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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 SFGH, 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 4E 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 SFGH 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):

- Clinical Director SFGH 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

2. REGULAR SERVICE PROVISION – Anesthesia services at SFGH 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 SFGH and their 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 alarm, 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 which 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 resident on beeper 341, immediately, or a “Code Blue” may be called via the operator. When a replacement pager 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 patients 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 patient’s 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.

E. 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. SFGH 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 placed in plastic inside the narcotic box and returned to the Pharmacy or operating room charge nurse at end of the work period. A pharmacist will reconcile narcotic usage and returned medication with log sheet.

I. Anesthesia care providers will be familiar, 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 CO₂ 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 #1 (in addition to a regular cart); a second Trauma cart is available in the designated Trauma Backup OR or kept in the trauma room one anteroom.
- Three Obstetrical OR carts are available in each of the 3 Labor & Delivery operating rooms. An emergency airway cart is in Ob OR 1.
- One epidural cart is maintained on ward 6C.
- Two fiberoptic carts, one designated as a difficult airway cart, are located in the OR anteroom.
- One regional anesthesia cart, located in the workroom.
- Three Pediatric Carts, located in the OR anteroom.
- One Malignant Hyperthermia (MH) cart, located in the anesthesia workroom.

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 I).

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 J).
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 SFGH 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 canister 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, rubela).

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 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 SFGH 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 SFGH through the Anesthesia and Perioperative Care Clinical Service Department is in accordance with SFGH 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:
C. REAPPOINTMENTS

The process of reappointment to the Medical Staff of SFGH through the Anesthesia and Perioperative Care Clinical Service is in accordance with SFGH 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 Department's Director of Quality improvement 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 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.
A file will be generated for each faculty member to allow a review by the Chief of Anesthesia Service. 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 SFGH 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 patients 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.
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.

Requires ability and skill to detect unfavorable patient reactions and apply prompt remedial measures.

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 which are described in Article III of the SFGH 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 SFGH 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, mechanical ventilation and resuscitation.

2. TYPE II PRIVILEGES: Specific Privileges

   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**

   - ACUPUNCTURE
   - TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE MONITORING
   - TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE COMPREHENSIVE EXAMINATION

   **MINIMUM CRITERIA:** Please refer to Appendix - N

**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 N, Anesthesia Privileges for SFGH.

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 SFGH 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 SFGH 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 SFGH 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 1st, 2nd, and 3rd 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), Obstetric Anesthesia (yearly), 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. The summary of these evaluations is presented to the house staff by the Chief of Service, Clinical Director, or resident rotation director at the end of each rotation. 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 SFGH 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

   Tuesday afternoon conferences are directed at topics of clinical relevance to the practice of anesthesia at SFGH, as well as reviews of recent journal articles relevant to the clinical cases seen at SFGH and are run by faculty members.

   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.

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

IX. PERFORMANCE IMPROVEMENT/PATIENT SAFETY (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 SFGH 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 anesthetists, 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 SFGH 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 (SFGH Tuesday Afternoon Resident Seminars) are for primarily residents and directed to topics relevant to the care of patients at SFGH. 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 SFGH. 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 SFGH 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 SFGH 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 SFGH 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 San Francisco General Hospital (SFGH) 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 SFGH 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 SFGH.

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 congruious with the values, mission, and strategic plan of SFGH and the DPH.

In collaboration with the Executive Administrator and other SFGH 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 SFGH 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 SFGH Medical Staff Bylaws.
APPENDIX D: SFGH Anesthesia Department Transition of Care Policy
San Francisco General Hospital Medical Center
Dept. of Anesthesia Policy No. 002
Date Adopted: 09/15/2007
Reviewed: 9/7/13

Title: SFGH 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 Staff 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 a 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:

Reviewed/revised: 9/7/13

Jens Krombach, MD
Medical Director, Perioperative Services

James D. Marks, MD, Ph.D.
Chief of Anesthesia

Patty Coggan, RN
Nurse Manager, Operating Room

Kathy Ballou, RN
Director, Perioperative Services

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APPENDIX D: SFGH Anesthesia Department Transition of Care Policy

