

**ANESTHESIA AND PERIOPERATIVE CARE CLINICAL  
SERVICE  
RULES AND REGULATIONS  
2016**

**ANESTHESIA AND PERIOPERATIVE CARE CLINICAL SERVICE  
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TABLE OF CONTENTS (continued)**

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## **I. ORGANIZATIONAL STRUCTURE AND ADMINISTRATIVE POLICIES**

### **A. SCOPE OF SERVICE**

- 1. OVERSIGHT** - The Chief of the Anesthesia Service (Refer to Appendix A for detailed job description) is responsible for oversight of all anesthetic care at Zuckerberg San Francisco General Hospital (ZSFG), all functions of the Post-Anesthesia Care Unit (PACU) related to the Anesthesia and Perioperative Care Clinical Services, administration of anesthesia faculty attending in the Medical-Surgical ICU and administration of the Respiratory Care Service.

### **B. ORGANIZATION/STAFFING OF THE ANESTHESIA AND PERIOPERATIVE CARE SERVICE**

- 1. CHIEF OF SERVICE** - The Chief of the Anesthesia Service, or his/her designee, is responsible for ensuring the quality of anesthesia care. As necessary, assistance is invited from other services/departments, the Performance Improvement and Patient Safety Committee, or the appropriate ZSFG administrative committee or organization (example: Executive Committee, OR Committee, Engineering, etc.).  
To facilitate the administrative oversight of the varied clinical activities in the Department, the Chief has appointed the following clinical leaders (see Appendix B for Department of Anesthesia Organizational Chart):  
Vice Chief of Anesthesia  
Clinical Director ZSFG operating rooms  
Director of Obstetrical Anesthesia  
Director Of Quality Improvement  
Medical Director Post-Anesthesia care Unit (PACU)  
Medical Director Anesthesia Workroom  
Medical Director of Respiratory Therapy  
Medical Director of the Anesthesia Pre- Operative Clinic  
Medical Director Trauma Anesthesia  
Medical Director Anesthesia Pain Clinic
- 2. REGULAR SERVICE PROVISION** – Anesthesia services at ZSFG Medical Center are administered by a combination of fully credentialed, qualified anesthesiologists who are board certified or actively pursuing board certification, or the equivalent, as determined by the Chief of Anesthesia and Perioperative Care, or certified registered nurse anesthetists (CRNAs) and residents in the training program of the Department of Anesthesia and Perioperative Care, UCSF.

The scope of anesthesia services is determined by a continuing process of needs assessment and negotiation with ZSFG and other clinical departments. The Chief of the Anesthesia Service, or his/her designee, is responsible to oversee and provide adequate coverage. The Department of Anesthesia and Perioperative Care will

always provide qualified anesthesia personnel to meet the obligations of these agreements. Residents, fellows and CRNAs may administer anesthesia when under the supervision of an attending anesthesiologist who is immediately available if needed. This supervising attending anesthesiologist will be prepared to immediately conduct hands-on intervention if needed.

3. **ON-CALL COVERAGE** - A minimum of three physicians or two physicians and one nurse anesthetist will be in the hospital at all times. Of these, one physician will be available for immediate emergencies and will coordinate the activities of the other two. One of the physicians will be available for obstetrical anesthesia.
4. **ON-CALL FACULTY ANESTHESIOLOGIST** - At all times, one member of the attending staff is in the hospital or is readily available and takes responsibility for all anesthetics administered. A second attending anesthesiologist is on-call for backup and will be called in to ensure adequate in-house coverage if the coordinating anesthesia attending is confronted with or anticipates work load which cannot be handled safely with the regular staff.
5. **ANESTHESIA SERVICE IN THE EVENT OF A DISASTER** – The Anesthesia Service functions within the scope of the overall hospital disaster plan. In the event of a mass casualty event, the on-call attending anesthesiologist will estimate the total need for additional faculty, nurse anesthetists and workroom technicians and initiate the disaster call-back list.

In the event of a disaster that inactivates the telephone system, it is the responsibility of all personnel (who are able so to do) to come to the hospital immediately when they become aware of the disaster.

6. **EMERGENCY PROCEDURES** - In any emergency that requires resuscitation or handling of any airway problem, the Anesthesia Service may be contacted through the on-call physician on VOIP 6-0895, immediately, or a “Code Blue” or airway stat may be called via the operator. When a replacement pager/phone is in use, the telephone operator, the Emergency Department and Delivery Room will be notified by the on-call anesthesia resident or faculty.
7. **JEHOVAH’S WITNESSES** – Surgery that may involve any blood loss in a Jehovah’s Witness may only be scheduled following prior arrangement with the Department of Anesthesia by obtaining an Anesthesia consultation. This is to ensure that the patient and anesthesia provider understand the types of blood and fluid products available, that there is a clear understanding of the patient’s wishes regarding the type of products they will accept, and to ensure the availability of an anesthesiologist prepared to enter into an agreement not to transfuse blood, if that is what the patient desires.
8. **NURSE ANESTHETIST JOB DESCRIPTION (CRNA)**

See Section II.D. Affiliated Professionals

## C. DELIVERY OF ANESTHETIC CARE

1. **OVERVIEW** - Anesthesia providers (as described above) will routinely administer anesthesia to all patients brought to surgery, except in those cases where the surgeon desires to administer local or topical anesthesia, or where no anesthesia is required.  
The Anesthesia Service will also provide anesthesia in other sections of the hospital (Labor & Delivery floor, radiology suite, emergency department, etc.) when appropriate. A uniform standard of anesthesia care will be followed wherever anesthesia services are delivered to patients.
2. **PRE-OPERATIVE ANESTHESIA EVALUATION** - Each patient will be evaluated either by clinic visit, in hospital visit or chart review by a member of the anesthesia care team within the 48 hours prior to surgery. Pre-anesthesia evaluation and documentation shall be performed according to the guidelines (Basic Standards for Pre-Anesthesia Care described by the American Society of Anesthesiologists) and shall take into account the patients medical condition and surgical urgency (Appendix C). If, in his/her opinion, additional diagnostic or therapeutic measures are necessary prior to surgery, he/she will discuss these measures with the responsible physician and with an anesthesia attending. These concerns will also be discussed with the anesthesia care team assigned to the case as soon as possible.  
  
The preoperative note shall be reviewed, verified, and signed by the anesthesia care team on the day of surgery. It will include a notation of patient's diagnosis, surgical or obstetrical procedure anticipated; pertinent history and physical; assessment of anesthetic problems; and choice of anesthesia type (general, MAC, neuroaxial block, peripheral regional anesthesia or a combination of these). On the day of surgery the anesthesia care team shall verify the identification of the patient, site and side of surgery, presence of consent and any changes to the previously obtained history and physical. All questions from the patient and/or family shall be answered and the preferred type of anesthesia explained and any alternatives discussed. In the case of emergency where the urgency of the situation precludes a complete preoperative evaluation, specific documentation of the emergent nature of the procedure should be made by the attending anesthesiologist.
3. **CHOICE OF ANESTHESIA** - Under most circumstances, the responsibility for the choice of anesthetic technique belongs to the anesthesiologist. When unusual circumstances cause the surgeon to have a special preference, this should be handled by prior consultation.

- 4. ADMINISTRATION OF ANESTHESIA** - Immediately prior to the induction of anesthesia or intravenous sedation, with the patient in the OR or procedure room, the patient's condition will be reviewed by the anesthesia provider including measurement of vital signs, and assessment of airway status and response to pre-procedure medications. This physician or his/her assigned replacement will continue to be responsible for the safety of the patient throughout the anesthetic period.

It is expected that the attending anesthesiologist will be present for induction and emergence from anesthesia and any other critical parts of the procedure.

A record will be kept of all events taking place during the induction of, maintenance of, and emergence from anesthesia. This record will include vital signs, the amounts and duration of all drugs, anesthetic agents, intravenous fluids, blood, and blood products given and placement of invasive catheters and description of anesthetic technique including methods of body warming. In addition the anesthesia record will document the estimated blood loss and urinary output when measured, any unusual events during the anesthesia period and the status of the patient at the conclusion of surgery in the PACU.

Whenever there is a change of anesthesia care provider, for example at morning break, lunch break, or at shift changes, a formal handoff of patient care information will occur between the outgoing and incoming care provider as required by The Joint Commission (TJC) and in conformance with the Departmental Transition of Care Policy (Appendix D).

Standards for Basic Intra-operative Monitoring established by the American Society of Anesthesiologists will be adhered to in all cases. (See Appendix E) The anesthesia record shall document the monitors utilized and the results of such monitoring.

It is department policy that all syringes or intravenous fluids containing medication for patient administration be appropriately labeled. Medications should be prepared daily, and discarded at the end of the work period.

- A. All syringes will be labeled with drug name, concentration or total dose, the date and time of preparation and the initials of the anesthesia provider.
- B. All syringes containing medications outdate 24 hours after they are drawn up, except for propofol, which outdates after 6 hours.
- C. Labeling of the syringe is not required if the drug is drawn up and administered immediately by the individual who prepared the medication with no intervening tasks.
- D. All vials from which medications are drawn will remain immediately available until the end of the case. Ampules will remain immediately available by disposal in the sharps box. All other vials will remain immediately available by placing in the designated slot in the medication and syringe management tray.

- F. In all operating rooms or procedural areas when the anesthesia provider is not present, unused medications will reside inside the lockable anesthesia cart. Anesthesia carts may be left unlocked and non-controlled medications may be left in, or on, the top of unlocked anesthesia carts or anesthesia machines immediately prior to, during, and immediately following surgical cases in an operating room, so long as there are authorized operating room personnel in the immediate vicinity (see appendix F for detailed Policy and Procedure).
- G. Anesthesia providers may carry medications on their person under the following circumstances:
  - 1. When taking those drugs directly for administration at the patient's bedside. These drugs may include but are not limited to analgesics, anxiolytics, sedatives, vasopressors, anti-emetics, beta-blockers, bronchodilators. Only drug sufficient for the anticipated patient need should be carried on the provider's person.
  - 2. When transporting a patient to or from an acute care unit.
  - 3. The anesthesia provider is responsible for disposal of used medications between cases. At the conclusion of the work period the anesthesia provider is responsible for disposing of all used and unused medications.
  - 4. ZSFG high-alert medications (heparin and insulin) must be drawn up and the dose checked by two providers.
- H. Controlled drugs must at all times be either under the direct control of the anesthesia provider or in an approved locked box or drawer in a secure area. Controlled drugs (narcotics/sedatives and ketamine) are obtained from Pharmacy or the operating room charge nurse using a locked box method. Dispensed drugs are entered in a Pharmacy Log sheet. Any unused medications in the syringes should be disposed of, with a witness, prior to the initiation of care of another patient. The waste must be documented on the controlled substance administration record and initialed by the provider and witness.
- I. Anesthesia care providers will be familiar with, and adhere to, the Operating Room Universal Protocol Policy and Procedure and will actively participate in the Rolling Timeout, Final Timeout and end of case debriefing.

## **5. ANESTHESIA EQUIPMENT**

- A. The anesthesia work place consists of an anesthetic machine, monitoring and an anesthesia cart.
- B. The anesthesiologist shall inspect and test the anesthetic apparatus prior to use. The Anesthesia Apparatus Checkout Recommendations (Appendix G) will serve as a guide. In general, this will include checking:



1. Reserve supply of oxygen
  2. Connected pipeline inlets
  3. Functioning, filled vaporizers
  4. Calibrated, functioning oxygen analyzers and respiratory gas and anesthetic analyzers
  5. That the Anesthesia machine is free of leaks
  6. That there are functioning inspiratory and expiratory valves (if a circle system is to be used)
  7. That there is non-exhausted CO<sub>2</sub> absorbent (if a circle system is to be used)
  8. That there is a functioning leak-free mechanical ventilator, where appropriate
- C. If leaks or other faults are detected, the equipment must not be used until the fault is repaired.
- D. The anesthesiologist shall also check the availability, readiness, cleanliness (sterility where appropriate) and working order of all other equipment used in the administration of anesthetic agents. This includes resuscitative equipment.
- E. All reusable anesthesia equipment in direct contact with the patient shall be cleaned after each use (See Infection Control).
- F. Regular anesthesia carts are standardized according to the Anesthesia Cart Policy and are provided for every OR. Additionally, the following specially equipped carts are available:
- Two Trauma Carts, one located in the Trauma OR (in addition to a regular cart); a second Trauma cart is available in the designated Trauma Backup OR when the primary trauma OR is in use.
  - Obstetrical OR carts are available in each of the Labor & Delivery operating rooms. An emergency airway cart is in the primary OB OR.
  - One epidural cart is maintained on Labor and Delivery.
  - Two fiberoptic carts, one designated as a difficult airway cart.
  - One regional anesthesia cart.
  - Three Pediatric Carts.
  - One Malignant Hyperthermia (MH) cart.

Except for the MH cart, carts will be stocked with drugs and supplies by OR workroom and pharmacy personnel according to established policy (See OR Workroom Policy and Procedures).

Responsibilities for stocking and checking the contents of the MH cart are defined in the MH cart Policy & Procedure (Appendix H).

- G Four Anesthesia Intubation Bags will be maintained for emergency airway procedures within the hospital. The contents and procedures for stocking and checking these bags are described in the Anesthesia Intubation Bags Policy and Procedure (Appendix I).
  - H. To ensure proper care of any surgical emergency case, designated Trauma and L&D ORs are prepared and checked at least once per day. Details of preparing and checking these areas are described in the Trauma Operating Room Preparedness Policy and Procedure (Appendix J) and Labor and Delivery Operating Room Preparedness Policy and Procedure (Appendix K).
  - G. Environmental Health & Safety personnel make regular checks of nitrous oxide levels in the Operating Rooms, including locations close to the machines and columns. A log of measured levels are maintained and made available to OR personnel. Efforts will be made to maintain nitrous oxide levels acceptably low by maintenance of fittings and of the scavenging system.
  - H. The presence of flammable materials and oxidizing agents makes the operating room a location for potential fires. In order to minimize the probability of fire, the ZSFG Fire Safety in the OR Guidelines will be followed (Appendix L).
6. **OTHER SPECIAL ANESTHESIA EQUIPMENT** - Disposable anesthesia hoses and breathing bags are available and should be discarded after each use. Disposable anesthesia hoses, adapters, connectors, Y-pieces and other removable parts are to be replaced with clean or sterile equipment for each case. Plastic or rubber goods may be sterilized by either ethylene oxide or sterilized in perchloric acid. These items need not be sterile at the time of use as long as they are disinfected and stored in a clean manner.

Ventilators and canisters in daily use should be cleaned at monthly intervals. Disposable endotracheal tubes are to be discarded after use. Other tubes may be re-sterilized with ethylene oxide if recommended by the manufacturer. Disposable suction catheters are to be discarded after each use. All medication vials are single use and should be disposed of at the end of the case. Anesthesia circuits will contain a filter to prevent contamination of those parts not replaced after each case (CO2 absorber, etc).

## 7. **POST-ANESTHESIA CARE UNIT (PACU)**

- A. All patients who have had surgery and/or anesthesia who are not directly admitted to an intensive care unit should be admitted to the Post-Anesthesia Care Unit (PACU) for observation until fully recovered from anesthesia and until vital signs are stable. Infected (dirty) cases will be admitted to the

PACU except for the following (who will require special arrangements):  
Infections requiring private room isolation: pulmonary tuberculosis if active untreated or during early treatment until judged clinically non-communicable by the Pulmonary or Infectious Disease Service; infections requiring strict private room precautions (i.e., chickenpox, mumps, diphtheria, herpes zoster, pertussis, rubella, rubeola).

- B. Non-post-operative patients requiring special care and/or procedures may be admitted at the discretion of the responsible anesthesiologist after consultation with the PACU charge nurse. This will be considered if all other special care units of the hospital are at capacity. The PACU is thus the unit of last resort for critical care patients
- C. Medical Orders for Postanesthesia care, including pain medication, are provided by the anesthesia care team who admits a patient to the PACU on the designated order form. The form is faxed to Pharmacy before PACU admission. Any changes or additions to the order form must be co-signed.
- D. It is the responsibility of the anesthesia provider to give a verbal report to the PACU nurse on each patient admitted.
- E. The anesthesia provider should not leave the patient until completely satisfied that the patient can be safely attended by the nurse receiving the patient, whether this be in the PACU, or intensive care unit.
- F. The anesthesia attending or his/her designee will follow the progress of each patient under his/her care in the PACU. He/she will be available for consultation concerning any complications in the post-operative period. The anesthesiologist or his/her designee must evaluate the patient for anesthetic complications following surgery. The responsible physician or dentist who discharges the patient from the hospital must inform Anesthesia of any unusual anesthetic related events that may occur post discharge.
- G. In general, visitors are not allowed in the PACU. Exceptions will be made, for example, when the patient is very young, when a patient is in danger of dying, or when the patient must spend an unusual amount of time in the PACU. Under these circumstances, visitors will be allowed; when the Charge Nurse approves.
- H. In the case of an emergency in the PACU, the anesthesia resident or CRNA and attending on-call and the surgeon involved will be notified.
- I. An anesthesia attending must evaluate each patient who has received anesthesia services and document readiness for discharge before the patient can leave the PACU. The patient must meet PACU discharge criteria (see PACU Nursing Policy and Procedures).

## **II. CREDENTIALING**

### **A. MEMBERSHIP REQUIREMENTS**

Membership on the Medical Staff of Zuckerberg San Francisco General Hospital is a privilege which shall be extended only to those practitioners who are professionally competent and continually meet the qualifications, standards, and requirements set forth in ZSFG Medical Staff Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

### **B. NEW APPOINTMENTS**

The process of application for membership to the Medical Staff of ZSFG through the Anesthesia and Perioperative Care Clinical Service Department is in accordance with ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

1. Attending staff appointed to the Medical Staff will be proctored at the beginning of service. This will include:
  - a) Observation of the appointee discharging his/her usual clinical responsibilities, and
  - b) Observation of the appointee in his/her discussion of clinical problems with housestaff or CRNA's.
  - c) A sufficient number of times will be used to reach a conclusion as to competence.
2. At the end of three (3) months, the proctor will submit a report to the Chief of Anesthesia Service. This report will include:
  - a) The nature of observations made
  - b) The time period of observations,
  - c) A recommendation may be made for a further period of proctoring if this is thought to be necessary.
3. When intensive care privileges are to be included, proctoring will include observations of care given by the appointee by a member of the Anesthesia ICU attending staff.
4. Proctoring reports will form a part of the Chief of Anesthesia Service's recommendation for appointment to the staff.

5. Quality of care issues in regard to faculty are discussed in several ways (See Section IX.D. Clinical Indicators). This information is used for reappointment.
6. Attending staff are evaluated on an ongoing basis in various ways.
  - a) Initially, the proctoring protocol is followed.
  - b) Through Faculty Reappointment every two years
  - c) Through twice yearly Ongoing Professional Performance Evaluation . (See Appendix N, Anesthesia OPPE)

## **C. REAPPOINTMENTS**

The process of reappointment to the Medical Staff of ZSFG through the Anesthesia and Perioperative Care Clinical Service is in accordance with ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

### **1. REAPPOINTMENT CRITERIA**

The criteria for faculty reappointment shall include review of his or her clinical care, licensure status, professional judgment and performance, and review of health status as indicated. The reappointment process will include review of case management by the Departments Director of Quality Improvement, the Clinical Director of Anesthesia, or the Vice Chief of Anesthesia as reflected in the twice yearly OPPE. The following information will be collected and reviewed.

