

## WHAT IS INTRAOPERATIVE AWARENESS UNDER GENERAL ANESTHESIA?

Intraoperative awareness occurs when a patient becomes conscious during a surgical procedure performed under general anesthesia and subsequently has recall of these events. The medical literature suggests that intraoperative awareness with recall while under general anesthesia may occur to some degree at a frequency of approximately 1 – 2 in 1,000 anesthetics. Most patients experiencing intraoperative awareness do not feel any pain. However, the experience can be quite disturbing and traumatic, and some patients may even need counseling after their surgery to help lessen feelings of confusion, stress, or trauma associated with the experience. For this reason, anesthesia professionals seriously committed to minimizing the risk of intraoperative awareness under general anesthesia.

Intraoperative awareness does not refer to the period of time just prior to the anesthetic completely taking effect, or as the patient is emerging from anesthesia. In addition, when sedatives are administered during a local or regional anesthetic (such as a nerve block, spinal, or epidural), a state of deep unconsciousness is usually intentionally avoided. It is expected that these patients will have some recollection of the procedure. Finally, the information in this brochure does not apply to patients who receive sedation, and not general anesthesia, for procedures outside of the operating room such as for dental procedures, upper GI endoscopies, colonoscopies, etc., because awareness is not uncommon for these procedures.

Members of the American Society of Anesthesiologists (ASA), the American Association of Nurse Anesthetists (AANA), the American Academy of Anesthesiologist Assistants (AAAA), and the Anesthesia Awareness Campaign (AAC) want you to know about the possibility of intraoperative awareness with recall. A high priority of all four organizations is to educate the public about intraoperative awareness under general anesthesia and to minimize its occurrence. Both the ASA and the AANA appointed separate task forces to study intraoperative awareness, and each organization has published guidelines to help minimize the risk. (ASA 2006: *Practice Advisory for Intraoperative Awareness and Brain Function Monitoring*. AANA 2005: *Position Statement 2.12. Unintended Awareness under General Anesthesia*)

## WHY DOES INTRAOPERATIVE AWARENESS HAPPEN AND WHY ARE SOME PATIENTS AT RISK?

The ultimate goals of anesthesia professionals are always to protect the life of the patient and to make the patient as comfortable as possible. That is why it is important to have highly trained anesthesia professionals involved in your surgery. In some high-risk surgeries, such as trauma, cardiac surgery, emergency cesarean delivery, or in situations involving a patient whose condition is unstable, using the usual dose of anesthetic drugs could harm the patient. In these and other critical or emergency situations, awareness may not be completely avoidable because the patient cannot be put safely into a deeper anesthetic state.

While the safety of anesthesia has increased markedly over the last 20 years, patients may react differently to the same level or type of anesthesia. Sometimes different medications can mask important signs that anesthesia professionals monitor to help determine the depth of anesthesia. In other rare instances, technical failure or human error may contribute to unexpected episodes of awareness.



Your anesthesia professional can help you to feel comfortable and informed about your upcoming experience with anesthesia.

## THE 10 THINGS YOU SHOULD KNOW ABOUT INTRAOPERATIVE AWARENESS

1. Even though intraoperative awareness is rare, when it does occur, it can be very disturbing and traumatic for some patients.
2. Awareness can range from brief, hazy recollections to some specific awareness of your surroundings during surgery. Most patients experiencing awareness usually do not feel any pain. Some patients may experience a feeling of pressure.
3. Patients who dream during surgery, or who have some perception of their surroundings before or after surgery, may think they have experienced intraoperative awareness. But such a sensation or memory does not necessarily represent actual awareness with recall during the surgical procedure.
4. Some procedures are performed under local or regional anesthesia with modest levels of sedation. In these circumstances, deep unconsciousness is not intended, and patients will predictably have varying levels of recall of events and surroundings without experiencing surgical pain. Your anesthesia provider will clearly explain exactly what you should expect to experience.
5. Experts in the field of anesthesia are actively studying awareness under general anesthesia, and they are seeking the most effective ways to minimize it. Practice advisories and position statements have been established for anesthesia professionals to help minimize the risk.
6. Intraoperative awareness can occur in high-risk surgeries such as trauma and cardiac surgery in which the patient's condition may not allow for the usual dose of anesthetic drugs to be given. In those instances, the anesthesia professional will weigh the potential for awareness against the need to guard the patient's life or safety. The same is true during a delivery by cesarean section, particularly if it is an emergency delivery. The usual doses of anesthetic drugs may not be the safest for the mother or child.
7. It has been shown that early counseling after an episode of awareness is vital to lessen feelings of confusion, stress, or trauma associated with the experience.
8. Over the last 20 years, researchers in anesthesia have spearheaded developments that have dramatically improved patient safety and comfort during surgery.
9. A highly trained anesthesia professional should be involved in your surgery. No technology can replace this expertise.
10. Patients should talk with their anesthesia professional before surgery to discuss all of their concerns, including the remote possibility of awareness. These professionals work to ensure the best possible care of patients in the operating room.