1) Intraoperative transfer of care and other shift related transfers will follow a standardized checklist will standardize responsibilities.
   i. The SFGH 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 SFGH Anesthesia Shift Handover Checklist and the SFGH Anesthesia OB/Pain Service Shift Handover Checklist

APPENDIX

A) SFGH Anesthesia Handover Checklist
B) SFGH Anesthesia OB Shift Handover Checklist
C) SFGH Anesthesia Shift Handover Checklist
SFGH 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
SFGH Anesthesia
OB/Pain Service Shift Handover Checklist

- Current ongoing or scheduled surgical procedures in OB
- Current laboring patients
- Current Epidurals/Continuous SpA
- Exchange patient data cards
- Readiness of LD OR #1; #2 & #3
- Current pain patients
  - Card handover
SFGH Anesthesia
OR Shift Change Handover Checklist
(performed at 7AM & 6PM daily)

- Current OR procedures
- Current PACU patients
- Pre-Ops remaining to be completed
- Staffing issues
- OR #1 readiness
  - Anesthesia Intubation Bags (4) accounted for, sealed, and ready
  - Pager handoff 233, 341, 351, 900 x 4, keys x 3, VOIP phones x 3
- OB hand-over (own Checklist)
APPENDIX E: Standards for Basic Anesthetic Monitoring

San Francisco General Hospital Medical Center
Dept. of Anesthesia Policy No. 003
Date Adopted: 9/22/06
Reviewed: 09/07/13

Jens Krombach, MD
Medical Director, Perioperative Services

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Chief of Anesthesia

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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**

- 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.*

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

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.*

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 CO2 alarm
shall be audible to the anesthesiologist or the anesthesia care team personnel.*

. 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.

. 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.
Changes to MH Policy

The MH policy revision dated 6/17/2013 contains all the content of the previous policy, but has been reorganized to provide greater detail while being easier to use during an emergency.

Outline of new policy:

- **Purpose**
- **Definitions** - MH causes, physical signs, possible cxs described (information contained in prior document, but not concise in one spot)
- **Diagnosis** - not changed from previous document
- **Drugs**: causal, tx - not significantly changed from previous document
- **Protocol**
  - Criteria for diagnosis - delineates other areas of the hospital where the patient may receive agents that could trigger MH and where MH patients should be during acute management (OR, ICU)
  - Staffing roles - new section which includes the responsibilities for all services (only anesthesia response delineated in prior policy) who will be involved in the management of a patient with MH
    - Anesthesia - establishes anesthesia as the team leader for the response. Section on management of dysrhythmias changed to be consistent with current ACLS guidelines.
    - Nursing - new
    - Surgery - new
    - Anesthesia techs - new
    - Pharmacy - new
    - OR front desk
    - PACU - new
    - AOD - new
  - Documentation - new. This revision provides a formal way of documenting the care provided in response to MH
  - MH cart maintainance
- **Appendix A**: response flow sheet - new. A single page document that delineates the ordered response to MH. Prior document had no checklist, requiring that the entire document be read in an emergency to avoid missing part of the treatment recommendations.
- **Appendix B**: Drugs stocked in MH cart
- **Appendix C**: MH cart supplies
- **MH cart check documents** - new. Maintains a log of when the MH cart has been check, for regulatory purposes.
TITLE: MALIGNANT HYPERTERMIA 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\textsubscript{2} when minute ventilation is kept constant. The increase in CO\textsubscript{2} 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\textsubscript{2}, 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\textsubscript{2} 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.
APPENDIX H: OR POLICY 44: MALIGNANT HYPERTHERMIA RESPONSE

PROTOCOL: MALIGNANT HYPERTHEMIA 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 CO₂ 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. FiO₂ 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 (Dial x61180, wait for the beep, then dial 345 or 347 and speak a message after the tone)
        • 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 (Dial x61180, wait for the beep, then dial 233 and speak a message after the tone)
        • Inform surgeons of an MH emergency and to 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 (Dial x61180, wait for the beep, then dial 345 or 347 and speak a message after the tone)
     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⁺ 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⁺ and ionized Ca⁺⁺
    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)
• 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 (x68134) to have them:
     • Overhead page the OR to request for adequate help in the MH crisis
       (Dial #36, wait for the beep, then dial 05 and speak a message)
     • Call PACU (x68127) 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 (x63488) 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
APPENDIX H: OR POLICY 44: MALIGNANT HYPERTHERMIA RESPONSE