- a) A review of the number and type of cases done by each faculty will be generated from the operating room records to allow the Chief of Anesthesia Service (or designee) to review the work performed by each faculty member and adequacy of clinical experience.
- b) Further, a review of the postoperative complications will be summarized as part of the OPPE process and the appropriate faculty member's cases with problems will be noted (physician specific). These will be based on Joint Commission mandated clinical indicators.
- c) A file will be generated for each faculty member to allow a review by the Chief of Anesthesia Service (or designee). Documentation of licensure will include current state license, DEA license and appropriate CME course work will be reviewed.
- d) There will also be an ongoing review of cases listed for possible M & M discussion. This will be discussed at regular monthly conferences and as needed at faculty meetings. These will be kept on file and available for review at the time of reappointment. Finally, the Chief of Anesthesia Service shall file individual memos, comments or other documentation relating to an individual physician's clinical care

and competence, so that he will be able to document and re-certify the individual at reappointment time.

#### **D. PRACTITIONER PERFORMANCE PROFILES**

The Anesthesia and Perioperative Care Clinical Service Practitioner Performance Profiles are maintained by the Chief of Anesthesia Service. This includes items C.1. (a – d) above.

#### **E. AFFILIATED PROFESSIONALS**

The process of appointment and reappointment to the Affiliated Professionals through the Anesthesia and Perioperative Care Clinical Service is in accordance with ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

##### **1. NURSE ANESTHETIST JOB DESCRIPTION (CRNA)**

- a) Characteristics of Job - Under the supervision of physician anesthesiologists, CRNAs administer anesthesia, other central nervous system depressants and necessary additional medications in the operating suite, delivery rooms, and other diagnostic and treatment areas. They may respond to cardiopulmonary emergencies in the Emergency Department and other patient care areas. They maintain records of anesthesia and other drugs administered, of resuscitations carried out, and of each patient's responses to these measures.
- b) Responsibilities of Job – CRNAs are responsible for: 1) carrying out established methods and procedures in administering anesthetics, including both elective and emergency operations and procedures; 2) monitoring patient's physiological status, using current electronic and other equipment; 3) preparing detailed medical and technical records relative to anesthetics administered and patient's reactions. The nature of work involves sustained physical effort and manual dexterity with some exposure to health and accident hazards. Rotation on night and weekend call may be required.
- c) Minimum Qualifications:
  - 1) Training and experience: requires completion of high school, supplemented by graduation from an accredited school of nursing and two years of special certified training in anesthesia, or an equivalent combination of training and experience. Current ongoing experience with a broad range of anesthetist's duties is essential.

- 2) Knowledge, abilities and skills: requires thorough knowledge of various types and methods of administering anesthesia; standard operating room methods, equipment and procedures; anesthesia equipment, instruments and drugs used in various types of surgery.
- 3) Requires ability and skill to detect unfavorable patient reactions and apply prompt remedial measures.
- 4) License: requires possession of current valid license as a registered nurse issued by the State Board of Nursing Examiners, and current certification by the American Association of Nurse Anesthetists (or evidence of eligibility for the first six months employment.)

## **F. STAFF CATEGORIES**

Anesthesia and Perioperative Care Clinical Service attending staff fall into the same staff categories that are described in Article III of the ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

## **III. DELINEATION OF PRIVILEGES**

### **A. DEVELOPMENT OF STAFF PRIVILEGE CRITERIA**

Anesthesia privileges are developed in accordance with ZSFG Medical Staff. All requests for clinical privileges will be evaluated and approved by the Chief of Anesthesia.

### **B. PRIVILEGE CATEGORIES**

Staff Privileges for the Anesthesia and Perioperative Care Clinical Service are categorized as follows:

#### **1. TYPE I PRIVILEGES: Basic Privileges**

MINIMUM CRITERIA: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia or a member of the Clinical Service prior to 10/17/00. Preoperative evaluations of patients at all levels of American Society of Anesthesia classification including emergencies. Management of procedures for rendering these patients insensible to pain and emotional stress before, during and after surgical, obstetric and certain medical interventions. These procedures include all anesthetic and sedative techniques including local infiltration, regional anesthesia, MAC, and general anesthesia.

They also include special skills necessary for support of life functions during an anesthetic, in the post anesthesia care unit, and elsewhere in the hospital. These include airway management, hemodynamic monitoring/management, mechanical ventilation and resuscitation.

**2. TYPE II PRIVILEGES: Specific Privileges  
- Intensive Care Unit**

MINIMUM CRITERIA: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia with special qualifications in Critical Care Medicine or a member of the Clinical Service prior to 10/17/00. Under special circumstances, the recommendation of the Chief of Anesthesia and Perioperative Care may be required. Basic Type I privileges and management of patients in critical care units.

**3. TYPE III PRIVILEGES - Special Privileges**

- TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE MONITORING
- TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE COMPREHENSIVE EXAMINATION
- PAIN MANAGEMENT
- FLUOROSCOPY

MINIMUM CRITERIA: Please refer to Appendix - M

**Proctoring Requirements for Privileges**

Prior to recommendation for appointment or reappointment to the Medical Staff, the appropriateness of privileges will be reviewed by the Chief of Anesthesia Service, based on his own observations and on advice from other staff members who have personally observed the applicant's clinical performance as delineated in Appendix M, Anesthesia Privileges for ZSFG.

**C. ANNUAL REVIEW OF CLINICAL SERVICE PRIVILEGE REQUEST FORM**

The Anesthesia and Perioperative Care Clinical Service Privilege Request Form shall be reviewed annually.

**D. DEVELOPMENT OF PRIVILEGE CRITERIA**

Refer to Section III A – Development of Staff Privilege Criteria

**E. CLINICAL PRIVILEGES AND MODIFICATION/CHANGE TO PRIVILEGES**

The process for modification/change to the privileges for members of the Anesthesia Service is in accordance with the ZSFG Medical Staff Bylaws, Rules and Regulations and accompanying manuals.

**IV. PROCTORING AND MONITORING – See Section II A and B, and IX**



**A. REQUIREMENTS**

Monitoring (Proctoring) requirements for the Anesthesia and Perioperative Care Clinical Service shall be the responsibility of the Chief of the Anesthesia Service.

**B. ADDITIONAL PRIVILEGES**

Request for additional privileges for the Anesthesia and Perioperative Care Clinical Service shall be in accordance with the ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

**C. REMOVAL OF PRIVILEGES**

Request for removal of privileges for the Anesthesia and Perioperative Care Clinical Service shall be in accordance with the ZSFG Bylaws, Rules and Regulations and accompanying manuals as well as these Clinical Service Rules and Regulations.

**V. EDUCATION**

The Anesthesia and Perioperative Care Service offers an extensive lecture series for 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year residents. A well-organized course structure is provided for medical student rotations. In addition, all members of the staff can attend UCSF department courses for CME credits: Fiberoptic Workshops (annually), Changing Practices of Anesthesia (yearly), Anesthesia Grand Rounds (monthly), and multiple national meetings.

**VI. ANESTHESIA AND PERIOPERATIVE CARE CLINICAL SERVICE HOUSESTAFF TRAINING PROGRAM AND SUPERVISION**

Attending faculty shall supervise house staff in such a way that house staff assume progressively increasing responsibility for patient care according to their level of training ability and experience.

**A. ROLE, RESPONSIBILITY AND PATIENT CARE ACTIVITIES OF THE HOUSE STAFF:**

1. The resident physician shall be responsible for preoperative evaluation, planning and administration of an anesthetic, and postoperative care of assigned patients. This will be done under the supervision of an attending faculty member. It is expected that all cases will be discussed with the attending anesthesiologist prior to the induction of anesthesia.
2. Decisions regarding the progressive involvement and independence of the resident in the above mentioned patient care activities are made following close observation of the skills and knowledge base of the resident.

**B. RESIDENT EVALUATION PROCESS:**

1. Each of the staff completes a written evaluation and this is entered into an electronic departmental database. General recommendations are then passed on to a faculty advisor and a report on clinical competence is submitted every 6 months to the

American Board of Anesthesia. The period of time at ZSFG is closely scrutinized for quality of care. Clinical comments are made to the house staff on a daily basis when needed.

2. Didactic Educational Activities

- a) Tuesday afternoon conferences are directed at topics of clinical relevance to the practice of anesthesia at ZSFG, as well as reviews of recent journal articles relevant to the clinical cases seen at ZSFG and are run by faculty members.
- b) Monthly Wednesday morning M/M Conference includes evaluation and discussion of all department wide deaths, as well as significant complications, near misses and appropriate cases with an emphasis on specific problems and/or possible changes in practice and improved care.
- c) All residents are required to attend weekly didactic sessions and grand rounds.

3. Ability to write patient care orders:

House staff members may write patient care orders following management discussions with an attending.

**VII. ANESTHESIA AND PERIOPERATIVE CARE CLINICAL SERVICE CONSULTATION CRITERIA**

- A.** In cases in which the patient has a significant systemic disease or an unusual surgical problem, consultation is required. Previously mentioned, this includes patients who are Jehovah's Witness. All consultations must be in writing and signed by the consultant. This consultation may be accomplished by a visit to the preoperative clinic or by an individual consultation regarding an inpatient or a patient in clinic.
- B.** Consultation is not required in the case of extreme emergency when, in the opinion of the attending physician, the life of the patient would be jeopardized by the delay necessary to obtain qualified consultation. In such emergency cases, the physician shall record the emergency situation, which required this action.
- C.** When a member of the medical staff has discussed a case preoperatively, or given advice about the patient, or where consultation is the result of a clinical conference, this should be so stated in the chart.

**VIII. DISCIPLINARY ACTION**

The Zuckerberg San Francisco General Hospital Medical Staff Bylaws, Rules and Regulations and accompanying manuals will govern all disciplinary action involving members of the ZSFG Anesthesia and Perioperative Care Clinical Service.

## **IX. PERFORMANCE IMPROVEMENT/PATIENT SATETY (PIPS) and UTILIZATION MANAGEMENT**

The overall responsibility for Performance Improvement/Patient Safety and Utilization Management rests with the Chief of the Anesthesia and Perioperative Care Clinical Service. Design and implementation and other portions of the programs will be delegated to members of the department, recognizing that this is a department-wide responsibility.

### **A. GOALS AND OBJECTIVES**

The Chief of the Anesthesia Service, or his/her designee, is responsible for ensuring resolution of quality care issues. As necessary, assistance is invited from other departments, the Performance/Improvement Patient Safety (PIPS) Committee, or the appropriate ZSFG administrative committee or organization (example: Executive Committee, OR Committee, Engineering, etc.).

1. To insure appropriate care of all patients receiving anesthetic care or intervention. It is understood that this care is provided chiefly in the OR and PACU, but includes other areas such as the Emergency Room, intensive care units, obstetrical suite, GI suite, and Radiology.
2. To minimize morbidity and mortality as well as to avoid unnecessary days of inpatient care. Efficiency in delivery of service is also a prime objective.

### **B. RESPONSIBILITY**

1. Anesthetic morbidity and mortality is identified, by postoperative visits, reports submitted into the division's M&M database, and Unusual Occurrence reports. A record of this is kept for individual anesthesiologists, and major problems are highlighted. This is maintained within the Anesthesia and Perioperative Care Clinical Service. These are reviewed regularly to determine adequacy of care. Specific problems are tabulated for faculty reappointment database. The Chief and his/her designees also review near miss reports made by CRNAs, residents, and faculty contemporaneously and appropriate follow-up and/or corrective actions are taken.
2. Monthly staff meetings address organizational as well as performance improvement and patient safety issues. Minutes are submitted to the Medical Staff Office. The minutes outline topics covered, and "track" ongoing problems. Performance improvement and patient safety issues are discussed at most meetings.
3. As topics arise from M&M Conference, notices from other departments of physicians, patients, or administration, a member of the attending staff undertakes further evaluation. This may take the form of a broad review or specific attention to a clinical problem.

Follow-up on the above might include:

- a) Inservice (or departmental education/training). (Example: A follow-up on the review of epidural narcotics or lecture to the nursing staff on these modalities and means to decrease side effects.)
- b) Revision of policy or procedures
- c) Potential staff changes/proctoring, dismissal, etc.
- d) Purchase of equipment. (Example: The O.R. monitoring equipment has expanded dramatically in recent years and exceeds the American Society of Anesthesiology standards).

#### **C. REPORTING**

Performance Improvement/Patient Safety (PIPS) and Utilization Management activity records will be maintained by the department. Further, minutes will be sent to the Medical Staff Office and will include PIPS and Utilization Management information/follow-up, etc.

#### **D. CLINICAL INDICATORS**

The Department of Anesthesia and Perioperative Care believes in the consistent delivery of quality patient care, as defined by the Institute of Medicine, i.e. that it is safe, timely, effective, efficient, equitable and patient-centered. The Anesthesia and Perioperative Care Clinical Service reviews and evaluates the quality and appropriateness of the care delivered on a continuous basis. This is a multi-faceted program with data collection from numerous sources. These include:

1. Direct supervision of the performance of residents and CRNA's by members of the attending staff. Monthly evaluation of each resident includes direct comment on patient care issues. Performance evaluations of CRNA's are done on an annual basis.
2. All anesthesia-related deaths and complications are reviewed at monthly Morbidity and Mortality meetings. Cases are reviewed for deaths, myocardial infarction, neurologic injury, aspiration, and other adverse events occurring within 48 hours of anesthesia care. These indicators are reviewed at the monthly M&M conference and are included as part of OPPE. All members of the Anesthesia Service, including faculty, CRNA's, residents, and students are expected to attend these meetings. They are accredited for Continuing Medical Education. An attempt is made to determine ways to improve patient outcomes and avoid future problems. This is an open forum for frank discussion. Records are kept in the departmental office.

Cases are also reviewed at routine ZSFG departmental faculty meetings with an emphasis on specific problems on possible changes in practice. Some cases are also presented and discussed at UCSF departmental Grand Rounds.

3. STARS conferences (ZSFG Tuesday Afternoon Resident Seminars) are for primarily residents and are directed to topics relevant to the care of patients at ZSFG. These meetings are to discuss cases, recent and topical journal articles, special techniques and ideas to improve anesthesia management, especially as pertains to trauma and indigent care, and avoidance of future problems.

**E. CLINICAL SERVICE PRACTITIONERS PERFORMANCE PROFILES**

Refer to Section IX.D.

**F. MONITORING & EVALUATION OF APPROPRIATENESS OF PATIENT CARE**

It is understood that regular review by the Performance Improvement/Patient Safety Committee will occur as reports and problems arise from our department or others within ZSFG. Further, there shall be an annual review of our program and Performance Improvement and Patient Safety Issues from the previous year. Refer to Section IX.D.

**G. MONITORING & EVALUATION OF PROFESSIONAL PERFORMANCE**

See Attending, Resident, and CRNA staff. Refer to Section IX.D.

**H. CLINICAL INDICATORS**

Refer to Section IX.D, Clinical Indicators

**X. MEETING REQUIREMENTS**

In accordance with ZSFG Medical Staff Bylaws 7.2.I, All Active Members are expected to show good faith participation in the governance and quality evaluation process of the Medical Staff by attending a minimum of 50% of all committee meetings assigned, clinical service meetings and the annual Medical Staff Meeting.

The Anesthesia and Perioperative Care Clinical Service shall meet as frequently as necessary, but at least quarterly to consider findings from ongoing monitoring and evaluation of the quality and appropriateness of the care and treatment provided to patients.

As defined in the ZSFG Medical Staff Bylaws, Article VII, 7.2.G., a quorum is constituted by at least three (3)-voting members of the Active Staff for the purpose of conducting business.

**XI. ADDITIONAL CLINICAL SERVICE SPECIFIC INFORMATION**

- A. Monthly orientation sessions are held to inform house staff of ZSFG specific rules and regulations, patient care issues, schedules, etc.

- B. Ongoing educational sessions are held for faculty and CRNAs regarding hospital and department policies and procedures, equipment, performance improvement and patient safety, etc.
- C. Scheduling of house staff is done in accordance with the UCSF resident work hour improvement project.
- D. Risk Management: the department adheres to all hospital policies. Any untoward events are reported promptly to risk management
- E. Well Being: The Department of Anesthesia has an active Physician Well Being Committee. Any evidence of impairment is referred to the committee and a prompt and thorough investigation is carried out. If impairment is found it is promptly treated appropriately.

## **XII. ADOPTION AND AMENDMENT**

The Anesthesia and Perioperative Care Clinical Service Rules and Regulations will be adopted and revised by a majority vote of all Active members of the Anesthesia and Perioperative Care Clinical Service every two years at an Anesthesia and Perioperative Care Clinical Service meeting

## **APPENDIX A: Clinical Service Chief of Anesthesia and Perioperative Care Service Job Description**

### **Title:** Clinical Service Chief of Anesthesia and Perioperative Care Service Job Description

#### Chief of Anesthesia and Peri-Operative Care Clinical Service Position Summary:

The Chief of Anesthesia and Peri-Operative Care Clinical Service directs and coordinates the Service's clinical, educational, and research functions in keeping with the values, mission, and strategic plan of Zuckerberg San Francisco General Hospital (ZSFG) and the Department of Public Health (DPH). The Chief also insures that the Service's functions are integrated with those of other clinical departments and with the Hospital as a whole.

#### Reporting Relationships:

The Chief of Anesthesia and Peri-Operative Care Clinical Service reports directly to the Vice Dean and the University of California, San Francisco (UCSF) Department Chair. A committee appointed by the Chief of Staff reviews the Chief not less than every four years. Reappointment of the Chief occurs upon recommendation by the Chief of Staff, in consultation with the Vice Dean, the UCSF Department Chair, and the ZSFG Executive Administrator, upon approval of the Medical Executive Committee and the Governing Body. The Chief maintains working relationships with these persons and groups and with other clinical departments.

#### Position Qualifications:

The Chief of Anesthesia and Peri-Operative Care Clinical Service is board certified, has a University faculty appointment, and is a member of the Active Medical Staff at ZSFG.

#### Major Responsibilities:

The major responsibilities of the Chief of Anesthesia and Peri-Operative Care Clinical Service include the following:

Providing the necessary vision and leadership to effectively motivate and direct the Service in developing and achieving goals and objectives that are congruous with the values, mission, and strategic plan of ZSFG and the DPH.

