



STATE OF WASHINGTON

**DEPARTMENT OF HEALTH**

PO Box 47852 · Olympia Washington 98504-7852

**Dental Quality Assurance Commission  
General Anesthesia Office  
On-site Inspection Form**

Name of Practitioner Inspected: \_\_\_\_\_

General Anesthesia Permit Number: \_\_\_\_\_

Location of Inspection (Address)  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Date of Inspection: \_\_\_\_\_

Time of Inspection: \_\_\_\_\_

Note: All office equipment and records related to patient care should be available for inspection by the evaluating practitioner. **This inspection is not intended to be punitive, it is an educational tool.**

**Part 1**

**Office Equipment, Records, and Emergency Medications**

**A. Dental Practitioner**

1. YES/NO – BLS Certificate Expiration Date: \_\_\_\_\_

2. YES/NO – ACLS Certificate Expiration Date: \_\_\_\_\_

3. YES/NO – PALS Certificate Expiration Date: \_\_\_\_\_

4. YES/NO – Documentation of Advanced Sedation or Anesthesia Training
5. YES/NO – Board Certification

**B. Staff** - Verify appropriate valid BLS/ACLS/PALS/DA Registration/EFDA License/Hygienist License/Dental Anesthesia Assistant Certification/Anesthesia Monitor Training (14 hours) as applicable for each employee that assists and/or monitors in general anesthesia cases.

Name.	Licenses/certifications Verified	Type
_____	_____yes/no_____	_____
_____	_____yes/no_____	_____
_____	_____yes/no_____	_____
_____	_____yes/no_____	_____

(Attach additional list if necessary)

**C. Records**

Review three charts of patients who have been treated with general anesthesia in the inspected practice-previously selected by the inspected practitioner.

YES/NO – Medical history of the patients.

YES/NO – Physical evaluation of the patients.

YES/NO – Anesthesia records showing continuous monitoring of heart rate, blood pressure, and respiration using electrocardiographic monitoring, pulse oximetry and capnography.

YES/NO – Recording of monitoring every 5 minutes.

YES/NO – Continuous recovery monitoring with notation of patient’s condition upon discharge and person to whom the patient was discharged.

YES/NO – Recording of medications administered, including amounts and times administered.

YES/NO – Records illustrating length of the procedure.

YES/NO – Records reflecting any complication of anesthesia.

#### **D. Office Facility and Equipment**

YES/NO – Non-invasive Blood Pressure Monitors

- Test/Calibration Dates: \_\_\_\_\_

YES/NO – Electrocardiographs / AED or defibrillator

- Test/Calibration Dates: \_\_\_\_\_

YES/NO – Pulse Oximeters

- Test/Calibration Dates: \_\_\_\_\_

YES/NO – End-tidal Carbon Dioxide Monitors

- Test/Calibration Dates: \_\_\_\_\_

#### **Operating Theatre:**

YES/NO – Operating Theater large enough to accommodate the patient on a table or in an operating-dental chair adequately.

YES/NO – The operating theatre permits an operating team to move freely about the patient.

#### **Operating Chair or Table:**

YES/NO – The operating chair or table permits the patient to be positioned so the operating team can maintain the airway.

YES/NO – The operating chair or table permits the team to alter the patients position quickly in an emergency.

YES/NO – The operating chair or table provides a firm platform for the management of cardiopulmonary resuscitation.

**Lighting System:**

YES/NO – The lighting system permit evaluation of the patient’s skin and mucosal color.

YES/NO – There is a battery powered backup light system in place.

YES/NO – The backup lighting system is sufficient intensity to permit completion of any operation underway at the time of general power failure.

**Gas Storage:**

YES/NO – Medical Gases are stored in a secure, well ventilated area and are properly labeled.

YES/NO – Gas Cylinders have steadying devices/brackets in place where applicable.

**Suction Equipment:**

YES/NO – The suction equipment permits aspiration of the oral and pharyngeal cavities.