- 1 bag of cold 3L NS for Irrigation
- Regular Insulin 100 units/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
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Discontinue Triggers</strong> (succinylcholine, inhaled anesthetics)</td>
<td></td>
</tr>
<tr>
<td>2. <strong>Start TIVA</strong> (Total Intravenous Anesthesia), if anesthesia required</td>
<td></td>
</tr>
<tr>
<td>3. <strong>Hyperventilate 2-3 Times Predicted Minute Ventilation</strong></td>
<td></td>
</tr>
<tr>
<td>4. <strong>FIo2 1.0 at 10 L/min.</strong> Keep circuit, absorber and machine.</td>
<td></td>
</tr>
<tr>
<td>5. <strong>Obtain MH Cart / Call for Help / Inform OR Team</strong></td>
<td><strong>Med/Dose/Time:</strong></td>
</tr>
<tr>
<td>Designate an <em>anesthesia technician to obtain MH Cart</em> <em>(Anes Workroom)</em> (Dial x61180, wait for the beep, dial 345 or 347 and speak message)</td>
<td></td>
</tr>
<tr>
<td>Page the <em>Anesthesia D1</em> or Anesthesia Night Attending (Dial x61180, wait for the beep, dial 233 and speak message)</td>
<td></td>
</tr>
<tr>
<td>D1 to designate an Anesthesiologist as <strong>Team Leader</strong></td>
<td></td>
</tr>
<tr>
<td>Inform Surgeons of MH emergency and to coordinate the most expeditious surgical plan to finish the surgical procedure</td>
<td></td>
</tr>
<tr>
<td>6. <strong>Administer Dantrolene 2.5 mg/kg per dose IV Bolus</strong> <em>(MH Cart)</em></td>
<td></td>
</tr>
<tr>
<td>Repeat Dose until Symptoms Subside (up to 10-30 mg/kg)</td>
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</tr>
<tr>
<td>Dilute only 60 mL Sterile Water for Injection in each 20 mg Dantrolene vial (i.e., 75 kg patient = 9 vials Dantrolene per dose)</td>
<td></td>
</tr>
<tr>
<td>Assign multiple team members to reconstitute Dantrolene</td>
<td></td>
</tr>
<tr>
<td>Designate a provider to administer Dantrolene via IV push</td>
<td></td>
</tr>
<tr>
<td>7. <strong>Team Leader to Designate Roles and Responsibilities</strong></td>
<td></td>
</tr>
<tr>
<td>Designate an <em>anesthesia provider to manage vent and anesthesia</em></td>
<td></td>
</tr>
<tr>
<td>Designate a <em>circuiting RN as Lead Nurse</em>. Lead RN to delegate RN duties and to call OR Front Desk <em>(x68134)</em> to notify the following:</td>
<td></td>
</tr>
<tr>
<td>Overhead Page OR to request adequate help in MH crisis <em>(Dial #36, wait for the beep, dial 05 and speak message)</em></td>
<td></td>
</tr>
<tr>
<td>Call PACU <em>(x68127)</em> to bring 4 large plastic bags of ice</td>
<td></td>
</tr>
<tr>
<td>Page the AOD <em>(327-0259)</em> to arrange for ICU disposition</td>
<td></td>
</tr>
<tr>
<td>Call OR <em>Pharmacy</em> <em>(x63488)</em> to request meds as needed</td>
<td></td>
</tr>
<tr>
<td>Designate an <em>anesthesia provider or CRNA to record the events</em> during the MH crisis on the MH Flowsheet <em>Anes Workroom</em></td>
<td></td>
</tr>
<tr>
<td>Designate a <em>provider to insert lines</em> (arterial line, additional large bore IV access), if not already present</td>
<td></td>
</tr>
<tr>
<td>Designate a separate <em>provider to administer medications</em></td>
<td></td>
</tr>
<tr>
<td>Designate an <em>anesthesia technician to obtain</em>:</td>
<td></td>
</tr>
<tr>
<td>From the <em>Anesthesia Workroom</em> <em>(x58716)</em></td>
<td></td>
</tr>
<tr>
<td>Syringe Pump, Spiked IV, Triple Lumen CVC, A-line Sets</td>
<td></td>
</tr>
<tr>
<td>From the <em>Anesthesia Workroom Refrigerator</em></td>
<td></td>
</tr>
<tr>
<td>1L Plasmalyte x 3 bags</td>
<td></td>
</tr>
<tr>
<td>3L NS for Irrigation x 1 bag</td>
<td></td>
</tr>
<tr>
<td>Insulin 10 mL vial / NS 100 mL IV Bag x 1 kit</td>
<td></td>
</tr>
<tr>
<td>From the Nearest Available Location</td>
<td></td>
</tr>
<tr>
<td>Crash Cart</td>
<td></td>
</tr>
</tbody>
</table>