In collaboration with the Executive Administrator and other ZSFG leaders, developing and implementing policies and procedures that support the provision of services by reviewing and approving the Service's scope of service statement, reviewing and approving Service policies and procedures, identifying new clinical services that need to be implemented, and supporting clinical services provided by the Department;

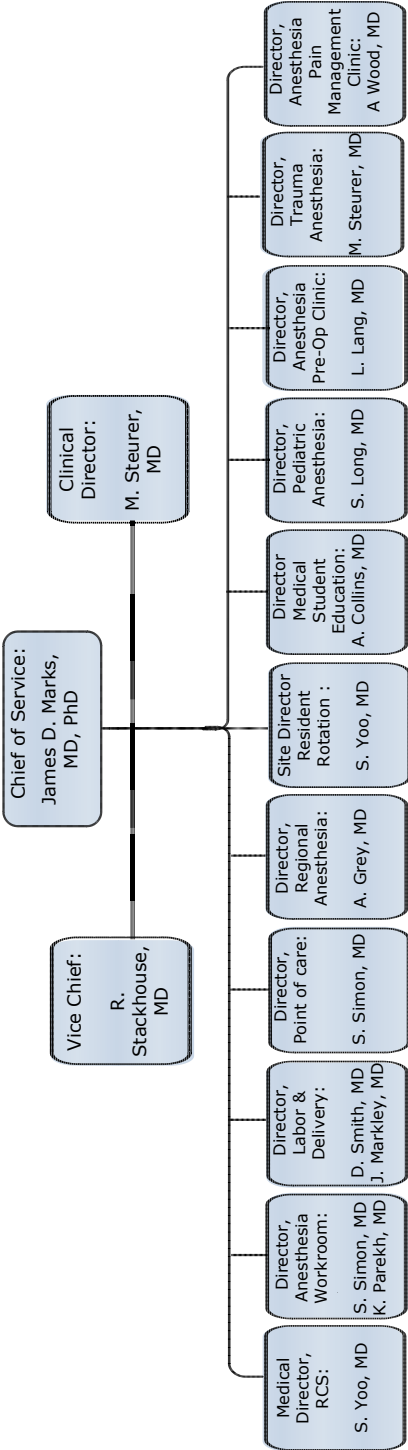
In collaboration with the Executive Administrator and other ZSFG leaders, participating in the operational processes that affect the Service by participating in the budgeting process, recommending the number of qualified and competent staff to provide care, evaluating space and equipment needs,

selecting outside sources for needed services, and supervising the selection, orientation, in-service education, and continuing education of all Service staff;

Serving as a leader for the Service's performance improvement and patient safety programs by setting performance improvement priorities, determining the qualifications and competencies of Service personnel who are or are not licensed independent practitioners, and maintaining appropriate quality control programs; and performing all other duties and functions spelled out in the ZSFG Medical Staff Bylaws.



APPENDIX B: UCSF Department of Anesthesia and Perioperative Care San Francisco General Hospital Division Organization



## **APPENDIX C: Basic Standards for Preanesthesia Care**

(Approved by the American Society of Anesthesiologists House of Delegates on October 14, 1987, and amended October 25, 2005)

These standards apply to all patients who receive anesthesia care. Under exceptional circumstances, these standards may be modified. When this is the case, the circumstances shall be documented in the patient's record.

An anesthesiologist shall be responsible for determining the medical status of the patient and developing a plan of anesthesia care.

The anesthesiologist, before the delivery of anesthesia care, is responsible for:

1. Reviewing the available medical record.
2. Interviewing and performing a focused examination of the patient to:
  - a. Discuss the medical history, including previous anesthetic experiences and medical therapy.
  - b. Assess those aspects of the patient's physical condition that might affect decisions regarding perioperative risk and management.
3. Ordering and reviewing pertinent available tests and consultations as necessary for the delivery of anesthesia care.
4. Ordering appropriate preoperative medications.
5. Ensuring that consent has been obtained for the anesthesia care.
6. Documenting in the chart that the above has been performed.

## APPENDIX D: ZSFG Anesthesia Department Transition of Care Policy

**Title:** ZSFG Anesthesia Department Transition of Care Policy

**Purpose:** To establish Policy and Procedure defining the purpose and procedure concerning perioperative transition of care. This Policy is compliant with TJC 2007 National Patient Safety Goal No. 2E

**Policy:** An anesthesia team consisting of a faculty member and an anesthesia resident or CRNA provides Perioperative anesthesia care at SFGH. Transition of anesthesia care (“hand-off”) to a different provider may become necessary at the end of the care giver’s regular working shift, or during the regular working hours for a short time to ensure adequate breaks. This Policy formalizes and standardizes the process of any transition of care, which becomes necessary during the intraoperative period.

Oversight for establishing this Policy & Procedure is the responsibility of the Chief of Anesthesia or his/her designee.

**Background:** Adequate transfer of patient care is a crucial part of a safe medical practice. TJC recognizes this in implementing a National Patient Safety Goal in 2007 to ensure standardization when patient care is transferred to another care giver. This P&P defines a safe and standardized process to transfer accurate information about the patient including medical history, surgical procedure, current conditions and anticipated intraoperative course.

### Procedures:

- 1) Intraoperative transfer of care and other shift related transfers will follow a standardized checklist with standardized responsibilities.
  - i. The ZSFG Anesthesia Handover Checklist will be followed for transfer of patient care in the main OR and all satellite anesthetizing locations including obstetrical anesthesia.
- 2) Handover procedures are performed whenever care or responsibilities are transferred between caregivers. This includes:
  - i. Any permanent transfers of care between faculty and/or between residents and CRNA’s.
  - ii. Intermittent transfers of care (e.g. as occurs for morning, lunch, and preoperative breaks)
- 3) Handovers are performed face to face and at the bedside by going through the items on the Handover Checklist as well as going over and verifying all drawn up medications including controlled substances.

- 4) A Handover will also occur at 7AM and 6PM between incoming and departing anesthesia faculty managing the OR, Obstetrical Suites, and Anesthesia Pain Service to ensure appropriate transfer of patient information and management duties.
  - i. This Handover will follow the ZSFG Anesthesia Shift Handover Checklist and the ZSFG Anesthesia OB/Pain Service Shift Handover Checklist

## APPENDIX

- A) ZSFG Anesthesia Handover Checklist
- B) ZSFG Anesthesia OB Shift Handover Checklist
- C) ZSFG Anesthesia Shift Handover Checklist

# **ZSFG Anesthesia Case Handover Checklist**

(to be performed for all anesthesia personnel changes)

## **Situation:**

**Patients Name, Age, ASA, native language**

**Allergies**

**Procedure & current surgical status**

**Surgical requests for anesthesia (e.g. relaxation, MAP)**

**Patient position**

**Anesthesia type**

## **Background:**

**Medical History**

**Airway Management/Difficulties**

**Regional anesthesia (placement? events?)**

## **Assessment:**

**Cardiovascular Status**

**Pulmonary status & Vent settings**

**Anesthetics given (Vapor/Opioids/Relaxants/Reversals)**

**Other Medication given or due (Antibiotics/Antiemetics)**

**IV / Arterial / Central lines (placement/usage events?)**

**Fluid input and output**

**Blood product availability**

**Labs received/pending**

## **Recommendations:**

**Emergence and Disposition plan**

**Extubation (Y/N)**

**Reversal**

**Pain medication**

**PACU, CG/CS, ICU (informed? Transport arranged?)**

- **Reconcile medications and controlled substances**
- **Inform surgical and nursing staff of anesthesia personnel change**

# **ZSFG Anesthesia**

## **OB/Pain Service Shift Handover Checklist**

- **Current ongoing or scheduled surgical procedures in OB**
- **Current laboring patients**
- **Current Epidurals/Continuous SpA**
- **Readiness of LD ORs**
- **Current pain patients**

# **Handoff checklist**

- Current Procedure
- Active Consults/900's
- Add-on cases
- Pre-ops
- Staffing  
(sick calls? stay late?)
- OR1/DR1 Ready

# **Handoff checklist**

- Morning: OR Turnover?
- 4 Anesthesia Bags
- SIS Completion?  
(attendings and residents!)
- Phones & Pagers
- OB and Pain Handoff
- Tuesday AM resident-conferences  
(Stars, Trauma conference, Journal Club)



# **End of Shift Checklist for Attending**

- OR Handoff
  - PACU: Patients? Name taken off the board?
  - SIS completion
  - M&M cases to enter?
- D2: ROTEM QC?

## **APPENDIX E: Standards for Basic Anesthetic Monitoring**

### **STANDARDS FOR BASIC ANESTHETIC MONITORING**

**(Approved by the ASA House of Delegates on October 21, 1986, and last amended on October 20, 2010 with an effective date of July 1, 2011)**

These standards apply to all anesthesia care although, in emergency circumstances, appropriate life support measures take precedence. These standards may be exceeded at any time based on the judgment of the responsible anesthesiologist. They are intended to encourage quality patient care, but observing them cannot guarantee any specific patient outcome. They are subject to revision from time to time, as warranted by the evolution of technology and practice. They apply to all general anesthetics, regional anesthetics and monitored anesthesia care. This set of standards addresses only the issue of basic anesthetic monitoring, which is one component of anesthesia care. In certain rare or unusual circumstances, 1) some of these methods of monitoring may be clinically impractical, and 2) appropriate use of the described monitoring methods may fail to detect untoward clinical developments. Brief interruptions of continual† monitoring may be unavoidable. These standards are not intended for application to the care of the obstetrical patient in labor or in the conduct of pain management.

#### **STANDARD I**

Qualified anesthesia personnel shall be present in the room throughout the conduct of all general anesthetics, regional anesthetics and monitored anesthesia care.

##### **Objective**

Because of the rapid changes in patient status during anesthesia, qualified anesthesia personnel shall be continuously present to monitor the patient and provide anesthesia care. In the event there is a direct known hazard, e.g., radiation, to the anesthesia personnel which might require intermittent remote observation of the patient, some provision for monitoring the patient must be made. In the event that an emergency requires the temporary absence of the person primarily responsible for the anesthetic, the best judgment of the anesthesiologist will be exercised in comparing the emergency with the anesthetized patient's condition

and in the selection of the person left responsible for the anesthetic during the temporary absence.

## **STANDARD II**

During all anesthetics, the patient's oxygenation, ventilation, circulation and temperature shall be continually evaluated.

### **Oxygenation**

#### **Objective**

To ensure adequate oxygen concentration in the inspired gas and the blood during all anesthetics.

#### **Methods**

3. Inspired gas: During every administration of general anesthesia using an anesthesia machine, the concentration of oxygen in the patient breathing system shall be measured by an oxygen analyzer with a low oxygen concentration limit alarm in use.\*
4. Blood oxygenation: During all anesthetics, a quantitative method of assessing oxygenation such as pulse oximetry shall be employed.\* When the pulse oximeter is utilized, the variable pitch pulse tone and the low threshold alarm shall be audible to the anesthesiologist or the anesthesia care team personnel.\* Adequate illumination and exposure of the patient are necessary to assess color.\*

## **VENTILATION**

#### **Objective**

To ensure adequate ventilation of the patient during all anesthetics.

#### **Methods**

7. Every patient receiving general anesthesia shall have the adequacy of ventilation continually evaluated. Qualitative clinical signs such as chest excursion, observation of the reservoir breathing bag and auscultation of breath sounds are useful. Continual monitoring for the presence of expired carbon dioxide shall be performed unless invalidated by the nature of the patient, procedure or

equipment. Quantitative monitoring of the volume of expired gas is strongly encouraged.\*

8. When an endotracheal tube or laryngeal mask is inserted, its correct positioning must be verified by clinical assessment and by identification of carbon dioxide in the expired gas. Continual end-tidal carbon dioxide analysis, in use from the time of endotracheal tube/laryngeal mask placement, until extubation/removal or initiating transfer to a postoperative care location, shall be performed using a quantitative method such as capnography, capnometry or mass spectroscopy.\* When capnography or capnometry is utilized, the end tidal CO<sub>2</sub> alarm shall be audible to the anesthesiologist or the anesthesia care team personnel.\*
9. When ventilation is controlled by a mechanical ventilator, there shall be in continuous use a device that is capable of detecting disconnection of components of the breathing system. The device must give an audible signal when its alarm threshold is exceeded.
10. During regional anesthesia (with no sedation) or local anesthesia (with no sedation), the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs. During moderate or deep sedation the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs and monitoring for the presence of exhaled carbon dioxide unless precluded or invalidated by the nature of the patient, procedure, or equipment.

## **CIRCULATION**

### **Objective**

To ensure the adequacy of the patient's circulatory function during all anesthetics.

### **Methods**

Every patient receiving anesthesia shall have the electrocardiogram continuously displayed from the beginning of anesthesia until preparing to leave the anesthetizing location.\*

Every patient receiving anesthesia shall have arterial blood pressure and heart rate determined and evaluated at least every five minutes.\*

Every patient receiving general anesthesia shall have, in addition to the above,

circulatory function continually evaluated by at least one of the following: palpation of a pulse, auscultation of heart sounds, monitoring of a tracing of intra-arterial pressure, ultrasound peripheral pulse monitoring, or pulse plethysmography or oximetry.

## **BODY TEMPERATURE**

### **Objective**

To aid in the maintenance of appropriate body temperature during all anesthetics.

### **Methods**

Every patient receiving anesthesia shall have temperature monitored when clinically significant changes in body temperature are intended, anticipated or suspected.

† Note that “continual” is defined as “repeated regularly and frequently in steady rapid succession” whereas “continuous” means “prolonged without any interruption at any time.”

\* Under extenuating circumstances, the responsible anesthesiologist may waive the requirements marked with an asterisk (\*); it is recommended that when this is done, it should be so stated (including the reasons) in a note in the patient’s medical record.

**Title:**           **Anesthesia Cart Locking, Medication Safety and Controlled Substance Policy and Procedure**

**Purpose:**       To establish Policy and Procedure for the locking of anesthesia carts and handling of controlled substances. Oversight for establishing and updating this Policy & Procedure is the responsibility of the Chief of Anesthesia or his/her designee.

**Background:** Anesthesia carts contain various equipment and drugs needed for induction and maintenance of anesthesia and the support of additional anesthesia related tasks e.g. difficult airway management, central line placement, etc. To avoid illegitimate access to the carts, all carts are generally kept locked. At the beginning and end of cases, however, it is necessary for the anesthesiologist to have immediate access to drugs and equipment. As stated in the attached Security of Medications in the Operating Room position statement drafted by the American Society of Anesthesiologists (ASA), "At the end of anesthesia cases, when patients are particularly vulnerable, anesthesia professionals dedicate full attention to their patients. This vulnerable period extends from the time the patient emerges from anesthesia until the anesthesia professional transports the patient to a recovery area. If drugs are locked up during this vulnerable period, provider access to drugs required for emergency patient care is obstructed. Furthermore, requiring anesthesia professionals to divert attention from patients in order to lock non-controlled medications in anesthesia carts during the period between emergence from anesthesia and transport of patients out of the operating room jeopardizes patient safety. Therefore locking non-controlled medications at this point in the anesthetic should not be required." (APPENDIX A) Similarly, anesthesia providers bring premedicated patients from the preoperative holding area into the operating room. Immediate access to anesthesia drugs and equipment may be required. For these reasons the ASA states in the position statement "Anesthesia carts may be left unlocked and non-controlled medications may be left in or on the top of unlocked anesthesia carts or anesthesia machines immediately prior to, during, and immediately following surgical cases in an operating room, so long as there are authorized operating room personnel in the OR suite."

The position of the regulatory authorities on this issue is in flux. While the State Operations Manual require that carts containing anesthesia medications be locked whenever they are not directly monitored by an individual with legal access to the medications, even within a secure operation room suite CMS published a proposed revision on March 25, 2005 requiring now that "all drugs and biologicals be kept in a secure area, and locked **when appropriate**" [§482.25(b)(2)]. This has now been finalized in 482.25(b)(2)(i) (APPENDIX B). The California Department of Health Services issued a memorandum stating that "anesthesia carts and anesthetic machines may remain unlocked during and in between surgical cases in a given operation room, as long as there are surgical service personnel in the immediate vicinity." This statement follows American Society of Anesthesiologists (ASA) policy.

The Anesthesia Locked Cart Policy follows the final CMS rule as well as the ASA position statement on this issue.

## Policies:

- Anesthesia carts are generally to be kept locked at all times. However, in certain situations Anesthesia professionals must have immediate access to drugs required for emergency patient care. Procedures designed to prevent unauthorized access to such drugs must be consistent with this imperative for patient safety. Therefore the following exemptions apply to the locked cart policy:
  - Anesthesia carts may be left unlocked and non-controlled medications may be left in, or on, the top of unlocked anesthesia carts or anesthesia machines immediately prior to, during, and immediately following surgical cases in an operating room, so long as there are authorized operating room personnel in the immediate vicinity.
  - Anesthesia carts may also remain unlocked whenever the anesthesia provider is able to directly monitor access to the anesthesia cart.
- All medications and solutions will be labeled with the medication name, concentration, date, time drawn up, and initials of the care provider whenever transferred from their original container.
  - Medications transferred from their original container will expire 24 hours after they are drawn up, except for propofol, which expires after 6 hours.
  - No more than 1 medication will be labeled at a time
  - All labels are to be verified verbally and visually by two qualified individuals when the person preparing the medication is not the person administering the medication
  - Any medications found unlabeled are to be immediately discarded
  - All original medication containers will remain available for reference until the conclusion of the procedure. Glass ampules will be immediately placed in the sharps container upon opening to comply with Environmental Health and Safety regulations.
  - At shift change or break relief, all medications and their labels will be reviewed by entering and exiting personnel.
- Drug boxes containing controlled substances are picked up from pharmacy prior to starting work and must be returned immediately to pharmacy after the shift ends. Proper hospital ID is required when obtaining controlled substance boxes. The controlled substance box must be brought directly to the providers assigned OR and kept locked to the top of the anesthesia cart. **Drug box keys are always to be kept with the provider. Keys may not be stored in the anesthesia cart, even if the cart is locked.**

### Exemptions:

- Open and/or unlocked controlled substance boxes are acceptable whenever the anesthesia provider is in the immediate vicinity and able to directly monitor access to the drug box.

- Controlled substances drawn up into syringes require labels with concentration, date, time & the initials of the provider drawing up the medication if not administered immediately and completely
- Controlled substances in syringes must remain in the OR at all times. Exemption:
  - To obtain adequate pre- or postoperative sedation and pain management the anesthesia provider is allowed to carry a reasonable amount of controlled substances on his body in syringes if directly heading to the pre-operative area to premedicate a patient or while transporting a patient at the end of a case.
- Controlled substances in use (applied over continuous infusion pumps or from syringes) may be handed off to another provider during transfer of care or for breaks. The provider who originally checked out the controlled substance box remains responsible for complete and correct documentation of administration.
  - Rational: Controlled substances are routinely administered in almost every anesthesia case. Often they are administered via a continuous infusion or syringe pump. From practical as well as quality of care standpoints, those drugs cannot and should not be discontinued when the anesthesia provider changes. Official recommendations regarding this matter from the ASA and AANA are not available, however, statements have been made that this is considered to be the standard practice nationwide.
- Audits of anesthesia carts are performed and recorded at least quarterly by the Chief of Service or the Director of Clinical Anesthesia. Irregularities are documented and planned actions described.

## APPENDIX

- D) ASA Position Statement "Security of Medications in the Operating Room"
- E) Federal Register/ Final Rule



## **STATEMENT ON SECURITY OF MEDICATIONS IN THE OPERATING ROOM**

(Approved by the ASA Executive Committee in October 2003, and last amended by the  
ASA House of Delegates on October 16, 2013)

### **Preamble**

A secure environment of care is needed for medication safety. Medication safety includes the security of oral, sublingual, parenteral, and inhaled drugs used for elective and emergency patient care. A secure area ensures the integrity of anesthesia machines as well as other equipment and materials. Security of medications in the operating room suite is essential for patient safety.

