for Unintended Awareness during General Anesthesia

- Definitions
- Anesthesia equipment preventative maintenance schedule, service and support plan
- Availability of level of consciousness monitor
- Staff education
- Preoperative assessment of patient for increased risk
- Postoperative assessment for symptoms of occurrence
- Process for patient to disclose an occurrence
- Process for healthcare professional to document and report occurrence
- Process to manage an occurrence
- Referral pathway
- Interdisciplinary team review of occurrence with action plan for improvement

Practice Considerations for Unintended Awareness during General Anesthesia

Preanesthesia assessment and evaluation to identify risk¹²

- Obtain the patient's medical history, including medication and herbal supplement use, preexisting conditions, anesthesia history, and other factors that could influence the patient's response to anesthesia (e.g., alcohol and drug abuse, obesity).
- Request information on awareness-specific risk factors (Table 1) to help develop the plan of anesthesia care.
- Refer to AANA *Documenting Anesthesia Care*¹² for additional information.

Plan of care and informed consent^{13,14}

- Develop plan of care to decrease risk of unintended awareness.
- Discuss the risk of unintended awareness with at-risk patients; plan of anesthesia care including monitoring modalities; possible symptoms of unintended awareness; and the importance of communication with surgeon or anesthesia professional if concerns arise any time prior to and after the procedure.
- Encourage the patient to contact the surgeon or anesthesia professional if experiencing unanticipated anxiety, unexpected change in mood, or recurrent dreams/nightmares.
- Refer to AANA *Informed Consent for Anesthesia Care*¹³ for additional information.

Anesthesia¹⁵⁻²¹

- Consider level of consciousness monitoring for patients at risk of unintended awareness under general anesthesia.
 - Monitor does not prevent or guarantee that unintended awareness will not occur
- Read medication container and syringe label during medication preparation, and check the labeling prior to and following administration.
- Conduct safety check of preanesthesia equipment and anesthetizing area.
- Document medication, dose and route.
- Minimize use of neuromuscular blocking agents.
- Consider use of an amnestic drug.

Monitor and Assess^{4,16,22,23}

- *Clinical signs*
 - Tachycardia
 - Blood pressure
 - Diaphoresis, tearing
 - Tachypnea and movement
 - Patency of vascular access
- *Equipment*
 - Level of consciousness monitor, if part of plan of care
 - Audible monitor tones and alarms
 - Monitor vaporizer setting, inhaled agent level, exhaled anesthesia agent and/or infusion pump setting, syringe volume
- Refer to the AANA *Standards for Nurse Anesthesia Practice*²³ monitoring standards.

Equipment Maintenance¹⁶

- Schedule preventative maintenance for anesthesia delivery systems, syringe pumps, monitors, and vaporizers to help ensure they function properly

Post-Anesthesia Considerations

A patient's experience of unintended awareness may manifest itself in several ways and may not be immediately apparent.²⁴ For example, children may exhibit changes in mood or report nightmares several days or weeks following their procedure. Therefore, it is important to educate the interprofessional team about all of the signs and symptoms of an occurrence of unintended awareness during general anesthesia so that they are prepared to notify the anesthesia professional to handle the occurrence.

When the anesthesia professional discusses the occurrence with the patient or family, it is important that they identify the type of anesthesia provided.¹ Many patients who received monitored anesthesia care or sedation believe that they have experienced recall of events during their procedure. Help the patient understand that periods of awareness may occur during analgesia and anxiolytics.¹ If the patient reports awareness or recalls events or sounds during general anesthesia, a semi-structured interview tool, such as the Brice-modified questionnaire, shown in Table 2, may help the anesthesia professional gather the most complete representation of the patient's experience.

Table 2. Brice-modified questionnaire^{25,26}

What was the last thing you remember before going to sleep?
What is the first thing you remember after waking up?
Do you remember anything between going to sleep and waking up?
Did you dream during your procedure?
Were your dreams disturbing to you?

If the patient is unable or unwilling to say what they remember, carefully help them recount the experience from the time of the preanesthesia assessment and evaluation, placement of the intravenous access, entering the operating room, induction, and so on.¹¹ Interview the parent(s) or guardian(s) of pediatric patients to identify any observable behavioral changes or experiences that may be indicative of unintended awareness.²⁴ Once the patient has talked about his or her feelings and provided a complete summary of the experience, try to relate operating room sounds and activities to the patient's report of sounds or events, offer them follow-up visits to discuss their experience further, suggest resources to assist in recovery, and discuss possible anesthesia management considerations for the future.

Disclosure

Some patients feel responsible for the unintended awareness. Disclosure of what is known related to anesthesia and preexisting risk is very helpful for recovery. The AANA *Guidelines for Critical Incident Stress Management* address disclosure following an adverse event.²⁷ Patients and families often want to know what will be done to prevent this from happening to anyone in the future. Providing open and timely communication keeps patients and family members informed to support their recovery. Discussion of your facility quality improvement process may be helpful. During the disclosure discussion:

- Validate the patient's concerns
- Reassure the patient that they were not dreaming or hallucinating
- Connect the events or sounds they report with the operating room environment
- Plan follow-up visits with the patient, as indicated
- Discuss future anesthesia management to mitigate risk of reoccurrence
- Provide information for the patient or family to share for future general anesthesia in order to prevent another occurrence
- Refer patients to resources such as counseling or cognitive behavioral therapy as needed
- Document the detailed account of the patient's experience and management in the healthcare record

Conclusion

Unintended awareness during general anesthesia can have a significant impact on the patient, family and anesthesia professional. It is important that anesthesia professionals carefully assess patients for risk of unintended awareness, engage in the informed consent process and obtain informed consent, remain vigilant, assess anesthesia equipment performance, and monitor for indications of unintended awareness. Incident or root cause analysis led by the facility performance improvement or risk management team is vital for systems improvement and prevention of future occurrences of unintended awareness.^{27,28} Supporting patients to disclose experiences and educating providers to recognize risk factors and warning signs of awareness will foster quality improvement and promote a culture of patient safety.

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In February 2005, the AANA Board of Directors adopted *Anesthesia Awareness during General Anesthesia, Position Statement Number 2.12* and *Considerations for Policy Development Number 4.3*. Both documents were revised in April 2012 and archived in November 2016. In November 2016, the AANA Board of Directors adopted *Unintended Awareness during General Anesthesia*, which combined and updated the position statement and policy considerations and added practice considerations as one document.

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