**Medication Used During Case**

**Patient Name / MRN:**

**Location/Room Number:**

**Anesthesia Provider(s):**

**Recorder (Anesthesia/CRNA):**

**Patient’s Weight (kg):**

**Surgery Provider(s):**

**RN(s):**

**Appendix A: SFGH Malignant Hyperthermia Response Flow Sheet**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. <strong>Call MH Hotline (1-800-664-9737)</strong> for additional help, as needed</td>
<td></td>
</tr>
<tr>
<td>9. <strong>Obtain and Monitor Labs and Studies</strong> <em>(sample lab sheets in MH Cart)</em></td>
<td></td>
</tr>
<tr>
<td>ABG Kit:</td>
<td><strong>ABG</strong></td>
</tr>
<tr>
<td>Light Blue:</td>
<td>PT/INR, PTT, Fibrinogen, D-Dimer</td>
</tr>
<tr>
<td>Gold Gel:</td>
<td>Basic Metabolic Panel, CK, LDH, Serum Myoglobin, Thyroid Studies (TSH, Free T4, Free T3)</td>
</tr>
<tr>
<td>Lavender:</td>
<td>CBC, Platelets</td>
</tr>
<tr>
<td>Grey:</td>
<td>Lactate</td>
</tr>
<tr>
<td>Urine Dipstick / Collection Cup:</td>
<td>Hemoglobin / Myoglobin, UA</td>
</tr>
<tr>
<td><strong>Monitoring Equipment:</strong></td>
<td>EKG, Core Temperature</td>
</tr>
<tr>
<td><strong>Cool Patient to Goal Temp of 38°C using one or more methods:</strong></td>
<td></td>
</tr>
<tr>
<td>Cold Plasmalyte-148 IV <em>(Anes Workroom Frig)</em></td>
<td></td>
</tr>
<tr>
<td>Cold Sodium Chloride 0.9% for Irrigation via nasogastric, bladder, rectal and/or open cavity lavage <em>(Anes Workroom Frig)</em></td>
<td></td>
</tr>
<tr>
<td>Ice Packs for external surface cooling <em>(PACU)</em></td>
<td></td>
</tr>
<tr>
<td>Consider calling 4E ICU <em>(x68201)</em> for intracool catheter and/or cooling blanket</td>
<td></td>
</tr>
<tr>
<td><strong>Treat Acidosis (if not reversed by Dantrolene administration)</strong></td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate 8.4% IV 1-2 mEq/kg <em>(Crash Cart)</em></td>
<td></td>
</tr>
<tr>
<td>Ensure adequate minute ventilation</td>
<td></td>
</tr>
<tr>
<td><strong>Treat Hyperkalemia and Associated Dysrhythmias</strong></td>
<td></td>
</tr>
<tr>
<td>Calcium Chloride 10% IV 10 mg/kg <em>(Crash Cart)</em></td>
<td></td>
</tr>
<tr>
<td><em>Avoid Calcium Channel Blockers</em></td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate (above) <em>(Crash Cart)</em></td>
<td></td>
</tr>
<tr>
<td>Insulin IV 0.15 units/kg (or 10 units) <em>(Anes Workroom Frig)</em></td>
<td></td>
</tr>
<tr>
<td><strong>HIGH ALERT / TWO PROVIDERS MUST DOUBLE CHECK</strong></td>
<td></td>
</tr>
<tr>
<td>Dilute Insulin 1 mL (~100 units) in 100 mL NS Bag</td>
<td></td>
</tr>
<tr>
<td>(Final Conc = 1 unit/mL), then give Insulin 10 mL = 10 units IV</td>
<td></td>
</tr>
<tr>
<td>Dextrose 50% IV 1 mL/kg <em>(Crash Cart)</em> Monitor serum glucose.</td>
<td></td>
</tr>
<tr>
<td>Treat dysrhythmias using ACLS algorithms <em>(Crash Cart)</em></td>
<td></td>
</tr>
<tr>
<td>12. <strong>Treat Hyperkalemia and Associated Dysrhythmias</strong></td>
<td></td>
</tr>
<tr>
<td>Calcium Chloride 10% IV 10 mg/kg <em>(Crash Cart)</em></td>
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<td><strong>HIGH ALERT / TWO PROVIDERS MUST DOUBLE CHECK</strong></td>
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<td>(Final Conc = 1 unit/mL), then give Insulin 10 mL = 10 units IV</td>
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</tr>
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<td>Dextrose 50% IV 1 mL/kg <em>(Crash Cart)</em> Monitor serum glucose.</td>
<td></td>
</tr>
<tr>
<td>Treat dysrhythmias using ACLS algorithms <em>(Crash Cart)</em></td>
<td></td>
</tr>
<tr>
<td>13. <strong>Place or Confirm Foley to Monitor Urine Output</strong></td>
<td></td>
</tr>
<tr>
<td>Aggressive hydration. Ensure UO of at least 2 mL/kg/hr.</td>
<td></td>
</tr>
<tr>
<td>Consider diuresis with Furosemide 0.5-1 mg/kg IVP <em>(Omnicell)</em></td>
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</tr>
<tr>
<td>14. <strong>Transport to ICU (and continue Dantrolene 1 mg/kg IV q6h)</strong></td>
<td></td>
</tr>
</tbody>
</table>
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)
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) bags contained within the Anesthesia Intubation Bags. Oversight for establishing the contents and use of the drug bags 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 4th and 5th floor ICU’s and the operating room. Theses 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 medication 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 bag sealed with a tamperproof seal that will be used to stock and restock the drug supply in the Anesthesia Intubation Bags.