### **Recommended Policies**

1. Access to operating room suites must be strictly limited to authorized persons.
2. All Schedule 3 and 4 narcotic medications must be kept in locked enclosed areas when not under the direct control of an anesthesia professional.
3. Anesthesia professionals must have immediate access to drugs required for emergency patient care. Procedures designed to prevent unauthorized access to such drugs must be consistent with this imperative for patient safety.
4. Anesthesia carts and anesthesia machines may remain unlocked, and non-controlled\* medications may be left in or on top of unlocked anesthesia carts or anesthesia machines immediately prior to, during, and immediately following surgical cases in an operating room, so long as there are authorized operating room personnel in the OR suite.

### **Rationale**

- A. Because the operating room suite is a limited-access secure location, it is safe practice for anesthesia professionals to leave non-controlled\* medications on the top of their anesthesia carts or anesthesia machines for brief periods (e.g., while going to a nearby holding area to bring a patient into the operating room).
- B. At the end of anesthesia cases, when patients are particularly vulnerable, anesthesia professionals dedicate full attention to their patients. This vulnerable period extends from the time the patient emerges from anesthesia until the anesthesia professional transports the patient to a recovery area (e.g., post anesthesia care unit, intensive care unit, etc.). If drugs are locked up during this vulnerable period, provider access to drugs required for emergency patient care is obstructed. Furthermore, requiring anesthesia professionals to divert attention from patients in order to lock non-controlled\* medications in anesthesia carts during the period between emergence from anesthesia and transport of patients out of the operating room jeopardizes patient safety. Therefore, locking non-controlled\* medications at this point in the anesthetic should not be required.
- C. It is necessary and safe practice for non-controlled\* medications to be set up for emergency cases (e.g., in obstetrics and trauma) and made secure in a drawer or cupboard "locked" by a tamper-evident device that can easily be broken by authorized persons. Locks requiring knowledge of a combination or possession of a physical key jeopardize patient safety.
- D. It is necessary and safe practice for emergency anesthesia drugs (e.g., dantrolene for the treatment of malignant hyperthermia) to be kept in a dedicated emergency cart or cupboard and made secure ("locked") by a tamper-evident device that can easily be broken by



authorized persons. Locks requiring knowledge of a combination or possession of a physical key jeopardize patient safety.

\*The term "non-controlled" refers to medications that are not Schedule II-V narcotics.



# Federal Register

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**Monday,  
November 27, 2006**

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## **Part II**

### **Department of Health and Human Services**

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**Centers for Medicare & Medicaid Services**

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**42 CFR Part 482**

**Medicare and Medicaid Programs;  
Hospital Conditions of Participation; Final  
Rule**

**DEPARTMENT OF HEALTH AND  
HUMAN SERVICES**

**Centers for Medicare & Medicaid  
Services**

**42 CFR Part 482**

[CMS–3122–F]

RIN 0938–AM88

**Medicare and Medicaid Programs;  
Hospital Conditions of Participation:  
Requirements for History and Physical  
Examinations; Authentication of Verbal  
Orders; Securing Medications; and  
Postanesthesia Evaluations**

**AGENCY:** Centers for Medicare & Medicaid Services (CMS), DHHS.

**ACTION:** Final rule.

**SUMMARY:** In this rule, we finalize changes to four of the current requirements (or conditions of participation (CoPs)) that hospitals must meet to participate in the Medicare and Medicaid programs. Specifically, this final rule revises and updates our CoP requirements for: Completion of the history and physical examination in the medical staff and the medical record services CoPs; authentication of verbal orders in the nursing service and the medical record services CoPs; securing medications in the pharmaceutical services CoP; and completion of the postanesthesia evaluation in the anesthesia services CoP. We also respond to timely public comments submitted on the proposed rule published in the March 25, 2005 *Federal Register* (70 FR 15266). The changes specified in this final rule are consistent with current medical practice and will reduce the regulatory burden on hospitals.

**DATES:** Effective Date: These regulations are effective on January 26, 2007.

**FOR FURTHER INFORMATION CONTACT:** Patricia Chmielewski, (410) 786–6899, Monique Howard, (410) 786–3869, Jeannie Miller, (410) 786–3164.

**SUPPLEMENTARY INFORMATION:** *Copies:* You can view and photocopy this *Federal Register* document at most libraries designated as Federal Depository Libraries and at many other public and academic libraries throughout the country that receive the *Federal Register*.

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**I. Legislative and Regulatory  
Background**

*A. General*

On March 25, 2005 we published a proposed rule in the *Federal Register* entitled “Medicare and Medicaid Programs; Hospital Conditions of Participation: Requirements for History and Physical Examinations; Authentication of Verbal Orders; Securing Medications; and Postanesthesia Evaluations” (70 FR 15266). In that document, we presented our proposals to: (1) Expand the timeframe for completion of the history and physical examination to 30 days and expand the number of permissible professional categories of individuals who may perform the history and physical examination; (2) require that all orders, including verbal orders, be dated, timed, and authenticated by a practitioner responsible for the care of the patient. In the absence of a State law specifying the timeframe for authentication of verbal orders, verbal orders would need to be authenticated within 48 hours; (3) require that all drugs and biologicals be kept in secure areas, and locked when appropriate; and, (4) permit the postanesthesia evaluation for inpatients to be completed and documented by any individual qualified to administer anesthesia. This action was initiated in response to broad criticism from the medical community that the current requirements governing these areas are burdensome and do not reflect current practice.

Previously, we published a proposed rule in the December 19, 1997 *Federal Register* (62 FR 66726), entitled

“Medicare and Medicaid Programs; Hospital Conditions of Participation (CoPs); Provider Agreements and Supplier Approval” which specified our proposal to comprehensively revise the entire set of hospital CoPs. The CoPs are the requirements that hospitals must meet to participate in the Medicare and Medicaid programs. The CoPs are intended to protect patient health and safety and to ensure that high quality care is provided to all patients.

Sections 1861(e)(1) through 1861(e)(8) of the Social Security Act (the Act) define the term “hospital” and list the requirements that a hospital must meet to be eligible for Medicare participation. Section 1861(e)(9) of the Act specifies that a hospital must also meet such other requirements as the Secretary of Health and Human Services (the Secretary) finds necessary in the interest of the health and safety of the hospital’s patients. Under this authority, the Secretary has established in regulations, at Part 482, the requirements that a hospital must meet to participate in the Medicare program.

Compliance is determined by State survey agencies (SAs) or accreditation organizations. The SAs, in accordance with section 1864 of the Act, survey hospitals to assess compliance with the CoPs. The SAs conduct surveys using the State Operations Manual (SOM) (Centers for Medicare & Medicaid Services (CMS) Publication No. 7). The SOM contains the regulatory language of the CoPs as well as interpretive guidelines and survey procedures that give guidance on how to assess provider compliance. Under § 489.10(d), the SAs determine whether a hospital meets the CoPs and make corresponding recommendations to us about a hospital’s certification, (that is, whether a hospital has met the standards required to provide Medicare and Medicaid services and receive Federal and State reimbursement).

Under section 1865 of the Act, hospitals that are accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), the American Osteopathic Association (AOA), and other national accreditation programs approved by us are deemed to meet the requirements in the CoPs. All Medicare- and Medicaid-participating hospitals are required to be in compliance with our CoPs regardless of their accreditation status.

*B. Finalizing Provisions of the December 19, 1997 Proposed Rule (62 FR 66726)*

In the December 19, 1997 proposed rule (62 FR 66726), we proposed to revise all CoPs specified in Part 482. While our initial intention was to

finalize the December 19, 1997 proposed rule in its entirety, delays within CMS (then the Health Care Financing Administration (HCFA)) led us to re-evaluate this objective in light of concerns expressed by providers that we move forward with certain final rules in the interest of public health and safety. Our strategy to address CoPs considered of particular urgency by providers was to finalize or "carve-out" specific CoPs as separate final rules. To date, we have published the following hospital CoPs: Organ, Tissue and Eye Procurement CoP (see the June 22, 1998 final rule (63 FR 33856); Patients' Rights (see the July 2, 1999 interim final rule (64 FR 36069); Anesthesia Services-CRNA supervision (see the November 13, 2001 final rule (66 FR 56762); Fire Safety Requirements for Certain Health Care Facilities (see the January 10, 2003 final rule (68 FR 1374); and, Quality Assessment Performance Improvement (see the January 24, 2003 final rule (68 FR 3435).

Beginning in 2003, we began to develop a final rule to address public comments provided on the December 19, 1997 proposed rule for the following four requirements: (1) Completion of a history and physical examination in the medical staff and the medical record services CoPs; (2) authentication of verbal orders in the nursing service and the medical record services CoPs; (3) securing medications in the pharmaceutical services CoP; and (4) completion of the postanesthesia evaluation in the anesthesia services CoP.

Our decision to carve out these four requirements in this final rule has evolved in large measure as a result of our continuing dialogue with the health care community. Through various CMS-sponsored provider forums such as the Physicians' Regulatory Issues Team (PRIT) (a team of subject matter experts who work within the government to reduce the regulatory burden on Medicare participating physicians), our open door forums, and written correspondence by a variety of organizations and individuals, we were made aware that providers overwhelmingly believe that the existing regulations for these requirements no longer reflect current health care practice. In addition, public comments received on the December 19, 1997 proposed rule strongly supported the revisions we proposed for these selected CoPs.

*C. Changes as a Result of the Enactment of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA)*

On December 8, 2003, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) was enacted. Section 902(a) of the MMA specifies that the Secretary, in consultation with the Director of the Office of Management and Budget (OMB), is required to establish and publish a regular timeline for the publication of final regulations based on the previous publication of a proposed regulation or an interim final regulation. Section 902 further provides that the timeline may vary among different regulations, but shall not be longer than 3 years except under exceptional circumstances.

Although we do not believe that this law operates retroactively, out of an abundance of caution, we are applying the provisions of section 902(a) of the MMA to this rule since our publication of the December 19, 1997 rule was not finalized. Had section 902(a) of MMA not been enacted, the CoP provisions stipulated in the March 25, 2005 proposed rule would have been stipulated in a final regulation. However, with the passage of section 902 of the MMA, we believe it was in the spirit of the legislation to publish a new proposed regulation and subsequent final rule.

This final rule finalizes provisions set forth in the March 25, 2005 proposed rule (70 FR 15266 through 15274). In addition, this final rule has been published in the **Federal Register** within the 3-year time limit imposed by section 902 of the MMA. Therefore, we believe that this final rule is in accordance with the Congress' intent to ensure timely publication of final regulations.

**II. Provisions of the Proposed Regulations**

On March 25, 2005 we published a proposed rule (70 FR 15266) in the **Federal Register** entitled "Medicare and Medicaid Programs; Hospital Conditions of Participation: Requirements for History and Physical Examinations; Authentication of Verbal Orders; Securing Medications; and Postanesthesia Evaluations." This proposed rule responded to the health care community's primary concern that the current regulations are contrary to current health care practice and unduly burdensome. In order to be consistent with current health care practice, reduce regulatory burden, and ensure patient safety and quality care, we proposed

revising aspects of the current medical staff, nursing services, medical record services, pharmaceutical services, and anesthesia services CoPs. Below we summarize and discuss our proposed changes to these conditions and requirements.

As discussed in section I of the preamble to the proposed rule, we proposed the following changes:

*A. Completion of the Medical History and Physical Examination*

These proposed revisions would expand the timeframe for completion of the history and physical (H&P) examination to 30 days and expand the number of permissible categories of individuals who may perform the H&P. They address ongoing concerns expressed by the American Medical Association (AMA) and the American Podiatric Medical Association, Inc. (APMA), related to the timeframe for completion, as well as who is permitted to complete the history and physical examination. We proposed to revise the current medical staff requirement at § 482.22(c)(5) to specify that a medical history and physical examination must be completed no more than 30 days before or 24 hours after admission for each patient by a physician (as defined in section 1861(r) of the Act) or other qualified individual who has been granted these privileges by the medical staff in accordance with State law, and that the medical history and physical examination must be placed in the medical record within 24 hours after admission. We also proposed revising the current Medical Records CoP at § 482.24(c)(2)(i) to reflect that a medical history and physical examination must be completed no more than 30 days before or 24 hours after admission, and placed in the patient's medical record within 24 hours after admission. We also proposed revising § 482.22(c)(5) and § 482.24(c)(2)(i) to require that when a medical history and physical examination is completed within the 30 days before admission, the hospital must ensure that an updated medical record entry documenting an examination for any changes in the patient's current condition is completed. This updated examination must be completed and documented in the patient's medical record within 24 hours after admission.

*B. Authentication of Verbal Orders*

These proposed revisions broaden the category of practitioners who may authenticate orders. It responds to health care community concerns, reduces regulatory burden, and provides flexibility for hospitals in meeting the

**Aestiva ZSFG Machine Checklist**

**Perform All Steps Every Day Before the First Patient**  
**Perform Steps # 9 - 13 Before Each Patient**

**Emergency Ventilation Equipment**

**1. Verify Backup Ventilation Equipment is Available & Functioning**

**XIII. High Pressure System**

**XIV. 2. Check Oxygen Cylinder Supply**

**3. Check Central Pipeline Supplies**

**Low Pressure Systems**

**4. Perform Leak Check of Machine Low Pressure System**

**5. Calibrate (Zero) Flow Sensors**

**6. Calibrate O<sub>2</sub> Monitor to Room Air (21%)**

**7. Test Flowmeters**

**Scavenging System**

**8. Verify Scavenge Valve is Open 1 ½ Turns**

**Breathing System**

**9. Check Initial Status of New Breathing System**

**Automatic and Manual Ventilation Systems**

**10. Test Ventilation Systems & Unidirectional Valves**

**11. Perform Leak Check of the Breathing System**

**Monitors**

**12. Check, and/or Set Alarm Limits of All Monitors**

## Final Position

### 13. Check Final Status of Machine

#### Checklist Details

- 1:
  - a: Set the system switch to ON & disconnect wall oxygen supply.
  - b: Open O<sub>2</sub> cylinder & verify at least half full (about 1,000 psi).
  - c: Turn O<sub>2</sub> and N<sub>2</sub>O flows to 5 L/min. Close O<sub>2</sub> cylinder.
  - d: Observe N<sub>2</sub>O flow to stop before O<sub>2</sub> supply pressure and O<sub>2</sub> flow drop to zero.
  - e: Verify (listen for) low oxygen pressure supply alarm.
  - f: Set all gas flows to minimum.
- 2:
  - a: Check that hoses are connected & pipeline gauges read about 50 psi.
- 3:
  - a: Set the system switch to STANDBY.
  - b: Turn the gas flow control valves one and a half turns counterclockwise.
  - c: Turn on (Open) the Auxiliary Common Gas Outlet (ACGO) Switch.  
ACGO Switch located above soda lime canister and below O<sub>2</sub> Sensor door.
  - d: Attach "Suction Bulb" to ACGO.
  - e: Squeeze bulb repeatedly until fully collapsed.
  - f: Verify bulb stays collapsed for at least 10 seconds.
  - g: Open one vaporizer at a time to 1% and repeat 'e' and 'f' above,  
& check vaporizer interlock system.
  - h: Remove suction bulb and close ACGO switch.
- 4:
  - a: Push on the latch under the flow sensor module.
  - b: Remove the flow sensor module to begin calibration.
  - c: When calibration is complete screen will show "No Insp & No Exp Flow Sensor".
  - d: Reinstall the flow sensor module. (If wet, replace flow sensor module.)
- 5:
  - a: Located inside door above ACGO and next to Drain Button.
  - b: Press menu, scroll down to Set Up/Calibrate, follow instructions.
- i:
  - a: Adjust flow of all gases through their full range,  
checking for smooth operation of floats & undamaged flow tubes.
  - b: Attempt to create a hypoxic O<sub>2</sub>/N<sub>2</sub>O mixture & verify correct changes in flow.
- 7:
  - a: Check that breathing circuit is complete, undamaged and unobstructed.
  - b: Verify that CO<sub>2</sub> absorbent is adequate.
  - c: Install breathing circuit accessory equipment to be used during the case.
  - d: Install **NEW HME filter**.
- 8:
  - a: Place a breathing bag on Y-piece.
  - b: Set appropriate ventilator parameters for next patient.
  - c: Set selector switch to automatic ventilation (ventilator) mode.
  - d: Fill bellows & breathing bag with O<sub>2</sub> flush.
  - e: Set O<sub>2</sub> flow to minimum, other gas flows to zero.
  - f: Verify that during inspiration bellows delivers appropriate tidal volume  
& that during expiration bellows fills completely.
  - g: Set fresh gas flow to about 5 L/min.
  - h: Verify that the ventilator bellows & simulated lungs fill & empty appropriately  
without sustained pressure at end expiration.
  - i: Check for proper action of unidirectional valves.
  - j: Set selector switch to Bag mode.
  - k: Move breathing bag from Y-piece to bag arm.
- 9:
  - a: Set all gas flows to minimum.
  - b: Close APL (pop-off) valve & occlude Y-piece.
  - c: Pressurize breathing system to about 30 cm H<sub>2</sub>O with O<sub>2</sub> flush.
  - d: Ensure that pressure remains fixed for at least 10 seconds.
  - e: Open APL (pop-off) valve & ensure that pressure decreases.
- 10: Capnometer Oxygen Analyzer  
Pulse Oximeter Respiratory Volume Monitor (spirometer)

Pressure monitor with High & Low Airway Alarms

- 11:   a: Vaporizers off, check fill level, tighten vaporizers' filler caps.  
      b: APL valve open.  
      c: Selector switch to "Bag" mode.  
      d: All flowmeters to minimum.  
      e: Patient suction level adequate.  
      f: Breathing system ready to use.



## APPENDIX H: MALIGNANT HYPERTHERMIA RESPONSE

### TITLE: MALIGNANT HYPERTHERMIA RESPONSE

#### PURPOSE

The purpose of this policy is to ensure a well-coordinated response to malignant hyperthermia (MH) treatment by:

- Defining MH and providing guidelines for the diagnosis of MH
- Outlining responsibilities of the clinical team during the treatment of MH
- Providing guidelines on how to stock and check the MH emergency cart

#### DEFINITIONS

##### Malignant Hyperthermia:

- The MH crisis is a biochemical chain reaction response, “triggered” by commonly used general anesthetics and the paralyzing agent succinylcholine (a neuromuscular blocker), within the skeletal muscles of susceptible individuals.
- Some patients who are MH susceptible may experience a MH crisis without exposure to anesthetic drugs. Such events are rare. Strenuous exercise, exposure to heat, or perhaps high body temperature from infection may precipitate the crisis.
- The general signs of the MH crisis include increased heart rate, greatly increased body metabolism, muscle rigidity and/or fever that may exceed 110°F along with muscle breakdown, derangements of body chemicals and increased acid content in the blood.
- Severe complications include: cardiac arrest, brain damage, internal bleeding or failure of other body systems. Thus, death, primarily due to a secondary cardiovascular collapse, can result.
- **MH is a medical emergency.** Minimizing time to appropriate treatment is essential!