## HOW CAN THE RISK OF INTRAOPERATIVE AWARENESS BE MINIMIZED?

Before surgery, a patient should meet with his or her anesthesia professional to discuss anesthesia options. The patient should share with the anesthesia professional any problems experienced with previous anesthetics, including any history of intraoperative awareness. The patient should also discuss all prescription medications or over-the-counter medications he or she is taking. This information is vital so that the anesthesia professional can tailor the anesthetic plan to the patient's specific needs. Should there be concerns regarding intraoperative awareness, this is the ideal time to express them and to ask questions about what precautions will be taken to avoid another occurrence.

During your surgery, your anesthesia professional will carefully monitor your vital signs, such as your heart rate, breathing rate, and blood pressure to help gauge the depth of anesthesia. Sophisticated technology to analyze the presence of anesthetic in the administered gas mixture is widely available. Brain function monitors intended to measure the depth of anesthesia can be used. The impact of these technologies on the risk of awareness is unclear so the decision to use them is often made on a case-by-case basis by the anesthesia professional. Recent studies indicate that anesthesia gas analyzers and brain function monitors may have similar value.

No monitor exists that can completely guarantee a patient will not experience intraoperative awareness with recall. As always, your anesthesia professional will guide you safely through your surgery by relying on his or her clinical experience, training and judgment combined with appropriate technology.



Inform your anesthesia professional immediately if you think you have experienced intraoperative awareness.

### WHAT SHOULD I DO IF I THINK I HAVE EXPERIENCED INTRAOPERATIVE AWARENESS?

The ASA, AANA, AAAA, and AAC urge you to talk immediately with your anesthesia professional, who can explain to you the events that took place in the operating room at any stage of your surgery and why you might have been aware at certain times. It is important to note that a variety of anesthetic agents is often used, some of which may create false memories or no memory at all of the various events surrounding surgery. If you have distinct recollections of your surgery, you should speak with your anesthesia professional immediately so that he or she can help you or refer you to a counselor or to other appropriate resources. Early counseling after awareness has been shown to be most effective.

Part of the anesthesia community's effort to understand intraoperative awareness includes gathering information. Patients who experience intraoperative awareness are encouraged to report their experiences to the Anesthesia Awareness Registry at [www.awaredb.org](http://www.awaredb.org).

### WHAT DOES THE FUTURE HOLD?

As patient advocates, anesthesia professionals and others are working hard to reduce the likelihood of awareness under general anesthesia. Depending upon the type of surgery, these experts have a growing array of anesthetic agents and techniques to accommodate a broad range of patient and surgical requirements.

Extensive research is ongoing to study and develop new technologies and best practices which may lessen the risk of patient intraoperative awareness and recall.

Remember—no monitoring device can replace the judgment and skill of an anesthesia professional who has years of training and clinical experience. Working together, you and your anesthesia professional can make your anesthetic experience as safe and comfortable as possible.

*"Intraoperative Awareness Under General Anesthesia"* has been prepared by the American Society of Anesthesiologists, the American Association of Nurse Anesthetists, the American Academy of Anesthesiologist Assistants, and the Anesthesia Awareness Campaign, Inc.

American Society of Anesthesiologists



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