Procedure:

Anesthesia stocking procedure

1. a. Anesthesia Intubation Bags will be stored in the OR Rm 1 ante-room.
   b. The Anesthesia Intubation Bags 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-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 cleanliness 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.
APPENDIX J: Anesthesia Intubation Bags Policy and Procedure

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.

References: Pharmacy P&P 6:12 Anesthesia Intubation Bag replenishment
### Appendix 1

**ADULT CODE BAG INVENTORY**

<table>
<thead>
<tr>
<th>Pharmacy Drug Box</th>
<th>Top</th>
<th>Side Pockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Succinylcholine 20mg/cc x2</td>
<td>• Ropivacaine 10mg/cc 5cc x2</td>
<td>• Forms (Record, Procedure Note, Pre-op)</td>
</tr>
<tr>
<td>• Ephedrine 5mg/cc x2</td>
<td>• Propofol 10mg/cc 20cc x2</td>
<td>• Timed, dated &amp; initialed check list</td>
</tr>
<tr>
<td>• Phenylephrine 100mcg/cc x2</td>
<td>• Lidocaine 2% jelly x2</td>
<td>• EZ-IO Power Driver, 2 sets of AD 15G 25mm IO needles</td>
</tr>
<tr>
<td>• Etomidate 2mg/cc 20cc x1</td>
<td>• Afrin spray x1</td>
<td></td>
</tr>
</tbody>
</table>