##### Diagnosis of Malignant Hyperthermia:

- The most consistent indicator of potential MH in the OR is an **unanticipated increase (e.g., doubling or tripling) of end-tidal CO<sub>2</sub>** when minute ventilation is kept constant. The increase in CO<sub>2</sub> may occur over a brief period of time or may develop over longer periods of time (minutes to hours). If upward adjustments of minute ventilation (tidal volume and frequency) are required to maintain normal end-tidal CO<sub>2</sub>, the possibility of MH should be considered and promptly evaluated.
- If sudden, **unexpected cardiac arrest** occurs, especially in a young male, hyperkalemia should be considered immediately and therapy started with calcium, hyperventilation, glucose, and insulin. Plasma potassium concentration should be measured as soon as possible. Sudden unexpected cardiac arrest is not typically due to MH, but due to sudden rapid rhabdomyolysis.
- **Unexpected tachycardia, tachypnea and jaw muscle rigidity** (masseter spasm) are often common signs of MH that follow the significant CO<sub>2</sub> increase.
- **Respiratory and metabolic acidosis** usually indicates fulminant MH. However, metabolic acidosis is not always present prior to severe temperature increase.
- A specific sign of the MH syndrome is **body rigidity** (i.e., limbs, abdomen and chest). When there is a suspicion of MH, attempts should be made to determine if muscle rigidity is also present.
- **Temperature elevation** usually follows the appearance of other signs of MH. Temperature change during MH is best detected by core temperature measurement (tympanic, naso- or oropharyngeal, esophageal, rectal, or pulmonary artery). Forehead skin temperature is less acceptable; it is slower in reflecting changes

in core temperature and could be influenced by peripheral vasoconstriction. **MHAUS recommends that core temperature be measured whenever general anesthesia is administered for procedures lasting more than 30 minutes.**

- **Postoperative rhabdomyolysis** without intraoperative signs of MH should be treated with hydration, mannitol and bicarbonate. Plasma potassium concentration should be measured immediately or as soon as possible. The patient should be referred to a neurologist and to an MH testing center to evaluate occult myopathy and determine the need for evaluation of MH susceptibility.

#### **Drugs and Malignant Hyperthermia:**

- **All volatile inhalation anesthetics (Halothane, Enflurane, Isoflurane, Desflurane, Sevoflurane) and Succinylcholine are MH triggers.** Nitrous oxide is not a trigger.
- **DO NOT ADMINISTER** calcium channel blockers when Dantrolene has been given since it may increase the risk for hyperkalemia and subsequent cardiac arrest.
- All other currently used anesthetics and life-support drugs are considered safe.

#### **PROTOCOL: MALIGNANT HYPERTHERMIA RESPONSE**

##### **I. Criteria for suspecting MH and Hospital Locations where MH may occur:**

- Suspect MH if one or more of the following criteria are present:
  1. Unanticipated increase (e.g., doubling or tripling) of end-tidal CO<sub>2</sub> when minute ventilation is kept constant
  2. Unexpected cardiac arrest
  3. Unexpected tachycardia, tachypnea, jaw muscle rigidity (masseter spasm)
  4. Respiratory and metabolic acidosis
  5. Body rigidity (i.e., limbs, abdomen and chest)
  6. Temperature elevation
  7. Postoperative rhabdomyolysis
- MH may occur in the following hospital locations:
  1. Operating Room (including OB OR) – Primary site: MH may occur at any time during or emerging from anesthesia, including in the immediate post-operative period
  2. Post Anesthesia Care Unit (PACU)
  3. Emergency Department (ED)
  4. MH can occur anywhere in the hospital where patients require emergency intubation with succinylcholine or in other departments that use inhaled anesthetics for procedures (i.e., IR, GI, ICU)
  5. **If the patient experiences MH outside of the OR area, immediately transport the patient to the OR for appropriate care. The Anesthesia D1 to assign the specific OR treatment room. For patients already in the ICU, the ICU Attending and Anesthesia D1 will decide whether to treat the patient in the OR or ICU.**

##### **II. Staff/Service Roles during an MH Crisis**

- **ANESTHESIA**
  1. Recognize and diagnose MH
  2. Immediately discontinue volatile anesthetics or succinylcholine upon diagnosis
  3. Start TIVA (Total Intravenous Anesthesia), if anesthesia is required
  4. Hyperventilate patient at 2-3 times predicted minute ventilation with 100% oxygen.
  5. FiO<sub>2</sub> 1.0 at 10 L/min. Keep the circuit system, absorber and ventilation machine.

6. Activate the MH response system by obtaining the MH Cart, clearly designating roles and responsibilities and ensuring closed loop communication
  - Designate an anesthesia technician to obtain the MH Cart from the Anesthesia Workroom (VOIP phone 60927)
  - Page the Anesthesia D1 during the day or Anesthesia Night Attending at night to assign an anesthesiologist to be the team leader of the MH response (VOIP phone 60905)
  - Inform surgeons of an MH emergency and coordinate the most expeditious surgical plan to finish the surgical procedure
7. Administer Dantrolene Sodium 2.5 mg/kg by rapid IV bolus
  - Designate an anesthesia attending, resident, CRNA, nurse, and/or pharmacist to reconstitute the Dantrolene (designate multiple team members solely for Dantrolene reconstitution, as the process is time intensive).
  - Reconstitute each 20 mg vial of Dantrolene with 60 mL Sterile Water for Injection. Shake the vial until the solution is clear. The resulting solution contains 20 mg of Dantrolene and 3gm of Mannitol
  - Designate one provider to administer Dantrolene via rapid IV push.
  - DO NOT use 5% Dextrose Injection, 0.9% Sodium Chloride Injection or other acidic solutions since it is not compatible with Dantrolene
  - DO NOT transfer Dantrolene to large glass bottles for prophylactic infusion due to precipitate formation observed with the use of some glass bottles as reservoirs
  - The contents of the vial must be protected from direct light and used within 6 hours after reconstitution. Store reconstituted solutions at controlled room temperature (59°F to 86°F or 15°C to 30°C)
8. Repeat Dantrolene administration as often as necessary
  - Titrate to control clinical signs of MH to a total dose of 10 mg/kg. Note that in some patients, up to 30 mg/kg may be required
  - Dantrolene sodium does not produce significant cardiac or pulmonary complications when administered acutely. **Therefore, there is little harm in administering Dantrolene where MH is suspected, but not yet proven**
9. Team Leader of MH Response will designate the following roles and use the MH Checklist as a guideline for management:
  - An anesthesia provider to manage the patient's ventilation and anesthesia
  - A circulating RN as lead nurse to call for help, activate the MH response system and delegate responsibilities to other nurses and techs
  - An anesthesia provider or CRNA to record the events during the MH crisis on the MH Flowsheet
  - An anesthesia care provider to insert an arterial line and additional large bore IV access, if not already present
  - An anesthesia provider or RN to administer medications
  - An anesthesia technician to obtain the following (VOIP phone 60927)
    - (1) Refrigerated items from the anesthesia workroom (i.e., 1L IV Plasmalyte x 3 bags, 3L NS for Irrigation x 1 bag, Regular Insulin 10mL vial with NS 100 mL IV Bag x 1 kit)
    - (2) Crash Cart
    - (3) Other supplies (i.e., syringe pump, spiked IV, triple lumen CVC, A-line sets)
10. Call the MH hotline 1-800-MH-HYPER (1-800-644-9737) as needed for consultation to help with patient management

11. Perform and monitor the following laboratory tests and studies

- Arterial Blood Gas
- Basic Metabolic Panel, LDH, Thyroid Studies (TSH, Free T4, Free T3)
  - (1) Avoid parenteral potassium, if possible, during ongoing rhabdomyolysis
  - (2) Following control of the acute episode, persistent hypokalemia may be treated with careful monitoring of the serum potassium level.
- Creatine Kinase (CK): Measure CKs every 6 hours until decreased
  - (1) CK may remain elevated for 2 weeks if event was severe
  - (2) After the patient has improved and stabilized, CK should be measured on a declining time basis until it is normal (e.g., every 4 hours during the acute episode to every week during convalescence)
  - (3) Monitoring is important because CK is elevated normally in some myopathies, and should be recognized as a part of overall evaluation and treatment
- Coagulation profile (PT/INR, PTT, Fibrinogen, D-Dimer, Lactate) – Disseminated intravascular coagulation (DIC) may occur
- CBC, Platelets, Serum Myoglobin
- Urine Hemoglobin and Myoglobin, Urinalysis
- EKG

12. Monitor core temperature and treat for hyperthermia

- If hyperthermic or core temperature rises rapidly, cool the subject using one or more of the following modalities:
  - (1) Cold IV Plasmalyte-148
  - (2) Cold Sodium Chloride 0.9% for Irrigation via lavage of NG, bladder, rectum and/or open cavities
  - (3) Ice packs for external surface cooling
  - (4) Consider calling the 4E ICU (x68201) for intracool catheters and/or cooling blankets
- Cease cooling efforts when temperature has fallen to 38°C

13. Monitor and treat other conditions that can occur (e.g., acidosis, hyperkalemia, dysrhythmias, and myoglobinuria)

- Monitor arterial blood gases and treat acidosis if not promptly reversed by Dantrolene administration
  - (1) Sodium Bicarbonate (8.4%) IV at initial dose of 1-2mEq/kg
  - (2) Or may titrate based on base deficit: Give 0.3 x weight (kg) x base deficit
  - (3) Ensure adequate minute ventilation to avoid paradoxical intracellular acidosis and continue to monitor ABGs
- Monitor serum K<sup>+</sup> and EKG and treat for hyperkalemia (peaked T-waves, widened QRS, QT and PR prolongation, wide complex ventricular tachycardia)
  - (1) Treat cardiac arrhythmias associated with hyperkalemia
    - (a) Calcium Chloride (10%) IV 10 mg/kg
    - (b) Monitor serum K<sup>+</sup> and ionized Ca<sup>++</sup>
    - (c) **Avoid calcium channel blockers**
  - (2) Treat hyperkalemia
    - (a) Sodium Bicarbonate (above)
    - (b) Regular Insulin IV bolus 0.15 units/kg (or 10 units).

- Insulin is considered a **“High Alert”** medication. As such, two providers must double check the dose prior to administration
- Dilute 1 mL=100 units Regular Insulin into a 100 mL NS Bag (final concentration 1 unit/mL). Draw up 10 mL=10 units dose.

(c) Follow Insulin with Dextrose 50% IV bolus 1 mL/kg. Monitor serum glucose.

- Monitor and treat for dysrhythmias
  - (1) Usually responds to treatment of acidosis and hyperkalemia by hyperventilation, Dantrolene, Sodium Bicarbonate, and Calcium Chloride (see above)
  - (2) Treat dysrhythmias using ACLS algorithms and crash cart

14. Place or confirm foley catheter. Monitor urine output

- Ensure urine output of at least 2 mL/kg/hr by hydration and diuretics to minimize myoglobinuria
- Hydrate aggressively (may require CVP monitoring). Avoid potassium containing solutions that contain **more than** 5 mEq/L of potassium
- Diuresis with Furosemide 0.5-1 mg/kg IVP
- Additional Mannitol is not usually necessary since 1 vial of Dantrolene contains 3gms of Mannitol

15. Once patient stabilized, transport to the ICU and provide detailed handoff to ICU team

- Continue intravenous Dantrolene for at least 24 hours after control of the episode (approximately 1 mg/kg every 6 hours either by IV bolus or infusion)
- Watch for recrudescence and monitor core temperature by appropriate monitoring in an ICU for at least 24 hours
  - (1) May reoccur in about 25% of MH cases.
  - (2) Greatest risk in muscular patients or who have received an anesthetic for at least 150 minutes prior to MH symptoms.

16. Report the event to MHAUS

- Submit a confidential Adverse Metabolic or Muscular Reaction to Anesthesia (AMRA) report for patients who have had acute MH episodes to the **North American MH Registry of MHAUS** (see [www.mhreg.org](http://www.mhreg.org))
- Have the patient call **1-888-274-7899** to add their name to the North American MH Registry Database

17. Refer patients and families to MHAUS for information on the disease

• **NURSING**

1. Designate circulating RN of the case as lead nurse to delegate responsibilities to other nursing staff
2. Active the MH response system by calling the OR Front Desk (x\_\_\_\_) to have them:
  - Overhead page the OR to request for adequate help in the MH crisis (Dial \_\_\_\_)
  - Call PACU (x\_\_\_\_) to bring 4 large plastic bags of ice to the MH crisis
  - Page the AOD (327-0259) to arrange for ICU disposition
  - Call the OR Pharmacy (x\_\_\_\_) to request other medications as needed
3. Reconstitute and administer Dantrolene
4. Prepare and administer other emergency medications as directed by the MH Lead
5. Obtain blood or urine for laboratory tests ordered
6. Assist in cooling the patient as directed by the MH Lead

• **SURGERY**

1. Assess and coordinate the most expeditious surgical plan to finish the surgical procedure (e.g., close the wound, complete the procedure, modify the procedure)
2. Assist in cooling the patient using the specified methods
3. Assist with any other activities as directed by the MH Lead

- **ANESTHESIA TECHNICIANS**

1. Bring the MH Treatment cart to the OR suite
2. Bring the Crash Cart to the OR suite
3. Bring refrigerated items from the anesthesia workroom refrigerator to the OR suite
  - 3 bags of cold 1L IV Plasmalyte
  - 1 bag of cold 3L NS for Irrigation
  - Regular Insulin 100units/mL 10 mL vial with NS 100 mL IV Bag
4. Bring a syringe pump, spiked IV, triple lumen CVC, and A-line sets to the OR suite
5. Set up, obtain and/or arrange other supplies and equipment as necessary
6. Restock the supplies in the MH cart upon conclusion of MH treatment in the OR

- **PHARMACY**

1. Reconstitute Dantrolene
2. Prepare other emergency medications as directed by the MH Lead
3. Restock the medications in the MH cart upon conclusion of MH treatment in the OR

- **FRONT DESK PERSONNEL**

1. Activate the MH response system and call for additional help (See Nursing Section)
2. Arrange for specimens to be sent to the laboratory
3. Obtain additional supplies as requested

- **PACU**

1. Bring 4 large plastic bags filled with ice to the OR suite
2. Offer other assistance to the OR team

- **ADMINISTRATOR ON DUTY (AOD)**

1. Arrange for ICU disposition post treatment
2. Offer other assistance to the OR team

### **III. Documentation**

- Document MH Response Events on the MH Response Flow Sheet (see Appendix A)
- Documentation of the response to the event will be placed in the patient's medical chart
- Report event to MHAUS via a confidential Adverse Metabolic or Muscular Reaction to Anesthesia (AMRA) Report to the North American MH Registry of MHAUS

### **IV. Maintenance of the Malignant Hyperthermia Cart**

- A Malignant Hyperthermia Emergency Cart (MH Cart) will be maintained in the Anesthesia Workroom.
- The MH Cart will be stocked with the drugs listed in Appendix B and the supplies listed in Appendix C as described in the body of this policy
- The MH Cart will be secured with a tamper-evident seal
- The MH Cart will have attached to it a list of the drugs contained within and the name and date of the drug that will expire first.
- The MH Cart will have the Malignant Hyperthermia Policy attached
- On establishment of the MH Cart, a pharmacist will verify the presence of all drugs and supplies listed in Appendix B. The anesthesia technician will ensure the presence of all supplies listed in Appendix C. The

pharmacist will then seal the box with a tamper-evident seal and fill in the required information on the "Operating Room Malignant Hyperthermia Cart" form on the cart.

- The cart will be checked by the pharmacist and anesthesia technician every 30 days, and after every deployment for integrity and outdating of contents. A record of such inspections will be recorded by the pharmacist and kept for at least three years in the pharmacy.

#### **V. Resources**

1. [www.mhaus.org](http://www.mhaus.org)
2. Hirshey Dirksen SJ, Van Wicklin SA, Mashman DL, Neiderer P, Merritt, DR. Developing Effective Drills in Preparation for a Malignant Hyperthermia Crisis. AORN Journal 2013; 97(3): 329-353.

<b>Date:</b>	<b>Patient Name / MRN:</b>	<b>Location/Room Number:</b>	<b>Anesthesia Provider(s):</b>	<b>Recorder (Anesthesia/CRNA):</b>
<b>Time:</b>	<b>Medications Used During Case (circle all that apply):</b> Succinylcholine / Desflurane / Isoflurane / Sevoflurane	<b>Patient's Weight (kg)</b>	<b>Surgery Provider(s):</b>	<b>RN(s):</b>

Intervention	Time
<b>1. <input type="checkbox"/> Discontinue Triggers</b> (succinylcholine, inhaled anesthetics) <b>2. <input type="checkbox"/> Start TIVA</b> (Total Intravenous Anesthesia), if anesthesia required <b>3. <input type="checkbox"/> Hyperventilate 2-3 Times Predicted Minute Ventilation</b> <b>4. <input type="checkbox"/> FiO2 1.0 at 10 L/min.</b> Keep circuit, absorber and machine.	
<b>5. Obtain MH Cart / Call for Help / Inform OR Team</b> <input type="checkbox"/> Designate <b>anesthesia technician to obtain MH Cart</b> <sup>*Anes Workroom*</sup> (VOIP phone 60927) <input type="checkbox"/> <b>Page the Anesthesia D1</b> or Anesthesia Night Attending (VOIP phone 60905) <input type="checkbox"/> D1 to designate an Anesthesiologist as <b>Team Leader</b> <input type="checkbox"/> <b>Inform Surgeons</b> of MH emergency and to coordinate the most expeditious surgical plan to finish the surgical procedure	
<b>6. <input type="checkbox"/> Administer Dantrolene 2.5 mg/kg per dose IV Bolus</b> <sup>*MH Cart*</sup> <b>Repeat Dose until Symptoms Subside</b> (up to 10-30 mg/kg) <input type="checkbox"/> Dilute <u>only</u> 60 mL Sterile Water for Injection in each 20 mg Dantrolene vial (i.e., 75 kg patient = 9 vials Dantrolene per dose) <input type="checkbox"/> Assign multiple team members to reconstitute Dantrolene <input type="checkbox"/> Designate a provider to administer Dantrolene via IV push	<b>Med/Dose/Time:</b>
<b>7. Team Leader to Designate Roles and Responsibilities</b> <input type="checkbox"/> Designate an anesthesia <b>provider to manage vent and anesthesia</b> <input type="checkbox"/> Designate <b>circulating RN as Lead Nurse</b> . Lead RN to delegate RN duties and to <b>call OR Front Desk</b> (x____) to notify the following: <input type="checkbox"/> <b>Overhead Page OR</b> to request adequate help in MH crisis (Dial ____) <input type="checkbox"/> <b>Call PACU</b> (x____) to bring 4 large plastic bags of ice <input type="checkbox"/> <b>Page the AOD</b> (327-0259) to arrange for ICU disposition <input type="checkbox"/> <b>Call OR Pharmacy</b> (x____) to request meds as needed <input type="checkbox"/> Designate an anesthesia <b>provider or CRNA to record the events</b> during the MH crisis on the MH Flowsheet <sup>*MH Cart*</sup> <input type="checkbox"/> Designate a <b>provider to insert lines</b> (arterial line, additional large bore IV access), if not already present <input type="checkbox"/> Designate a separate <b>provider to administer medications</b> <input type="checkbox"/> Designate an <b>anesthesia technician to obtain:</b> <b>From the Anesthesia Workroom</b> (VOIP phone 60927) <input type="checkbox"/> Syringe Pump, Spiked IV, Triple Lumen CVC, A-line Sets <b>From the Anesthesia Workroom Refrigerator</b> <input type="checkbox"/> 1L IV Plasmalyte x 3 bags <input type="checkbox"/> 3L NS for Irrigation x 1 bag <input type="checkbox"/> Insulin 10 mL vial / NS 100 mL IV Bag x 1 kit <b>From the Nearest Available Location</b> <input type="checkbox"/> Crash Cart	