YES/NO – There is a back-up suction device available.

**Oxygen Delivery System:**

YES/NO – The oxygen delivery system has adequate full-face masks and appropriate connectors, and is capable of delivering oxygen to the patient under positive pressure.

YES/NO – There is an AMBU-bag, self-inflating resuscitator available for emergency use.

YES/NO – There is an adequate backup-oxygen delivery system.

**Recovery Area: (can be the operating theatre)**

- YES/NO – The recovery area has available oxygen.
- YES/NO – The recovery area has available adequate suction.
- YES/NO – The recovery area has adequate lighting.
- YES/NO – The recovering patient can be observed by member of the staff at all times during the recovery period.

**Ancillary Equipment:**

- YES/NO – There are oral and nasopharyngeal airways.
- YES/NO – There are Laryngeal Mask Airways.
- YES/NO – There is a tonsillar or pharyngeal type suction tip available to all office outlets.
- YES/NO – There is a sphygmomanometer and stethoscope.
- YES/NO – There is equipment for the establishment and maintenance of an intravenous infusion.
- YES/NO – There are endotracheal tube forceps.
- YES/NO – There are endotracheal tubes and appropriate connectors.
- YES/NO – There is a working laryngoscope complete with an adequate selection of blades, spare batteries, and bulbs.

**E. Drugs**

- YES/NO – Drugs are stored in a secure location with a designated area to aseptically prepare medications.
- YES/NO – Vasopressor Drug-(Alpha and Beta adrenergic Stimulant)  
Expiration Date: \_\_\_\_\_
- YES/NO – Corticosteroid Drug      Expiration Date: \_\_\_\_\_
- YES/NO – Bronchodilator drug      Expiration Date: \_\_\_\_\_
- YES/NO – Muscle relaxant drug      Expiration Date: \_\_\_\_\_
- YES/NO – ACLS/PALS medications/drugs for treatment of cardiopulmonary arrest.  
Expiration Dates: \_\_\_\_\_

YES/NO – Adenosine \_\_\_\_\_

YES/NO – Amiodarone \_\_\_\_\_

YES/NO – Atropine \_\_\_\_\_

YES/NO – Epinephrine \_\_\_\_\_

YES/NO – Lidocaine \_\_\_\_\_

YES/NO – Magnesium \_\_\_\_\_

YES/NO – ASA Aspirin \_\_\_\_\_

YES/NO – Narcotic Antagonist drug Expiration Date: \_\_\_\_\_

YES/NO – Benzodiazepine antagonist drug Expiration Date: \_\_\_\_\_

YES/NO – Antihistamine Drug Expiration Date: \_\_\_\_\_

YES/NO – Antiarrhythmic Drug Expiration Date: \_\_\_\_\_

YES/NO – Anticholinergic Drug. Expiration Date: \_\_\_\_\_

YES/NO – Coronary Artery Vasodilator Drug Expiration Date: \_\_\_\_\_

YES/NO – Antihypertensive Drug Expiration Date: \_\_\_\_\_

YES/NO – Malignant Hyperthermia Drug-Dantrolene Expiration Date:

\_\_\_\_\_

YES/NO – Anti-hypoglycemic Agent Expiration Date: \_\_\_\_\_

YES/NO – Anti-convulsant Drug Expiration Date: \_\_\_\_\_

**Additional Offices:** (Satellite offices)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Attach additional list if necessary)

I, \_\_\_\_\_ (name of practitioner being inspected),  
declare under penalty of perjury under the laws of the state of Washington that the  
above listed offices have equipment, drugs, facilities, and systems that are equally  
prepared to safely treat patients and respond to emergency situations as the office  
location that is being inspected today:

Signature of practitioner being inspected:

\_\_\_\_\_

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

## **Overall Equipment and Facility**

Comments

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\_\_\_\_\_  
\_\_\_\_\_  
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Recommendations/Remediation