**Equipment**

<table>
<thead>
<tr>
<th>Bottom</th>
<th>Top</th>
<th>Side Pockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cricothyrotomy kit x1</td>
<td>• Pharmacy drug box</td>
<td>• Forms (Record, Procedure Note, Pre-op)</td>
</tr>
<tr>
<td>• Ambu bag w/ mask x1</td>
<td><strong>Intubation Bag with the following:</strong></td>
<td>• Timed, dated &amp; initialed check list</td>
</tr>
<tr>
<td>• Capnograph w/ sampling line</td>
<td>• ET Tubbs: (6.0, 6.5, 7.0, 7.5, 8.0)</td>
<td>• EZ-IO Power Driver, 2 sets of AD 15G 25mm IO needles</td>
</tr>
<tr>
<td>• Combitube 37F x1, 41Fr x1</td>
<td>• ET Tubbs: (endotracheal) 6.0, 7.0</td>
<td></td>
</tr>
<tr>
<td>• Gum elastic bougie x1</td>
<td>• ETT 14 Fr stylets x2 (wrapped)</td>
<td></td>
</tr>
<tr>
<td>• 30cc Syringes x2 (bundled w/ LMAs)</td>
<td>• Oral Airways (80, 90, 100)</td>
<td></td>
</tr>
<tr>
<td>• LMA #3 and #4</td>
<td>• Nasal Airways (28, 32, 36)</td>
<td></td>
</tr>
</tbody>
</table>

**Bag the following together:**

<table>
<thead>
<tr>
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<th>Top</th>
<th>Side Pockets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 18g Needles x1 bundle</td>
<td>• Laryngoscope handles x2</td>
<td>• Pink tape ½” x1</td>
</tr>
<tr>
<td>• 10cc Syringes x1 bundle</td>
<td>• Laryngoscope blades: (Mac 3 &amp; 4, Miller 2 &amp; 3)</td>
<td>• Spare plastic bags</td>
</tr>
<tr>
<td>• MAD atomizers x2</td>
<td></td>
<td>• Magill forceps x1</td>
</tr>
</tbody>
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Robin Stackhouse 9/7/13 11:44 AM

Deleted: Boxes

Robin Stackhouse 9/7/13 11:44 AM

Deleted: 12/07/11

Rev. 9/7/13, JDM
## PEDIATRIC CODE BAG INVENTORY

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<th>Pharmacy Drug Box</th>
<th>Intubation bag with the following:</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Succinylcholine 20mg/cc x2&lt;br&gt;• Ephedrine 5mg/cc x2&lt;br&gt;• Phenylephrine 100mcg/cc x2&lt;br&gt;• Etomidate 2mg/ml 20ml x1</td>
<td>• ET Tubes cuffed:&lt;br&gt;(3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0)&lt;br&gt;• ET Tubes uncuffed:&lt;br&gt;(2.5, 3.0, 3.5, 4.0, 4.5, 5.0)&lt;br&gt;• ETT (endotracheal) 6.0, 7.0&lt;br&gt;• Oral Airways (50, 60, 70, 80, 90)&lt;br&gt;• Nasal Airways (24, 28, 32)&lt;br&gt;• Laryngoscope handles (pediatric) x2&lt;br&gt;• Laryngoscope blades:&lt;br&gt;(Mac 1,2 &amp; 3. Miller 0,1, 1.5 &amp; 2)&lt;br&gt;• Pink tape ½” x1&lt;br&gt;• Spare plastic bags&lt;br&gt;• Pedi Magill forceps x1&lt;br&gt;• Stylets 6F &amp; 14F for ETT (wrapped)&lt;br&gt;• 10cc Syringes x2</td>
<td>• Cricothyrotomy kit 3.5mm ID x1&lt;br&gt;• Capnograph w/ sampling line&lt;br&gt;• Pediatric Ambu bag&lt;br&gt;• Breathing bags (0.5, 1.0 liter)&lt;br&gt;• Masks:&lt;br&gt;(Neonate, Infant, Toddler, Child, Adult)&lt;br&gt;• 30cc Syringes x2 (bundled to LMAs)&lt;br&gt;• LMA #1.5, #2.0, #2.5&lt;br&gt;Note: Bag the following together:</td>
</tr>
</tbody>
</table>

| Drug Expiration: __________________________ Date ___________ Time ___________ Initial ___________ |
APPENDIX K: Trauma Operating Room Preparedness Policy and Procedure

San Francisco General Hospital Medical Center
Dept. of Anesthesia Policy No. 101
Date Adopted 09/22/2006
Reviewed 9/7/13

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 SFGH, and which is compliant with TJC and other state and federal requirements.