Intervention	Time
<b>8. <input type="checkbox"/> Call MH Hotline (1-800-644-9737)</b> for additional help, as needed	
<b>9. Obtain and Monitor Labs and Studies</b> <sup>*sample lab sheets in MH Cart*</sup> <input type="checkbox"/> <b>ABG Kit:</b> ABG <input type="checkbox"/> <b>Light Blue:</b> PT/INR, PTT, Fibrinogen, D-Dimer <input type="checkbox"/> <b>Gold Gel:</b> Basic Metabolic Panel, CK, LDH, Serum Myoglobin, Thyroid Studies (TSH, Free T4, Free T3) <input type="checkbox"/> <b>Lavender:</b> CBC, Platelets <input type="checkbox"/> <b>Grey:</b> Lactate <input type="checkbox"/> <b>Urine Dipstick / Collection Cup:</b> Hemoglobin / Myoglobin, UA <input type="checkbox"/> <b>Monitoring Equipment:</b> EKG, Core Temperature	<b>Result/Time:</b>
<b>10. Cool Patient to Goal Temp of 38°C</b> using one or more methods: <input type="checkbox"/> Cold Plasmalyte-148 IV <sup>*Anes Workroom Fridge*</sup> <input type="checkbox"/> Cold Sodium Chloride 0.9% for Irrigation via nasogastric, bladder, rectal and/or open cavity lavage <sup>*Anes Workroom Fridge*</sup> <input type="checkbox"/> Ice Packs for external surface cooling <sup>*PACU*</sup> <input type="checkbox"/> Consider calling 4E ICU (x____) for intracool catheter and/or cooling blanket	
<b>11. Treat Acidosis</b> (if not reversed by Dantrolene administration) <input type="checkbox"/> Sodium Bicarbonate 8.4% IV 1-2 mEq/kg <sup>*Crash Cart*</sup> <input type="checkbox"/> Ensure adequate minute ventilation	<b>Med/Dose/Time:</b>
<b>12. Treat Hyperkalemia and Associated Dysrhythmias</b> <input type="checkbox"/> Calcium Chloride 10% IV 10 mg/kg <sup>*Crash Cart*</sup> <b>Avoid Calcium Channel Blockers</b> <input type="checkbox"/> Sodium Bicarbonate (above) <sup>*Crash Cart*</sup> <input type="checkbox"/> Insulin IV 0.15 units/kg (or 10 units) <sup>*Anes Workroom Fridge*</sup> <b>HIGH ALERT / TWO PROVIDERS MUST DOUBLE CHECK</b> Dilute Insulin 1 mL (= 100 units) in 100 mL NS Bag (Final Conc = 1 unit/mL), then give Insulin 10 mL = 10 units IV <input type="checkbox"/> Dextrose 50% IV 1 mL/kg <sup>*Crash Cart*</sup> Monitor serum glucose. <input type="checkbox"/> Treat dysrhythmias using ACLS algorithms <sup>*Crash Cart*</sup>	<b>Med/Dose/Time:</b>
<b>13. <input type="checkbox"/> Place or Confirm Foley to Monitor Urine Output</b> <input type="checkbox"/> Aggressive hydration. Ensure UO of at least 2 mL/kg/hr. <input type="checkbox"/> Consider diuresis with Furosemide 0.5-1 mg/kg IVP <sup>*Omniceil*</sup>	<b>Med/Dose/Time:</b>
<b>14. <input type="checkbox"/> Transport to ICU</b> (and continue Dantrolene 1 mg/kg IV q6h)	



## **Appendix B: List of MH Cart Drugs**

### **A. Medications**

1. Dantrolene Sodium for injection 20 mg x 36 vials (dilute each vial with 60 mL sterile water at the time of use).
2. Sterile Water for Injection USP (preservative free) 100 mL x 36 vials
3. Regular Insulin (100 units/mL) 10 mL x 1 vial **(in anesthesia workroom refrigerator)**

### **B. Fluids**

1. Sodium Chloride 0.9% 100 mL IV x 1 bag (to dilute insulin to a 1 unit/mL concentration) **(in anesthesia workroom refrigerator)**
2. 1L cold Plasmalyte-148 IV x 3 bags **(in anesthesia workroom refrigerator)**
3. 3L cold Sodium Chloride 0.9% for Irrigation x 1 bag **(in anesthesia workroom refrigerator)**

## **Appendix C: List of MH Cart Supplies and Equipment**

### **A. General Equipment/Nursing Supplies**

1. Toomy irrigation syringes (60 mL x 2) for NG irrigation
2. Rectal tubes (sizes appropriate for your patient population) and collection bag
3. Three-way irrigating foley catheters: (sizes appropriate for your patient population)
4. Irrigation tray with piston syringe (x 1) for NG irrigation
5. 5-in-1 Connector x 4
6. Cysto/Bladder Irrigation Set 81" (2.1m) Regulating Clamp
7. Large clear plastic bags for ice x 4
8. Small plastic bags for ice x 4
9. Bucket for ice

### **B. Medication Preparation**

1. Vented spikes x 36 spikes (to reconstitute Dantrolene)
2. Syringes 60 mL luer lock x 36 syringes (to reconstitute Dantrolene)
3. Red syringe caps x 36 caps
4. Syringes to draw up insulin: 1 mL x 1 syringe, 10 mL x 1 syringe
5. Needles 18G x 4, 16G x 4 to draw up medications

### **C. Monitoring Equipment**

1. All immediately available in anesthesia cart and pre-assembled in workroom

### **D. Laboratory Testing Supplies**

1. Needled-type ABG kits x 6
2. Blood Specimen Tubes:
  - (A) Gold Gel: Basic Metabolic Panel, CK, LDH, Thyroid Studies (TSH, Free T4, Free T3), Serum Myoglobin
  - (B) Light Blue: PT/INR, PTT, Fibrinogen, D-Dimer
  - (C) Grey: Lactate
  - (D) Lavender: CBC, Platelets
3. Chem Strips/Dipstick for Urinalysis: Urine Hemoglobin
4. Urine Collection Container: UA, Urine Myoglobin

### **E. Documents**

1. Physician Order Form x 2
2. Laboratory Request Forms: Blood/Serum Form x 2; Urinalysis Form x 2 (see prefilled example on MH Cart)
3. Adverse Metabolic Reaction to Anesthesia (AMRA) Report Form (obtain from MH Registry Website)
4. MH Response Flow Sheet to provide documentation of the crisis (on MH Cart)
5. MH Policy (posted on the outside of the MH Cart)
6. MH Intervention Checklist (posted on the outside of the MH Cart)

## **APPENDIX J: Anesthesia Intubation Bags Policy and Procedure**

**Title:**           **Anesthesia Intubation Bags Policy and Procedure**

**Purpose:**       To establish Policy and Procedure defining the purpose, availability, maintenance, and restocking of anesthesia intubation bags that provide immediate availability of airway management tools to anesthesia personnel outside of the operating room and that are Title 22 and CMS compliant.

**Policy:**       Three adult and one pediatric Anesthesia Intubation Bags will be maintained by the Department of Anesthesia.

Anesthesia personnel (faculty, resident or CRNA) will be responsible for stocking and maintaining the supplies of the Anesthesia Intubation Bags.

Pharmacy personnel will be responsible for stocking and sealing the medication (drug) boxes contained within the Anesthesia Intubation Bags. Oversight for establishing the contents and use of the drug boxes is the responsibility of the Director of Pharmacy or his/her designee.

**Background:** Anesthesiology staff are required to provide emergency airway management and resuscitative capabilities outside of the operating room. These services include: 1) airway management in the emergency department; 2) airway management in the Intensive Care Units; 3) responding to code blue calls throughout the hospital; and 4) transport of critically ill intubated patients to and from the ICU's and the operating room. These services require the immediate availability of drugs and equipment for induction of anesthesia, muscle relaxation, and resuscitation. The emergent nature of these services, and the fact that they may need to be provided in the elevators or in transit where such equipment might not be otherwise available, requires a portable bag containing the necessary drugs and equipment which can be carried by anesthesia personnel. Since these services may be required simultaneously at different locations throughout the hospital, three (3) adult and one (1) pediatric Anesthesia Intubation Bags will be established and maintained. Each Anesthesia Intubation Bag will contain standardized medications and supplies. (See APPENDIX 1 for listing of medications and supplies). Since these bags must be immediately available and restocked 24 hours a day, pharmacy will provide all necessary drugs in a self contained box sealed with a tamperproof seal that will be used to stock and restock the drug supply in the Anesthesia Intubation Bags.

### **Procedure:**

#### **1.           Anesthesia stocking procedure**

- a.       Anesthesia Intubation Bags will be stored in the OR.
- b.       The Anesthesia Intubation Bags have a list of supplies and medications contained within and the name and date of the first medication to expire located in a side pocket.
- c.       It is the responsibility of the "E4 (trauma)-anesthesia resident" to maintain and check the Anesthesia Intubation Bags Monday-Friday at the beginning of the morning shift. On

Weekends, and on special dates where there is no E4 resident, anesthesia faculty or CRNAs may be designated to complete this task.

- d. The “D1-anesthesia faculty attending” is ultimately responsible to ensure completion of the maintenance and checking of the Anesthesia Intubation bags.
- e. The maintenance and checking procedures are to be done every day at the beginning of the shift.
- f. The Anesthesia Intubation bags are to be opened and the entire contents removed. The bags are checked for cleanness and that they are free of used or dirty equipment or supplies.
- g. Anesthesia staff (defined above) will verify the presence of all contents listed in Appendix A and ensure that sealed and sterile supplies are not damaged or open.
- h. Laryngoscope handles will be exchanged daily and their function checked before placing in the bags.
- i. The Capnometer battery will be checked and replaced if it is low, before returning the device to the Bag.
- j. A new sealed medication box will be checked for integrity and expiration date before placing in the Anesthesia Bag.
- k. If the bags are opened and/or the contents used, the anesthesia provider will return to the Anesthesia workroom as soon as possible and the bag replenished by following items #e-i.
- l. After the above items are accomplished, the Anesthesia Intubation bags are to be sealed with a tamper evident seal. The seal serial number is to be recorded in a notebook in the Anesthesia Workroom along with the Bag name, time, date and initials of the anesthesia personnel executing the procedure. The notebooks will be kept in the anesthesia workroom for at least 3 years.

## **2. Pharmacy restocking procedure**

- a. Daily in the morning by no later than 8 AM, pharmacy staff will provide ten (10) drug boxes containing the medications listed on Attachment A sealed with a tamper evident seal.
- b. The drug boxes will have a label on the outside listing the contents of the medications with the expiration date of the first drug to expire. A pharmacist will check the contents of the drug box for accuracy and seal the drug box with a red tamper evident seal. The seal serial number will be recorded on the label.
- c. Anesthesia staff (defined above) will use the pharmacy prepared and sealed drug boxes to perform the AM restocking of the drug supply of the Anesthesia Intubation Bags by replacing the drug box contained within the Anesthesia Intubation Bag with a fresh drug box.
- d. When a drug box is used during the day, the Anesthesia staff will replace the used drug box with a fresh drug box from the Anesthesia Workroom. Anesthesia staff will secure the used drug box in the Anesthesia workroom for pick up in the morning by pharmacy staff.

*San Francisco General Hospital  
1001 Potrero Avenue  
San Francisco, CA 94110*

References: Pharmacy P&P 6:12 Anesthesia Intubation Bag replenishment

## Appendix 1

### ADULT CODE BAG INVENTORY

Drug Expiration: \_\_\_\_\_  
Date Time Initial

#### Pharmacy Drug Box

<ul style="list-style-type: none"> <li>• Succinylcholine 20mg/cc x2</li> <li>• Ephedrine 5mg/cc x2</li> <li>• Phenylephrine 100mcg/cc x2</li> <li>• Etomidate 2mg/cc 20cc x1</li> </ul>	<ul style="list-style-type: none"> <li>• Rocuronium 10mg/cc 5cc x2</li> <li>• Propofol 10mg/cc 20cc x2</li> <li>• Lidocaine 2% jelly x2</li> <li>• Afrin spray x1</li> </ul>	<ul style="list-style-type: none"> <li>• Lidocaine 2% 5ml</li> <li>• Atropine 0.1mg/cc 10ml</li> <li>• Epinephrine 1:10K 10cc</li> <li>• Calcium 100mg/ml 10 cc</li> </ul>
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#### Equipment

<i>Bottom</i>	<i>Top</i>	<i>Side Pockets</i>
<ul style="list-style-type: none"> <li>• Cricothyrotomy kit x1</li> <li>• Ambu bag w/ mask x1</li> <li>• Capnograph w/ sampling line</li> <li>• Combitube 37F x1, 41Fr x1</li> <li>• Gum elastic bougie x1</li> <li>• 30cc Syringes x2 (bundled w/ LMAs)</li> <li>• LMA #3 and #4</li> </ul> <p><u>Bag the following together:</u></p> <ul style="list-style-type: none"> <li>• 18g Needles x1 bundle</li> <li>• 10cc Syringes x1 bundle</li> <li>• MAD atomizers x2</li> </ul>	<ul style="list-style-type: none"> <li>• Pharmacy drug box</li> </ul> <p><b><u>Intubation Bag with the following:</u></b></p> <ul style="list-style-type: none"> <li>• ET Tubes: (6.0, 6.5, 7.0, 7.5, 8.0)</li> <li>• ET Tubes: (endotrol) 6.0, 7.0</li> <li>• ETT 14 Fr stylets x2 (wrapped)</li> <li>• 10 cc Syringes x2</li> <li>• Oral Airways (80, 90, 100)</li> <li>• Nasal Airways (28, 32, 36)</li> <li>• Laryngoscope handles x2</li> <li>• Laryngoscope blades: (Mac 3 &amp; 4, Miller 2 &amp; 3)</li> <li>• Pink tape ½" x1</li> <li>• Spare plastic bags</li> <li>• Magill forceps x1</li> </ul>	<ul style="list-style-type: none"> <li>• Forms (Record, Procedure Note, Pre-op)</li> <li>• Timed, dated &amp; initialed check list</li> <li>• EZ-IO Power Driver, 2 sets of AD 15G 25mm IO needles</li> </ul>

## PEDIATRIC CODE BAG INVENTORY

Drug Expiration: \_\_\_\_\_  
Date      Time      Initial

### Pharmacy Drug Box

<ul style="list-style-type: none"> <li>• Succinylcholine 20mg/cc x2</li> <li>• Ephedrine 5mg/cc x2</li> <li>• Phenylephrine 100mcg/cc x2</li> <li>• Etomidate 2mg/ml 20ml x1</li> </ul>	<ul style="list-style-type: none"> <li>• Rocuronium 10mg/cc 5cc x2</li> <li>• Propofol 10mg/cc 20cc x2</li> <li>• Lidocaine 2% jelly x2</li> <li>• Afrin spray x1</li> </ul>	<ul style="list-style-type: none"> <li>• Lidocaine 2% 5ml</li> <li>• Atropine 0.1mg/cc 10ml</li> <li>• Epinephrine 1:10K 10cc</li> <li>• Calcium 100mg/ml 10cc x1</li> </ul>
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### Equipment

<i>Bottom</i>	<i>Top</i>	<i>Side Pockets</i>
<ul style="list-style-type: none"> <li>• Cricothyrotomy kit 3.5mm ID x1</li> <li>• Capnograph w/ sampling line</li> <li>• Pediatric Ambu bag</li> <li>• Breathing bags (0.5, 1.0 liter)</li> <li>• Masks: (Neonate, Infant, Toddler, Child, Adult)</li> <li>• 30cc Syringes x2 (bundled to LMAs)</li> <li>• LMA #1.5, #2.0, #2.5</li> </ul> <p><u>Bag the following together:</u></p> <ul style="list-style-type: none"> <li>• MAD atomizers x2</li> <li>• 18g Needles x1 bundle</li> <li>• 22g Needles x1 bundle</li> <li>• 10cc Syringes x2 bundle</li> <li>• 3cc Syringes x2</li> </ul>	<ul style="list-style-type: none"> <li>• Pharmacy Drug box</li> <li>• <b><u>Intubation bag with the following:</u></b></li> <li>• ET Tubes cuffed: (3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0)</li> <li>• ET Tubes uncuffed: (2.5, 3.0, 3.5, 4.0, 4.5, 5.0)</li> <li>• ETT (endotrol) 6.0, 7.0</li> <li>• Oral Airways (50, 60, 70, 80, 90)</li> <li>• Nasal Airways (24, 28, 32)</li> <li>• Laryngoscope handles (pediatric) x2</li> <li>• Laryngoscope blades: (Mac 1,2 &amp; 3. Miller 0,1, 1.5 &amp; 2)</li> <li>• Pink tape ½" x1</li> <li>• Spare plastic bags</li> <li>• Pedi Magill forceps x1</li> <li>• Stylets 6F &amp; 14F for ETT (wrapped)</li> <li>• 10cc Syringes x2</li> </ul>	<ul style="list-style-type: none"> <li>• Forms (Record, procedure note, pre- &amp; post)</li> <li>• Timed, dated and initialed check list</li> </ul> <p>EZ-IO Power Driver, 2 sets of PD 15G 15mm IO needles</p>

## **APPENDIX K: Trauma Operating Room Preparedness Policy and Procedure**

**Title:** Trauma Operating Room Preparedness Policy and Procedure

**Purpose:** To establish Policy and Procedure defining the purpose, availability, & maintenance of anesthesia readiness of urgent trauma care at ZSFG, and which is compliant with TJC and other state and federal requirements.

**Policy:** 24 hrs/day, 7 days/week, the Department of Anesthesia at ZSFG provides immediate readiness of one operation room (OR) for accepting urgent, severe trauma care.

Anesthesia personnel (faculty, resident, CRNA and anesthesia technicians) will be responsible for checking, maintaining and stocking all supplies necessary for this task in the designated Trauma Operating Room.

Oversight for establishing this Policy & Procedure is the responsibility of the Chief of Staff Anesthesia or his/her designee.

**Background:** ZSFG is a Level-1-Trauma center in the City & County of San Francisco and is therefore required to take care of severely injured patients at any time with short notice. The emergent nature of these services requires continuous maintenance of an open and prepared OR. The designated Trauma OR is usually OR#1. If this room is in use or not ready for any other reason, a back-up OR will immediately be designated and setup as described in this P&P.

In the OR, Anesthesia staff provide anesthesia, emergency airway management, iv resuscitation, and monitoring. These services require the immediate availability of all drugs and equipment necessary for induction of anesthesia, muscle relaxation, airway management and resuscitation. In the designated Trauma OR, anesthesia personnel are responsible for:

(1) Readiness of the anesthesia machine. This requires a complete check of the machine according to the ZSFG Machine Checklist (SEE APPENDIX A), performed every 24 hrs in the AM.

(2) Maintaining a fully stocked anesthesia cart containing all drugs & equipment as defined in APPENDIX B.

(3) Medication preparedness requires that induction agents, vasoactive drugs and paralytic agents be in appropriately labeled syringes and ready at all times.

(4) Airway device preparedness.

(5) IV resuscitation preparedness of high flow infusion and transfusion systems as well as an invasive blood pressure monitoring device.

