MedStar Georgetown University Hospital

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Awareness Under Anesthesia	9117
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Purpose

To minimize the frequency and negative consequences of anesthesia awareness. The negative consequences of anesthesia awareness include fear, alienation, confusion, mistrust, post-traumatic stress disorder and lawsuits.

Background

One of the major challenges facing anesthesia care providers on a daily basis is choosing doses of anesthetic drugs that are neither too small nor too large. A dose that is too small fails to achieve the desired effect(s). A dose that is too large results in prolonged effect or excessive side effects. Desirable drug effects during general anesthesia include unconsciousness, analgesia, amnesia, lack of motor response to surgical stimuli, blunted neurohumoral response to surgical stimuli and, in some cases, relaxation of skeletal muscle. Side effects of anesthetic drugs can include circulatory and respiratory depression, nausea, vomiting, depressed mental status, impaired motor coordination and many others. Factors contributing to the difficulty in titrating anesthetic drugs include interindividual variability in pharmacodynamics and pharmacokinetics as well as narrow therapeutic windows for many anesthetic drugs, lack of information on drug interactions and the lack of a definitive end-point against which to titrate these drugs.

Anesthesia awareness (a.k.a. unintended awareness or intra-operative recall) is explicit recall by a patient, with or without prompting, of events that occurred when he/she was meant to be under general anesthesia. Anesthesia awareness is an uncommon but frightening event which can usually be prevented by adhering to standard of care practices. However, there is no strategy for giving anesthesia which is guaranteed to prevent awareness; this is especially true when competing anesthetic goals are taken into consideration.

This policy will outline measures that are likely to minimize the frequency of anesthesia awareness or at least put the conflicting goals of general anesthesia in balance. Specifically, this policy will address the recommendations of JCAHO's Sentinel Event Alert #32 (titled: Preventing, and managing the impact of, anesthesia awareness). It is understood that the sentinel event recommendations are neither a standard of care nor a practice parameter. (A practice parameter is written by experts in the appropriate field after a transparent process that involves peer-review, open debate and an evidence-based approach to the practice of medicine.)

Responsibilities/Requirements

1. **Education**. Staff has been educated regarding anesthesia awareness including definitions, incidence, risk factors, prevention, diagnosis and management. The education process is an ongoing one, which includes regular lectures to the clinical staff of the Department of Anesthesia and the Post-Anesthesia Care Unit. Lectures on awareness occur on at least an annual basis.

2. **Equipment checks** are performed by the anesthesia care team before each case in accordance with FDA and manufacturer recommendations. Routine preventive maintenance is also performed by the appropriate technical staff. This applies to infusion pumps as well as anesthesia machines and vaporizers. See Department of Anesthesia Policy 9257 and Hospital Policies 703 & 704.

3. **Risk & Informed Consent**. During pre-anesthetic assessment, patients at higher risk of anesthesia awareness are identified and anesthetic plans are adjusted accordingly (see below). The risk of awareness will be discussed when the patient or anesthesia care provider considers it appropriate. Patients' questions about awareness will be answered honestly. If the anesthesia plan calls for monitored anesthesia care or any technique other than general anesthesia, the patient will be told that he/she will be awake during all or part of the procedure.

4. **Monitoring** during general anesthesia will include the use of a gas analyzer whenever possible. In particular, inspired and expired anesthetic concentrations will be measured during inhalational anesthesia whenever possible. The expired concentration will be noted on the anesthesia record at fifteen-minute intervals. Depth-of-anesthesia monitors are an emerging technology which infer level of consciousness from electroencephalographic and/or electromyographic signals. The use of depth-of-anesthesia monitors is not a reliable means of preventing awareness and is not a standard of care. These monitors may be used at the discretion of the attending anesthesiologist on a case-by-case basis when available.

5. **Technique**.
    a. Although the combination of inhalational and intravenous anesthetics is a robust technique with a low incidence of anesthesia awareness, total intravenous anesthesia and total inhalational anesthesia each have their place in clinical practice. The precise choice of anesthetic technique is made by the anesthesia care team on a case-by-case basis.
    b. Consideration will be given to the duration of effect of induction agent and, delivery of maintenance agent will generally begin immediately after induction.
    c. Use of muscle relaxant can often be avoided or minimized. This strategy makes movement a clinically relevant sign of light anesthesia.
    d. Nitrous oxide as the sole anesthetic agent during general anesthesia is an unreliable technique which should be avoided.

e. Opiates as the sole anesthetic agent during general anesthesia is an unreliable technique which should be avoided.
f. Delivery of agents will be periodically confirmed. This applies to inhalational agents and intravenous agents given by bolus or infusion.
g. Unplanned hypotension must not be treated solely by decreasing the dose of anesthetic (unless anesthetic overdose is the primary cause of the hypotension). Aggressive resuscitation will usually allow continued delivery of anesthetics in sufficient doses to reduce or eliminate the likelihood of recall.
h. If nitrous oxide is employed during maintenance of anesthesia, it will be continued (unless contraindicated) until closure is complete or application of the dressing is begun.
i. Consideration will be given to the use of earplugs or headphones.
j. Consideration will be given to the use of scopolamine, benzodiazepines & other amnestics.

6. **Follow-Up**. During post-operative follow-up visits by the anesthesia care team standard queries will be used to elicit evidence of intra-operative recall. Positive findings will be discussed with the patient at length and recorded in the chart. Ambulatory patients (i.e. outpatients) are not available for follow-up visits and will be provided other means of voicing their concerns about awareness.

7. **When Anesthesia Awareness is Detected**, the attending anesthesiologist will perform a thorough interview, document the interview thoroughly in the patient chart and offer explanation and reassurance. The anesthesiologist must avoid skepticism during this interview. A psychiatric consultation will be offered in all cases of explicit recall. Each case of anesthesia awareness is a complication which will be reported to both the departmental QA/QI Coordinator and the Hospital Risk Manager.

8. **Access to Psychiatric Care**. On a case-by-case basis, at the discretion of the Chief of Service of the Department of Anesthesia, the department may choose to provide financial support for mental health services to treat or prevent post-traumatic stress disorder or other mental disorders that follow an episode of anesthesia awareness.

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