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## **Part II**

### **Simulated Emergencies**

The inspectors and the anesthesia team should not just talk about emergency situations and how they should be managed. The practitioner being inspected and their demonstrated their methods for managing the following situations:

YES/NO – Laryngospasm

YES/NO – Bronchospasm

YES/NO – Emesis and aspiration

YES/NO – Airway obstruction

YES/NO – Angina/Acute Myocardial Infarction

YES/NO – Cardiopulmonary resuscitation (CPR)-(ACLS/PALS PROTOCOLS)

- Bradycardia
- Ventricular tachycardia (VT) Ventricular fibrillation (VF) Asystole
- Pulseless electrical activity (PEA)

YES/NO – Hypotension

YES/NO – Hypertension

YES/NO – Venipuncture Complications

YES/NO – Neurocardiogenic (Vasovagal) Syncope

YES/NO – Allergic reaction

YES/NO – Local Anesthetic Toxicity

YES/NO – Hyperventilation syndrome

YES/NO – Seizures

YES/NO – Malignant hyperthermia (MH).

An exact simulation of the emergency situation should be demonstrated in the surgery area, with full participation of the office staff. The “patient” should be positioned and draped, and all the equipment (such as mouth prop, the anesthetic machine, and the suction apparatus) that may be used should be demonstrated. A



simulated IV line should be taped into position, and all emergency equipment should be present, including syringes and medications.

## **Protocols for Inspection of Simulated Emergencies**

### **Simulated Emergencies and their Algorithms**

#### **Respiratory**

##### **Laryngospasm**

YES/NO – Administer 100% oxygen via nasal mask.

YES/NO – Suction the oropharynx, hypo-pharynx, and nasopharynx with a tonsil suction tip.

YES/NO – Suction/remove all blood, saliva, and foreign material from the oral cavity.

YES/NO – Pack the surgical site to prevent bleeding into the hypo-pharynx.

YES/NO – Draw the tongue and/or mandible forward.

YES/NO – Depress the patient's chest while listening with the ear close to the patient's mouth for a rush of air. If a clear "huff" of air is heard, the airway is patent and the spasm probably is resolved

If a clear "huff" is not heard:

YES/NO – Try to break the spasm mechanically by attempting to ventilate the patient with a full face mask and 100% oxygen.

YES/NO – Administer an IV dose of succinylcholine (partial spasm: 10-20 mg IV; complete spasm 20-40 mg IV) immediately and oxygen under pressure (alternative: rocuronium 0.6-1.2 mg/kg IV; may require prolonged ventilator support).

YES/NO – Administer intubating IV dose of succinylcholine, intubate, and secure the airway (Alternative: rocuronium 0.6-1.2 mg/kg IV and be prepared to ventilate patient for prolonged period). Consider atropine with repeat dose of succinylcholine to prevent bradycardia.

## **Bronchospasm**

### **Awake patient:**

YES/NO – Administer 4-8 puffs of a beta-agonist inhalant either via inhaler or nebulizer (2-4 puffs for pediatric patient).

YES/NO – Administer supplemental oxygen via face mask.

### **Obtunded non-intubated patient:**

YES/NO – Consider albuterol nebulizer via face mask prior to administration of epinephrine.

YES/NO – Administer 0.3 to 0.5 mg epinephrine (1:1,000 solution) intramuscularly.

### **If hypotension is present and believed to be a sign of acute anaphylaxis:**

YES/NO – Administer intravenous bolus dose of 10-20 mcg (0.1-0.2mg) of a 1:10,000 solution of epinephrine titrated to response.

### **Intubated patient:**

YES/NO – Administer 100% oxygen with positive pressure ventilation.

YES/NO – Administer 5-10 puffs of a beta agonist inhalant from an inhaler into the open end of the endotracheal tube or through a medication elbow (chamber) added to the circuit designed for inhalant medication delivery.