DETAILS OF (3)-(5) ARE DESCRIBED IN "OR#1 CHECKLIST", APPENDIX D



## Procedures:

- 5) It is the responsibility of the "D1-attending", together with the OR charge nurse, to ensure availability of a designated OR 24/7.
- 6) It is the responsibility of the "D1-attending" to ensure that this designated OR is prepared from an anesthesia perspective to receive a patient with no notice.
- 7) During regular weekdays, the "D1-attending" delegates the performance of all necessary tasks to the "E4-resident". On Saturdays, or if for any other reason the "E4-resident" is not available, the "D1-attending" can delegate the tasks to any other resident, CRNA or faculty.
- 8) Regular checks of Trauma OR anesthesia preparedness are performed:
  - a) Every morning between 7AM – 8AM
  - b) If a back-up OR becomes designated as the Trauma OR
  - c) Following every turn-over of OR#1
- 9) A complete check of the anesthesia machine is performed according to FDA regulations. A checklist (APPENDIX A) is attached to the anesthesia machine.
- 10) Intubation Equipment is placed in a tray on the anesthesia machine. This includes two laryngoscope handles, which are exchanged daily between 7AM-8AM by anesthesia technicians; a Miller 2 and a Mac 3 blade are attached to the handles and tested. Additional blades in the airway tray include a Mil 3 and Mac 4. Two endotracheal tubes (ETT) size 7.0 & 7.5 with attached syringes and stylets complete the airway tray. ETTs are good for 1 month after the package has been opened. Opening dates are marked on the ETT packages.
- 11) The following emergency medications are either provided by pharmacy as pre-filled syringes or are drawn up daily between 7AM-8AM:
  - i. Etomidate 20mg/10ml
  - ii. Succinylcholine 200mg/10ml
  - iii. Phenylephrine 100mcg/ml in 10ml syringe (& a 90ml bag of normal saline)
  - iv. Ephedrine 50mg/10ml

All drugs drawn up by anesthesia care providers are properly labeled, including concentrations, date, time and initials. They are good for 24 hrs.

If syringes are opened to prepare for drawing up additional emergency medication, they must be dated, timed and initialed and are good for 24 hrs.

- 12) The Anesthesia cart is checked daily by anesthesia technicians for proper stocking. The designated anesthesia staff member double checks stocking of the cart and ensures that the cart is clean and free of equipment on top of the cart. IV and A-line starter kits are kept on top of tilt bins. The staff member ensures that the anesthesia cart is always locked when no anesthesia personnel are in the room.

A second anesthesia cart serves as a back-up cart for the designated Trauma OR.

- 13) An A-line system is prepared daily by anesthesia technicians between 7AM-8AM. The system is dated/timed and initialed on the drip chamber, placed on the patients left side, and is good for 24 hrs.
- 14) An IV line system will be assembled connecting a hotline system (with extension tubing and 2 high-flow stopcocks) together with a Y-set ("blood pump"). The system is kept un-spiked, the hotline heater off, and the tubing endings off the floor. The system is dated, timed and initialed on the remaining paper tape of the hotline system. Un-spiked, the system is good for 1 month, if spiked onto a fluid bag and/or hotline heater is on, the system is good for 24 hrs.
- 15) Two Level-1 rapid infusers, or a Belmont infuser, are kept in the room, plugged in and powered off. The infusion system should be properly placed into the Level-1 device. A Pall filter should be connected to one spike and the top 3 clamps clamped. Two high-flow stopcocks with an extension tubing system are connected to the distal end of the infusion system. The infusion system should be left 'unspiked' (not connected to any IV fluid bags). The infusion system is dated, timed and initialed on the paper tape attached to the system. Un-spiked, the system is good for 1 month, if spiked and/or the Level-1 heater is on, the system is good for 24 hrs.
- 16) All crystalloid bags are to be kept unopened in their wrappers. If opened, they are dated, timed, and initialed and are good for 24 hrs.
- 17) After the room is used, all 'exposed' disposable supplies are disposed of. "Exposed" is anything that is not covered during patient care, including, but not limited to, open IV setups, open Level-1 setups, etc. All exposed surfaces (e.g. the anesthesia machine, anesthesia cart, and anesthesia monitors) are sanitized with an FDA approved disinfectant or replaced with clean equipment.
- 18) Following a complete room setup, the designated anesthesia staff member certifies completion of all tasks on the "OR #1 readiness sign-off sheet", (APPENDIX E) including documentation of the drug box tamper proof seal number.
- 19) Audits of the Trauma OR readiness are performed and recorded quarterly by the Chief of Service or the Director of Clinical Anesthesia. Irregularities are documented and planned actions described.

## APPENDIX

- A. ZSFG Anesthesia Machine Checklist
  - B. ZSFG Anesthesia OR #1 Checklist
-

**Aestiva ZSFG Machine Checklist**

**Perform All Steps Every Day Before the First Patient**  
**Perform Steps # 9 - 13 Before Each Patient**

Emergency Ventilation Equipment

**1. Verify Backup Ventilation Equipment is Available & Functioning**

High Pressure System

**2. Check Oxygen Cylinder Supply**

**3. Check Central Pipeline Supplies**

Low Pressure Systems

**4. Perform Leak Check of Machine Low Pressure System**

**5. Calibrate (Zero) Flow Sensors**

**6. Calibrate O<sub>2</sub> Monitor to Room Air (21%)**

**7. Test Flowmeters**

Scavenging System

**8. Verify Scavenge Valve is Open 1 ½ Turns**

Breathing System

**9. Check Initial Status of New Breathing System**

Automatic and Manual Ventilation Systems

**10. Test Ventilation Systems & Unidirectional Valves**

**11. Perform Leak Check of the Breathing System**

Monitors

**12. Check, and/or Set Alarm Limits of All Monitors**

Final Position

**13. Check Final Status of Machine**

### Checklist Details

- 1:
  - a: Set the system switch to ON & disconnect wall oxygen supply.
  - b: Open O<sub>2</sub> cylinder & verify at least half full (about 1,000 psi).
  - c: Turn O<sub>2</sub> and N<sub>2</sub>O flows to 5 L/min. Close O<sub>2</sub> cylinder.
  - d: Observe N<sub>2</sub>O flow to stop before O<sub>2</sub> supply pressure and O<sub>2</sub> flow drop to zero.
  - e: Verify (listen for) low oxygen pressure supply alarm.
  - f: Set all gas flows to minimum.
- 2:
  - a: Check that hoses are connected & pipeline gauges read about 50 psi.
- 3:
  - a: Set the system switch to STANDBY.
  - b: Turn the gas flow control valves one and a half turns counterclockwise.
  - c: Turn on (Open) the Auxiliary Common Gas Outlet (ACGO) Switch.  
ACGO Switch located above soda lime canister and below O<sub>2</sub> Sensor door.
  - d: Attach "Suction Bulb" to ACGO.
  - e: Squeeze bulb repeatedly until fully collapsed.
  - f: Verify bulb stays collapsed for at least 10 seconds.
    - g: Open one vaporizer at a time to 1% and repeat 'e' and 'f' above,  
& check vaporizer interlock system.
  - h: Remove suction bulb and close ACGO switch.
- 4:
  - a: Push on the latch under the flow sensor module.
  - b: Remove the flow sensor module to begin calibration.
  - c: When calibration is complete screen will show "No Insp & No Exp Flow Sensor".
  - d: Reinstall the flow sensor module. (If wet, replace flow sensor module.)
- 5:
  - a: Located inside door above ACGO and next to Drain Button.
  - b: Press menu, scroll down to Set Up/Calibrate, follow instructions.
- 6:
  - a: Adjust flow of all gases through their full range,  
checking for smooth operation of floats & undamaged flow tubes.
  - b: Attempt to create a hypoxic O<sub>2</sub>/N<sub>2</sub>O mixture & verify correct changes in flow.
- 7:
  - a: Check that breathing circuit is complete, undamaged and unobstructed.
  - b: Verify that CO<sub>2</sub> absorbent is adequate.
  - c: Install breathing circuit accessory equipment to be used during the case.
  - d: Install **NEW HME filter**.
- 8:
  - a: Place a breathing bag on Y-piece.
  - b: Set appropriate ventilator parameters for next patient.
  - c: Set selector switch to automatic ventilation (ventilator) mode.
  - d: Fill bellows & breathing bag with O<sub>2</sub> flush.
  - e: Set O<sub>2</sub> flow to minimum, other gas flows to zero.
  - f: Verify that during inspiration bellows delivers appropriate tidal volume  
& that during expiration bellows fills completely.
  - g: Set fresh gas flow to about 5 L/min.
  - h: Verify that the ventilator bellows & simulated lungs fill & empty appropriately  
without sustained pressure at end expiration.
  - i: Check for proper action of unidirectional valves.

- j: Set selector switch to Bag mode.
- k: Move breathing bag from Y-piece to bag arm.

- 9:
  - a: Set all gas flows to minimum.
  - b: Close APL (pop-off) valve & occlude Y-piece.
  - c: Pressurize breathing system to about 30 cm H<sub>2</sub>O with O<sub>2</sub> flush.
  - d: Ensure that pressure remains fixed for at least 10 seconds.
  - e: Open APL (pop-off) valve & ensure that pressure decreases.
- 10: Capnometer Oxygen Analyzer  
Pulse Oximeter Respiratory Volume Monitor (spirometer)  
Pressure monitor with High & Low Airway Alarms
- 11:
  - a: Vaporizers off, check fill level, tighten vaporizers' filler caps.
  - b: APL valve open.
  - c: Selector switch to "Bag" mode.
  - d: All flowmeters to minimum.
  - e: Patient suction level adequate.
  - f: Breathing system ready to use.

# OR 1 DAILY CHECKLIST

## anesthesia Machine

check per separate protocol  
IO drill kit on top of machine

## Intubation Tray

2 laryngoscopes  
handles exchanged daily by techs  
Mac3 & Mil2 attached and tested  
Mac4 & Mil3 in tray  
7.0 & 7.5 ETT styleted, 10ml syringe attached, with exp date and initials (good for 30d)  
90mm oral airway, 30Fr nasal airway, tongue depressor

## Emergency Medication

2\* Etomidate 20mg (either in prefilled syringe or in vial with sterile 10ml syringe & needle)  
2\* Succinylcholine 200mg (prefilled)  
2\* Phenylephrine 100mcg/ml (prefilled)  
2\* Ephedrine 5mg/ml (prefilled)  
*check all for expiration*  
To be stored in 3<sup>rd</sup> drawer of cart

## -line setup

spiked, de-aired, zeroed, dated (exp)  
done daily by techs (good for 24h)

## Belmont Rapid Infuser

power plugged in  
tubing assembled with 3liter reservoir in line  
top 5 clamps clamped  
250ml of NS hanging, not spiked  
Belmont extension tubing, packaged hanging on pole  
*check for expiration date (good for 30d), if freshly assembled date with expiration*

## Monitors

- ECG with pads ready on bed

## OR Table

- Plugged in, "on", @ lowest position

## Anesthesia carts

- 2 large bore iv start kits on top of tilt bins (2\* 16G iv, 2\* 14G iv, 4x4s, alcohol swab, 1" tape, tourniquet, tegaderm) NO open/filled syringes
- 1 arterial line starting kit on top of tilt bins (arrow a-line, 2\* 20G iv, 4x4s, alcohol swab, 1" tape, tourniquet, tegaderm, arm board)
- ensure both carts are locked

## General Rules for OR 1 readiness

- cart and drugs locked
- all items arranged according to markings on floor
- all fluid containing items are good for 24h (i.e. syringes, spiked bags)
- all air containing items are good for 30d (i.e. ETT, Belmont tubing)
- everything is to be labeled with the expiration date (NOT the date when opened/ prepared)

## Turnover After Each Case

- OR 1 shall be turned over ASAP after each case (to be ready for the next patient)
- All "exposed" disposables are discarded
- All "exposed" surfaces are to be wiped down with H2O2 wipes
- "exposed" = all items & surfaces that are not covered during patient care (i.e. anesthesia machine, monitor, carts, Belmont etc.)

Sign off that check is complete on dedicated sign off sheet once daily

## **APPENDIX L: Labor and Delivery Operating Room Preparedness Policy**

**Title:** Labor and Delivery Operating Room Preparedness Policy

**Purpose:** To establish Policy and Procedure defining the purpose, availability, & maintenance of anesthesia readiness of urgent obstetric care at ZSFG, and that is compliant with TJC and other state and federal requirements.

**Policy:** 24 hrs/day, 7 days/week, the Department of Anesthesia at ZSFG provides immediate readiness of 2 Labor and Delivery (L&D) operating rooms (ORs) for accepting urgent, obstetrical care. Anesthesia personnel (faculty, resident, CRNA and anesthesia technicians) will be responsible for checking, maintaining and stocking all supplies necessary for this task in the designated L&D ORs.

Oversight for establishing this Policy & Procedure is the responsibility of the Chief of Anesthesia or his/her designee.

**Background:** Obstetrician-gynecologists at ZSFG provide the full range of clinical care including high-risk pregnancy to a diverse population of women visiting the hospital. Anesthesia services require the immediate availability of all drugs and equipment necessary for immediate anesthesia for emergent Cesarean Sections. In the designated L&D OR, anesthesia personnel are responsible for:

- (1) Readiness of the anesthesia machine. This requires a complete check of the machine according to the ZSFG Machine Checklist (SEE APPENDIX A), performed every 24 hrs in the AM.
- (2) Maintaining a fully stocked anesthesia cart containing all drugs & equipment as defined in APPENDIX B.
- (3) Medication preparedness including the availability of induction agents, vasoactive drugs and paralytic agents kept be in appropriately labeled syringes and ready at all times. Drawn up drugs are to be kept locked in the first drawer of the anesthesia cart.
- (4) Airway device preparedness
- (5) IV resuscitation preparedness including the availability of high flow infusion and transfusion systems as well as an invasive blood pressure monitor.

DETAILS OF (3)-(5) ARE DESCRIBED IN "L&D CHECKLIST" SEE APPENDIX C.

**Procedures:**

- 20) It is the responsibility of the "OB-anesthesia attending", together with the L&D charge nurse, to ensure availability of at least one designated L&D OR available 24/7.
- 21) It is the responsibility of the "OB-anesthesia attending" to ensure that these designated ORs are prepared from an anesthesia perspective to receive a patient with no notice.
- 22) During regular weekdays the "OB-anesthesia attending" delegates the performance of all necessary tasks to the "E6-resident". On Saturdays, or if for any other reason the "E6-resident" is not available, the "OB-anesthesia attending" can delegate the tasks to any other resident, CRNA or faculty.
- 23) Regular checks of L&D ORs for anesthesia preparedness are performed:
- d) Every morning between 7AM – 8AM
  - e) If an additional back-up OR becomes designated as the L&D OR
  - f) Following every turn-over of L&D OR #1
- 24) A complete check of the anesthesia machine is performed according to FDA regulations. A checklist (APPENDIX A) is attached to the anesthesia machine.
- 25) Intubation Equipment is placed in a tray on the anesthesia machine. This includes two "stubby" laryngoscope handles, which are exchanged daily between 7AM-8AM by anesthesia technicians; a Miller 2 and a Mac 3 blade are attached and tested. Additional blades in the airway tray include a Mil 3 and Mac 4. Two endotracheal tubes (ETT) size 6.5 & 7.0 with attached syringes and stylets complete the airway tray. ETTs are good for 1 month after the package has been opened. Opening dates are marked on the ETT packages.
- 26) The following emergency medications are either by pharmacy as pre-filled syringes or are drawn up daily between 7AM-8AM:
- v. Etomidate or Propofol will be available
  - vi. Succinylcholine 200mg/10ml
  - vii. Phenylephrine 100mcg/ml in 10ml syringe (& 90ml in bag)
  - viii. Ephedrine 50mg/10ml
- When drawn up anesthesia care providers, all drugs are to be properly labeled, including concentrations, date, time and initials. They are good for 24 hrs. The drugs are kept in the first drawer of the anesthesia cart. The cart is to be kept locked whenever authorized personnel are not in the immediate vicinity.
- If syringes are opened to prepare for drawing up additional emergency medication, they must be dated, timed and initialed and are valid for 24 hrs.
- 27) The Anesthesia cart is checked daily by anesthesia technicians for proper stocking. The designated anesthesia staff member double checks stocking and ensures that the cart is clean. IV and A-line starter kits are kept on top of tilt bins. The staff member ensures that the anesthesia cart is always locked when no anesthesia personal is in the room.
- 28) Applies only to L&D OR#1: An A-line system including all necessary tools is attached to the IV pole. The system is kept un-spiked with a sterile fluid path and is dated/timed and initialed on the drip chamber or remaining paper tape. Un-spiked, the system is good for 1 month, if spiked, the system is good for 24 hrs.



- 29) Applies only to L&D OR#1: An IV line system will be assembled connecting a hotline system (with extension tubing and 2 high-flow stopcocks) together with a Y-set ("blood pump"). The system is kept un-spiked, the hotline heater off and the tubing endings off ground. The system is dated, timed and initialed on the remaining paper tape of the hotline system. Un-spiked, the system is good for 1 month, if spiked and/or hotline heater on, the system is good for 24 hrs.
- 30) Applies only to L&D OR#1: One Level-1 rapid infusers is kept in the room, plugged in and powered off. Level-1 cassettes remain in the back bin of the device in package. If the system is unpacked and not immediately used, it is dated, timed and initialed on the paper tape attached to the system. Un-spiked, the system is good for 1 month, if spiked and/or the Level-1 heater is on, the system is good for 24 hrs.
- 31) All crystalloid bags are to be kept unopened in their wrappers. If opened, they are dated, timed and initialed and are good for 24 hrs.
- 32) After the room is used, all 'exposed' disposable supplies are disposed of. "Exposed" is anything that is not covered during patient care, including, but not limited to, open iv setups, open Level-1 setups, etc. All exposed surfaces (e.g. the anesthesia machine, anesthesia cart, and anesthesia monitors) are sanitized with an FDA approved disinfectant or replaced with clean equipment.
- 33) Following a complete room setup, the designated anesthesia staff member certifies completion of all tasks on the "L&D OR #1 and #2 readiness sign-off sheet", (APPENDIX D).
- 34) Audits of the L&D OR readiness are performed and recorded at least quarterly by the Chief of Service or the Director of Clinical Anesthesia. Irregularities are documented and planned actions described.