Policy: 24 hrs/day, 7 days/week, the Department of Anesthesia at SFGH 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: SFGHMC 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 SFGH Machine Checklist (SEE APPENDIX A), performed every 24 hrs in the AM.

Date Adopted 09/22/2006
Reviewed 9/7/13
APPENDIX K: Trauma Operating Room Preparedness Policy and Procedure

(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:

1) It is the responsibility of the “D1-attending”, together with the OR charge nurse, to ensure availability of a designated OR 24/7.

2) 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.

3) 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.

4) 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

5) A complete check of the anesthesia machine is performed according to FDA regulations. A checklist (APPENDIX A) is attached to the anesthesia machine.

6) 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.

7) 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. Phenytoeline 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.

8) 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 personal are in the room.

A second anesthesia cart serves as a back-up cart for the designated Trauma OR. It is stored in the anteroom of OR#1.

9) 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.

10) 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 of 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.

11) 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.

12) 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.

13) 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.

14) 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.

15) 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) SFGH Anesthesia Machine Checklist

Robin Stackhouse 9/7/13 page 3
APPENDIX K: Trauma Operating Room Preparedness Policy and Procedure

B) ASA Position Statement “Security of Medications in the Operating Room”
C) SFGH Anesthesia OR #1 Checklist
D) SFGH Anesthesia OR# 1 Readiness Sign-Off Sheet
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 SFGH, and that is compliant with JCAHO and other state and federal requirements.

Policy: 24 hrs/day, 7 days/week, the Department of Anesthesia at SFGH 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 Staff Anesthesia or his/her designee.

Background: Obstetrician-gynecologists at SFGH 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 SFGH 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...
APPENDIX L: Labor & Delivery Operating Room Preparedness Policy

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:

1) 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.

2) It is the responsibility of the “OB-anesthesia attending” to ensure that this designated ORs are prepared from an anesthesia perspective to receive a patient with no notice.

3) 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.

4) Regular checks of L&D ORs for anesthesia preparedness are performed:
   a) Every morning between 7AM – 8AM
   b) If an additional back-up OR becomes designated as the L&D OR
   c) Following every turn-over of L&D OR #1

5) A complete check of the anesthesia machine is performed according to FDA regulations. A checklist (APPENDIX A) is attached to the anesthesia machine.

6) 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.

7) The following emergency medications are either by pharmacy as pre-filled syringes or are drawn up daily between 7AM-8AM:
   i. Etomidate or Propofol will be available
   ii. Succinylcholine 200mg/10ml
   iii. Phenylephrine 100mcg/ml in 10ml syringe (& 90ml in bag)
   iv. 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
APPENDIX L: Labor & Delivery Operating Room Preparedness Policy

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.

8) 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.

9) Applies only to L&D OR#1: An A-line system including all necessary tools is attached to the IV pole on the patients left side. 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.

10) 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.

11) 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.

12) 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.

13) 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.

14) 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).

15) 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 L: Labor & Delivery Operating Room Preparedness Policy

APPENDIX

A) SFGH Anesthesia Machine Checklist
B) SFGH Anesthesia L&D Checklists
C) SFGH Anesthesia L&D Readiness Sign-Off Sheet
Privileges for San Francisco General Hospital

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

Applicant: Please initial the privileges you are requesting in the Requested column.
Service Chief: Please initial the privileges you are approving in the Approved column.

<table>
<thead>
<tr>
<th>Requested</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

6 ANESTHESIA & PERIOPERATIVE CARE

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, 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, 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 or a member of the Clinical Service prior to 10/17/00.

PROCORING: 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 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

PROCORING: 5 observed cases

REAPPOINTMENT: Review of a minimum of 30 patients

6.22 TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE MONITORING
Traneseophageal echocardiography (TEE) 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; or a member of the Clinical Service prior to 6/1/08.

**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 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 exams for monitoring of wall motion abnormalities, volume status, or pericardial fluid every two (2) years is required for reappointment. Physician specific peer review data must include information regarding cases in which transesophageal echocardiography was utilized for perioperative monitoring.