YES/NO – Consider deepening plane of anesthesia.

YES/NO – Check breathing circuit.

YES/NO – If persistent, consider epinephrine as above for non-intubated patient.

### **Hypoxemia in spontaneously breathing patient:**

YES/NO – Administer 100% oxygen by face mask.

YES/NO – Consider reversal of sedative medications.

YES/NO – Perform chest auscultation and treat findings.

YES/NO – Intubate and administer positive-pressure ventilation with 100% oxygen if the patient continues to deteriorate with hypoxemia, impending respiratory muscle exhaustion, or worsening obtundation.

### **Emesis and Aspiration**

YES/NO – Place the patient in the Trendelenburg position with the head down at least 15 degrees and rolled onto the right side.

YES/NO – Clear any vomitus in the oropharynx with finger sweeps and large-bore suction.

YES/NO – If no improvement, place the patient in the supine position and intubate (may be necessary to use muscle relaxants prior to intubation).

YES/NO – Remove any solid particles in the laryngeal region with Magill forceps at time of intubation.

YES/NO – Oxygenate the patient as soon as possible and manage any bronchospasm as previously described.

YES/NO – Tracheobronchial lavage is not performed except for small volumes (5-10 mL) of saline to facilitate suctioning.

YES/NO – Maintain a patient airway and continue ventilation with 100% oxygen in route to hospital.

### **Difficult Airway Algorithm**

YES/NO – Chin lift/jaw thrust.

YES/NO – Pull tongue forward, reposition airway.

YES/NO – Full face mask positive pressure ventilation.

YES/NO – Consider nasal/oral pharyngeal airways.

YES/NO – Consider Laryngeal Mask Airway (LMA) or other adjunct airway devices.

YES/NO – Consider endotracheal intubation.

YES/NO – Consider needle cricothyrotomy.

YES/NO – Consider surgical cricothyrotomy.

YES/NO – Consider tracheostomy.

## **Cardiovascular**

### **Angina/Acute Myocardial Infarction**

YES/NO – Terminate the surgery and all stimulation of the patient.

YES/NO – Place the patient in a comfortable position and loosen tight clothing.

YES/NO – Administer oxygen at 4 L/min via mask or nasal cannula.

YES/NO – Apply pulse oximeter and ECG monitor.

YES/NO – Obtain vital signs with automatic or standard blood pressure cuff.

YES/NO – Administer nitroglycerin sublingually or via spray every five minutes if the systolic blood pressure is greater than 90mm/Hg.

YES/NO – Establish IV access, if not already present.

YES/NO – Administer non-enteric aspirin (160-325 mg) and direct patient to chew one and swallow one, except in cases of allergy to this drug.

YES/NO – Employ the mnemonic MONA but not in that order; use ONAM because use of chewed aspirin may decrease absorption of subsequent nitroglycerin.

YES/NO – Administer morphine, 1-3 mg IV every 5 minutes to control pain if systolic blood pressure is greater than 90mm/Hg. Watch carefully so the patient does not become overly sedated or lose respiratory drive.

YES/NO – Monitor vital signs closely. Watch for hypotension, hypoxemia, bradycardia, ventricular dysrhythmias, and cardiac arrest and manage appropriately per ACLS protocols.

### **Management of Perioperative Hypotension**

YES/NO – Treatment of hypotension is directed toward its cause.

YES/NO – Decrease anesthetic depth if patient is under anesthesia.

YES/NO – Terminate the surgery.

YES/NO – Place the patient in the supine position with legs elevated.

YES/NO – Administer 100% oxygen.

YES/NO – Re-evaluate blood pressure, heart rate, and rhythm and dysrhythmias.

YES/NO – Administer a bolus of isotonic fluid.

YES/NO – Titrate ephedrine or phenylephrine or other suitable vasopressor to preserve adequate systemic pressures (Ephedrine is general used unless there is tachycardia and hypotension in which case phenylephrine may be a better choice).