## APPENDIX

### F) ZSFG Anesthesia L&D Checklists

## **DR 1 checklist –keep it as you would like to find it in a STAT C Section!**

### **Anesthesia Machine:**

- *Machine check per protocol*
- *Make sure there is a sample line*

### **Monitors:**

- *ECG leads with pads untangled with pads on OR table*

### **OR Table:**

- *Plugged in*
- **ON**
- *At lowest position*

### **Intubation Equipment in Airway Tray:**

- *Single use laryngoscopes, Miller 2 und 3, Mac 3 and 4. Do not open laryngoscopes*
- *Wrapped oral and nasal airway in tray*

### **ETT (good for 1month with open package, date and initial):**

- *6.5 and 7.0 ETT with stylets, syringes attached*

### **Difficult Airway Equipment:**

- *On second anesthesia cart in DRI, sealed*
- *Check Glidescope*

### **Emergency Medication/Anesthesia cart:**

- *Sealed anesthesia medication tray in anesthesia cart; no medications out*
- *Cart locked if not attended*

### **A-L ine Setup**

- *A-line start kit on cart, sterile A-line packages*
- *A-line setup package in clear bag (500 ml saline bag, A-line transducer- everything in original package, do NOT open)*

### **IV Line:**

- *Hotline setup on package in clear bag (1000 ml Plasmalyte bag, Hotline tubing, Extension line, two 3-way stopcocks- everything in original package, do NOT open)*
- *IV-line start kit on cart*

*Level-1 Rapid infuser*

*San Francisco General Hospital  
1001 Potrero Avenue  
San Francisco, CA 94110*

- *Plugged in, power off*
- *Line not assembled (Cassette on back of Level 1)*
- *At least 5 bags of Plasmalyte*

***Sign off that you checked the room on the Sign-off sheet.***

## **DR2 checklist –keep it as you would like to find it in a STAT C Section!**

### **Anesthesia Machine:**

- *Machine check per protocol*
- *Make sure there is a sample line*

### **Monitors:**

- *ECG leads with pads untangled with pads on OR table*

### **OR Table:**

- *Plugged in*
- **ON**
- *At lowest position*

### **Intubation Equipment in Airway Tray:**

- *Single use laryngoscopes, Miller 2 und 3, Mac 3 and 4. Do not open laryngoscopes*
- *Wrapped oral and nasal airway in tray*

### **ETT (good for 1month with open package, date and initial):**

- *6.5 and 7.0 ETT with stylets, syringes attached*

### **Difficult Airway Equipment:**

- *On second anesthesia cart in DRL, sealed*

### **Emergency Medication/Anesthesia cart:**

- *Sealed anesthesia medication tray in anesthesia cart; no medications out*
- *Cart locked if not attended*

### **A-M ine Setup**

- *A-line start kit on cart, sterile A-line packages*

### **IV Line:**

- *Hotline setup on anesthesia cart*
- *IV-line start kit on cart*

## **ZSFG Fire Safety in the OR Guidelines**

The acronyms RACE and PASS are used to describe actions to be taken in the event of an OR fire.

- **R-Remove immediate danger**
- **A-Announce the fire by pulling alarm and dialing 9-911.**
- **C-Contain the fire by closing the doors**
- **E-Extinguish the fire if safe to do so.**
  
- **P-Pull the pin**
- **A-Aim at the base of fire**
- **S-Squeeze the handle**
- **S-Sweep back and forth**

### **Risk Reduction Strategies**

Each member of the surgical team - surgeon, anesthesiologist, nurse - controls an element of the fire triangle

- Oxygen source
- Heat
- Fuel

### **Oxygen source**

- **Both O<sub>2</sub> and N<sub>2</sub>O support combustion. Be aware of possible enriched O<sub>2</sub> and N<sub>2</sub>O atmospheres near the surgical site under the drapes, especially during head and neck surgery.**
- **Use air or FiO<sub>2</sub> 30% for open delivery.**
- **Minimize O<sub>2</sub> and N<sub>2</sub>O buildup beneath surgical drapes; tent drapes to dissipate gases.**
- **Use an incise drape to isolate head and neck incisions from O<sub>2</sub> and alcohol vapors.**
  
- **Fuel and Heat**

### **When using electrosurgery, electrocautery, or lasers:**

- **Coat facial hair near the surgical site with water-soluble surgical lubricating jelly to make it nonflammable.**

- Do not drape patient until all flammable preps have fully dried.
- Wet gauze or sponges used with uncuffed tracheal tubes to minimize leakage of O<sub>2</sub> into the oropharynx; keep them wet.
- Moisten sponges, gauze, and pledgets (and their strings) to render them ignition resistant.
- Scavenge the oropharynx with separate suction.
- Stop supplemental O<sub>2</sub> at least one minute before and during use of the unit, if possible. (Surgical team communication is essential.)
- Activate the ESU (laser) when the active tip is in view (especially if looking through a microscope).
- Deactivate the unit BEFORE the tip leaves the surgical site.
- Place electrosurgical electrodes in a holster or off of the patient when not in active use (i.e., when not needed within the next few moments).
- Place lasers in standby when not in active use.
- Do not place red rubber catheter sleeves over electrosurgical electrodes.
- Fiberoptic light sources CAN start fires.
- Complete all cable connections before activating the source.
- Place source in standby when disconnecting cables.

### Roles and Responsibilities

- Whoever discovers the fire, call 9-911.
  - Airway Fire:
    1. Disconnect circuit from fresh-gas source
    2. Remove ET tube and/or debris
    3. Squirt saline into field
    4. Ventilate by mask
    5. Reintubate trachea/bronchoscopy
- Drapes on Fire
  1. Remove to the floor and smother using:
  2. Saline solution
    3. Sheet/blanket technique
  4. Appropriate extinguisher
    - CO2 BC in each OR*
    - Chemical ABC in hallways*

**5. Use a slow sweeping motion**

- **Fire in OR**

**Anesthesiologist:**

- 1. Shut off anesthesia machine. Disconnect circuit and ventilate patient with Ambu Bag.**
- 2. Administer IV meds to maintain anesthetic state.**
- 3. Unlock OR table.**

**Charge Nurse:**

**Ensure O<sub>2</sub> is shut down.**

**Scrub person:**

**Take instruments to stabilize/close patient.**

**Surgeon:**

- 1. Protect surgical wound site.**
- 2. Make final decision to evacuate OR**

**Circulator:**

- 1. Clear operative zone to door.**
- 2. Help anesthesiologist transport patient from OR.**
- 3. Close door to contain fire.**

**Receiving Area:**

**Set-up and prepare to receive patients.**

- **Note: The applicability of these recommendations must be considered separately for each patient, consistent with their needs.**
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## Privileges for San Francisco General Hospital

Requested Approved

### Anesthesia ANESTHESIA & PERIOPERATIVE CARE 2015 ( 12/2015 MEC )

FOR ALL PRIVILEGES: All complication rates, including problem transfusions, deaths, unusual occurrence reports and sentinel events, as well as Department quality indicators, will be monitored semiannually.

#### 6.10 CORE PRIVILEGES

Preoperative evaluations of patients at all levels of American Society of Anesthesia classification including emergencies. Management of procedures for rendering these patients insensible to pain and emotional stress before, during and after surgical, obstetric and certain medical interventions. These procedures include all anesthetic and sedative techniques including local infiltration, regional anesthesia and general anesthesia. They also include special skills necessary for support of life functions during an anesthetic, in the post anesthesia care unit, and elsewhere in the hospital. These include airway management, including direct laryngoscopy and fiberoptic laryngoscopy, hemodynamic monitoring, including insertion of arterial lines, central lines, and pulmonary artery catheters, and mechanical ventilation and resuscitation.

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia.

PROCTORING: 5 observed cases

REAPPOINTMENT: Review of a minimum of 50 anesthetics

#### 6.20 SPECIAL PRIVILEGES

##### 6.21 Intensive Care

Evaluation and management of Critical Care Unit patients

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia with special qualifications in Critical Care Medicine. Under special circumstances, the recommendation of the Chief of Anesthesia and Perioperative Care may be required

PROCTORING: 5 observed cases

REAPPOINTMENT: Review of a minimum of 30 patients

##### 6.22 Transesophageal/Transthoracic Echocardiography For Perioperative Monitoring

Transesophageal echocardiography (TEE)/Transthoracic echocardiography (TTE) for perioperative monitoring of wall motion, volume status and pericardial fluid

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia and documentation of competency from a residency or fellowship program.

PROCTORING: Proctoring will consist of three (3) direct observations by a medical staff member who has either 6.22 or 6.23 privilege and has successfully completed proctoring. A minimum of one each, TEE/TTE, is required for proctoring. A summary monitoring report will be sent to the Clinical Service Chief at the completion of successful proctoring.

REAPPOINTMENT: Performance of a minimum of 5 (five) TEE or TTE exams for monitoring of wall motion abnormalities, volume status, or pericardial fluid every two (2) years is required for reappointment. A minimum of one each, TEE/TTE, is required for reappointment. Physician specific peer review data must include information regarding cases in which transesophageal or transthoracic echocardiography was utilized for perioperative monitoring.



\_\_\_\_\_

6.23 Transesophageal/Transthoracic Echocardiography For Perioperative Comprehensive Examination

Transesophageal/Transthoracic echocardiography monitoring of perioperative patients for comprehensive examination.

*Printed 12/21/2015*

*Page 1*

## Privileges for San Francisco General Hospital

Requested    Approved

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified by the American Board of Anesthesia. Successful completion of the Perioperative Transesophageal Echocardiography Certification Examination administered (PTEeXAM) by the National Board of Echocardiography (NBE testamur status).

PROCTORING: Proctoring will consist of five (5) direct/observations by a medical staff member who has 6.23 privilege and has successfully completed proctoring. A minimum of one each, TEE/TTE, is required for proctoring. A summary monitoring report will be sent to the Clinical Service Chief at the completion of successful proctoring.

REAPPOINTMENT: Performance of a minimum of 5 (five) complete TEE/TTE exams every two (2) years is required for reappointment. A minimum of one each, TEE/TTE, is required for reappointment. Physician specific peer review data must include information

### 6.24 CTSI (Clinical and Translational Science Institute) - CLINICAL RESEARCH

Admit and follow adult patients for the purpose of clinical investigation in the inpatient and ambulatory UCSF CTSI Clinical Research Center settings.

PREREQUISITES: Currently Board Admissible, Certified, or Re-Certified by one of the boards of the American Board of Medical Specialties. Approval of the provider's Service Chief and Director of CTSI is required if Board Admissible, Certified, or Re-Certified in a specialty other than Internal Medicine or one of its subspecialties

PROCTORING: Review of 3 cases

REAPPOINTMENT: Review of 3 cases.

### 6.25 Pain Medicine: Interventional procedures for the management of acute or chronic pain syndromes

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified in Anesthesiology with special qualifications in Pain Medicine by the American Board of Anesthesiology and documentation of competency from a residency and fellowship program accredited by the Accreditation Council on Graduate Medical Education.

PROCTORING: Proctoring will consist of direct observations by a medical staff member who has 6.25 privilege and has successfully completed proctoring. A minimum of two (2) direct observations of each of three categories of interventional pain procedures listed below is required for proctoring.

REAPPOINTMENT: Performance and peer review of a minimum of four (4) cases in each of the three categories of procedures listed below every two (2) years is required for reappointment. Physician specific peer review data must include information regarding cases in which interventional procedures were used for management of acute or chronic pain syndromes.

#### PRIVILEGE DESCRIPTIONS:

- Fluoroscopy based injections/neuromodulation/neurolysis of the spinal column, peripheral nerves, ganglia, joints, or bursa sacs
- Ultrasound based neuromodulation/neurolysis of the spinal column or peripheral nerves and injection/neuromodulation/neurolysis of the ganglia, joints, or bursa sacs
- Chemodenervation (botulinum toxin) or local anesthetic injection of trigger points, scar, pericranial muscles (for migraine), or neuroma

6.26 Diagnostic Radiology: Fluoroscopy

PREREQUISITES: Currently Board Admissible, Board Certified, or Re-Certified by The American Board of Anesthesiology. A current x-ray/Fluoroscopy Certificate is required.

PROCTORING: Presentation of valid California Fluoroscopy certificate

REAPPOINTMENT: Presentation of a valid California Fluoroscopy certificate.

## **Privileges for San Francisco General Hospital**

Requested    Approved

Applicant signature: \_\_\_\_\_ Date: \_\_\_\_\_

Department Chief signature: \_\_\_\_\_ Date: \_\_\_\_\_

6 Month Date Range: \_\_\_\_\_

**No patient care and/or clinical teaching for this time**  
(if checked, metrics need not be completed, but Y/N questions at bottom AN)

Last, First, degree: \_\_\_\_\_

CHN# \_\_\_\_\_

Status: \_\_\_\_\_

Service: **ANESTHESIA**

	<u>Acceptable</u>	<u>Marginal*</u>	<u>Unacceptable*</u>	<u>Metric Not Relevant</u> <u>During This Period</u>
<b>MEDICAL STAFF &amp; CRNAs ONLY</b>				
Deaths	0 or Any Non Preventable	≥ 1 Possibly Preventable	≥ 1 Probably Preventable	_____
Cardiac Arrest / MI	0 or Any Non Preventable	≥ 1 Possibly Preventable	≥ 1 Preventable	_____
Unrecognized Difficult Airway	0-2 w/full documentation of airway exam	1-2 with incomplete documentation of airway exam	> 2 with incomplete documentation of airway exam	_____
Unplanned Reintubation	0 or Any Non Preventable	1-2 Preventable	> 2 Preventable	_____
Medication Error	0 - 2	3	≥ 4	_____
Perioperative Aspiration (requiring escalation of care)	0-1 elective cases	2-3 elective cases	≥ 3 elective cases	_____
Dental Trauma	0 - 2	3 - 4	≥ 5	_____
Peripheral Nerve Injury	0-1	2	> 2	_____
Hypothermia	0 - 2 with appropriate warming measures	1 - 2 without appropriate warming measures	> 2 without appropriate warming measures	_____
Problem Transfusions	0 - 2 with all documentation	1 without full documentation	≥ 2 without full documentation	_____
<b>MEDICAL STAFF &amp; AFFILIATED STAFF</b>				
Other Cases Reviewed, U/Os, Patient Complaints, Sentinel Events	0 - 3	4 - 5	> 5	_____
Timely Completion of Medical Records				_____

**\* IN ANY ONE CATEGORY:**

Two consecutive marginal ratings require Chief of Service's commentary

Three consecutive marginal ratings require FPPE and notification to the Credentials Committee Chair

Two consecutive unacceptable ratings require FPPE and notification to the Credentials Committee Chair

**REQUIRED FOR EVERY PRACTITIONER ON ROSTER:**

Yes	No	Recommend continued current privileges
Yes	No	Recommend a Focused Professional Practice Evaluation (FPPE). If YES, attach a detailed FPPE plan
Yes	No	Recommend changes to current privileges: _____
Yes	No	To my knowledge, this practitioner does not have a medical/mental health condition that could affect clinical care or judgment. (If such a condition exists, please reference the plan for monitoring this condition)

Chief of Service (or designee) \_\_\_\_\_

(Electronic signature acceptable)

Date: \_\_\_\_\_

Practitioner Signature\* : \_\_\_\_\_

(Electronic signature acceptable)

\* Required only if "marginal" or "unacceptable" notes above

Date: \_\_\_\_\_

## Anesthesia OPPE Definition of Thresholds

### 1. Deaths

- ☐ *Acceptable:* Any non-preventable deaths (e.g., trauma patients with non-survivable injuries) will be considered acceptable.
- ☐ *Marginal:* One or more deaths that are deemed possibly preventable would be considered marginal performance.
- ☐ *Unacceptable:* One or more preventable deaths (e.g. mismanagement by the anesthesia provider) are considered unacceptable.

### 2. Cardiac Arrest / MI

- ☐ *Acceptable:* Any non-preventable cases (e.g. patient is medically optimized, cardiac evaluation and risk is clearly documented and anesthetic plan is tailored to minimize cardiac impact) are considered acceptable.
- ☐ *Marginal:* One or more cardiac events that are deemed possibly preventable would be considered marginal performance (e.g., cardiac risk not well documented / recognized by provider resulting in management decisions that fail to minimize cardiac risk).
- ☐ *Unacceptable:* One or more preventable cardiac events are considered unacceptable (mismanagement by the anesthesia provider, e.g., prolonged period of untreated hypotension or unaddressed tachycardia).

### 3. Unrecognized Difficult Airway

- ☐ *Acceptable:* 0-2 cases with full documentation of airway exam, reflecting that the standard of care for airway assessment has been met.
- ☐ *Marginal:* 1-2 cases with incomplete documentation of airway exam
- ☐ *Unacceptable:* > 2 cases with incomplete documentation of airway exam or 1 case without documentation of airway exam. Without documentation of the airway exam, standard of care for airway assessment has not been met.

*Note: None of the components of the airway exam have high positive predictive value. Difficult airways scenarios occur despite appropriate assessment and planning. If appropriate steps in assessment and planning are taken the management will be considered acceptable.*

### 4. Unplanned Re-intubation

- ☐ *Acceptable:* Non-preventable cases are re-intubations that are clinically indicated by patient factors. All appropriate assessment and treatment was completed prior to extubation (adequate minute ventilation, responding to commands, neuromuscular blockade reversed/resolved).
- ☐ *Marginal:* 1-2 preventable re-intubations (patient with residual neuromuscular blockade, poor respiratory mechanics prior to extubation, hypoxia prior to extubation)
- ☐ *Unacceptable:* Greater than 2 preventable re-intubations. See definitions above.

### 5. Medication Error

- ☐ *Acceptable:* 0–2
- ☐ *Marginal:* 3
- ☐ *Unacceptable:*  $\geq 4$

*Note: Assessments of medication errors should include evaluation of severity of outcome, appropriate recognition of error and measures taken to mitigate any possible harm.*

## **6. Perioperative Aspiration**

- ☐ *Acceptable:* 0–1 cases of pulmonary aspiration requiring escalation in level of care (unplanned admission or ICU) in elective cases. Trauma patients and emergency cases with intra-abdominal processes are at a higher risk of aspiration and will be considered differently.
- ☐ *Marginal:* 1–2 cases defined as above
- ☐ *Unacceptable:*  $\geq 3$

## **7. Dental Trauma**

- ☐ *Acceptable:* 0–3 Dental trauma is a known risk of general anesthesia and intubation, which is included in the informed consent process. Appropriate documentation should include a dental exam that indicates increased risk if poor dentition is present.
- ☐ *Marginal:* 3–4 with appropriate documentation. 2–3 cases may be considered marginal if documentation is incomplete; reflecting that appropriate assessment may not have been completed.
- ☐ *Unacceptable:*  $\geq 5$

## **8. Peripheral Nerve Injury**

- ☐ *Acceptable:* 0–1
- ☐ *Marginal:* 2
- ☐ *Unacceptable:*  $\geq 3$

## **9. Hypothermia**

- ☐ *Acceptable:* 0–2 cases with appropriate warming measures (warm IV fluids, forced-air warmer, appropriate documentation of temperature monitoring)
- ☐ *Marginal:* 1–2 case in which appropriate measures have not been implemented
- ☐ *Unacceptable:*  $> 2$  cases in which appropriate measures have not been implemented

## **10. Problem Transfusions**

- ☐ *Acceptable:* 0–2 cases with appropriate documentation of blood transfusion protocols (e.g., 2 providers check the blood against the patient information including blood type, check expiration and sign the slip)
- ☐ *Marginal:* 1 case without appropriate documentation.
- ☐ *Unacceptable:*  $\geq 2$  cases without appropriate documentation

*Note: There may be circumstances in trauma resuscitation that prevent the provider from completing all documentation prior to hanging the blood (e.g. signing the provider line with time and date the blood is administered). Therefore, 1 case will be considered marginal rather than unacceptable.*

## **11. Other Cases Reviewed, Patient Complaints, U/Os, Sentinel Events**

- ☐ *Acceptable: 0-3*
- ☐ *Marginal: 4-5*
- ☐ *Unacceptable:  $\geq 6$*

*Note: Given the diversity of type and severity of issues that may be raised via case review, patient complaints, U/Os and sentinel events, the specifics of the incident are important in determining whether the performance is acceptable, marginal or unacceptable.*