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### 6.23 TRANSESOPHAGEAL ECHOCARDIOGRAPHY FOR PERIOPERATIVE COMPREHENSIVE EXAMINATION

Transesophageal echocardiography monitoring of perioperative patients for comprehensive examination.

**PREREQUISITES:** 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. Successful completion of the Perioperative Transesophageal Echocardiography Certification Examination administered (PTEcXAM) 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 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 exams every two (2) years is required for reappointment. Physician specific peer review data must include information regarding cases in which transesophageal echocardiography was utilized for a comprehensive examination.
Privileges for San Francisco General Hospital

I hereby request clinical privileges as indicated above.

_______________________________________
Applicant date

FOR DEPARTMENTAL

☐ Proctors have been assigned for the newly granted privileges
☐ Proctoring requirements have been satisfied.
☐ Medications requiring DEA certification may be prescribed by this provider
☐ Medications requiring DEA certification will not be prescribed by this provider
☐ CPR certification is required.
☐ CPR certification is not required.

APPROVED BY:

_______________________________________
Division date

_______________________________________
Service date

[Signature]
[Division]
[Service]

Revised: 9/7/13
Approved: 9/7/13 11:50 AM

Deleted: Approved MEC June 2011
San Francisco General Hospital and Trauma Center - Ongoing Professional Performance Evaluation (OPPE)
Provider-Specific Six Month Report

6 Month Date Range:
- Jan - June
- July - Dec

Provider name, degree:

Service:

Anesthesia

<table>
<thead>
<tr>
<th>Metric</th>
<th>Acceptable</th>
<th>Marginal*</th>
<th>Unacceptable*</th>
<th>Metric Not Relevant During This Period</th>
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<tbody>
<tr>
<td>Deaths</td>
<td>0 or Any Non Preventable</td>
<td>≥ 1 Possibly Preventable</td>
<td>≥ 1 Preventable</td>
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<tr>
<td>Cardiac Arrest / MI</td>
<td>0 or Any Non Preventable</td>
<td>≥ 1 Possibly Preventable</td>
<td>≥ 1 Preventable</td>
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<tr>
<td>Unrecognized Difficult Airway</td>
<td>0-2 with full documentation of airway exam</td>
<td>1-2 with incomplete documentation of airway exam</td>
<td>&gt;2 with incomplete documentation of airway exam</td>
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<td>Unplanned Reintubation</td>
<td>0 or Any Non Preventable</td>
<td>1-2 Preventable</td>
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<td>requiring escalation of care</td>
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<td>Dental Trauma</td>
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<td>Peripheral Nerve Injury</td>
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<td>Hypothermia</td>
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<td>Problem Transfusions</td>
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<td>1 without full documentation</td>
<td>≥ 2 without full documentation</td>
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<tr>
<td>Other Cases Reviewed, U/Os, patient complaints, sentinel events etc.</td>
<td>0 - 3</td>
<td>4 - 5</td>
<td>&gt; 5</td>
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* 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 ALL PRACTITIONERS ON ROSTER:**

Yes ☐ No ☐ Recommend current privileges
Yes ☐ No ☐ Recommend a Focused Professional Practice Evaluation (FPPE). If YES, attached a detailed plan.
Yes ☐ No ☐ Recommend changes to current privileges, specify:

To my knowledge, this practitioner does not have a medical/mental health conditions that could affect clinical care or judgment. If such a condition exists, please specify the plan for monitoring this condition.

Chief of Service (or designee) ____________________________ Date: __________

Practitioner Signature* ____________________________ Date: __________

* Electronic signature acceptable

** Required only if “marginal” or “unacceptable” noted above
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**: ≥ 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**: ≥ 3

7. **Dental Trauma**
   • **Acceptable**: 0-3 Dental trauma is a known risk of general anesthesia and intubation which included in the informed consent process. Appropriate documentation should include a dental exam indicate 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**: ≥5

8. **Peripheral Nerve Injury**
   • **Acceptable**: 0-1
   • **Marginal**: 2
   • **Unacceptable**: ≥ 3

*Note: I recommend that this category reflect only nerve injuries secondary to positioning. In the future we may have an additional category for regional anesthesia complication.*

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**: ≥ 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:** ≥ 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 will be very important in determining whether the performance is acceptable, marginal or unacceptable.