YES/NO – Dosing of Sympathomimetic Agents for Treatment of Hypotensive.

### **Emergencies**

YES/NO – Ephedrine: Dilute a 50 mg/mL vial in 9mL of saline to make a 5mg/mL solution and administer at a dose of 2.5 to 5 mg IV, which can be repeated until blood pressure is stabilized. The drug's effects occur in approximately one minute, peak at 15 minutes, and last approximately one hour.

YES/NO – Phenylephrine: Dilute single dose vial (10 mg/mL) in 9mL of saline; discard 9mL and dilute with an additional 9mL of saline to create a 0.1mg/mL concentration; administer IV in 0.1 mg (1 mL) increments until the desired effects are achieved. The effects are seen within one minute and last for approximately twenty minutes.

### **Hypertension**

Therapeutic approaches to treating perioperative hypertension are directed at producing vasodilation or altering cardiac output by beta-adrenergic receptor blockers. Among the drugs that may be useful are beta-blockers such as esmolol (Brevibloc) and metoprolol (Lopressor), the selective alpha blocker labetalol (Normodyne, Trandate), and the vasodilator hydralazine.

YES/NO – Esmolol dosing.

Immediate control dosing: 80 mg (approximately 1 mg/kg) over 30 seconds followed with a 150 mcg/kg/min infusion (0.15/mg/kg/min) that is adjusted as required to a maximum of 300 mcg/kg/min (0.30 mg/kg/min) to maintain the desired heart rate and/or blood pressure  
Graduate control dosing (when there is time to titrate): loading dose infusion of 500 mcg/kg/min for one minute followed with a 50 mcg/kg/min over 4 minutes. If an adequate therapeutic effect is not seen in 5 minutes, loading dose infusion of 500 mcg/kg/min for one minute followed with a 100 mcg/kg/min.

YES/NO – Labetalol dosing (a selective alpha 1 blocker and non-selective beta blocker):

Initial adult dose 5-20 mg IV over 2 minutes followed by 2 mg/min (maximum dose 300 mg) IV infusion. Onset 5 minutes, duration 3-6 hours.

YES/NO – Hydralazine dosing (a direct vasodilator for patient who can tolerate an increase in heart rate and cardiac output but who has a history of asthma):

Initial adult dose 5-20mg IV, can titrate up to 25 mg. Onset 5 minutes, duration 2 hours.

## **Venipuncture Complications**

### **Hematoma**

YES/NO – Apply pressure to the venipuncture site.

### **Extravasation**

YES/NO – Apply moist heat and elevate extremity above level of heart (for many cases this simple treatment is all that is required).

If irritating drugs have extravasated, then consider:

YES/NO – Infiltrate 1% plain lidocaine (Xylocaine) at the site, if needed for pain.

YES/NO – Administer ibuprofen and possible use of steroids and antibiotics may be necessary to prevent or lessen the sloughing.

### **Phlebitis**

YES/NO – Apply heat to area.

YES/NO – Administer ibuprofen or other nonsteroidal drugs, steroids, and antibiotics.

YES/NO – Limit motion to alleviate symptoms.

YES/NO – Seek appropriate consultation if severe symptoms persist beyond 3-4 days.

### **Intra-Arterial Injection**

Prevention is the best treatment. No single treatment regimen has been found to be completely effective.

YES/NO – Leave needle in place.

YES/NO – Inject 10 mL 1% plain lidocaine into the artery.

YES/NO – Consider transfer patient to a hospital for further therapy and consider vascular consult.

### **Neurocardiogenic (Vasovagal) Syncope**

YES/NO – Place patient in reclining position with legs elevated.

YES/NO – Maintain airway.

YES/NO – Deliver 100% oxygen.

YES/NO – Support respiration if needed.

YES/NO – Take vital signs.

YES/NO – Apply cool compress to forehead.

YES/NO – Administer spirits of ammonia, if necessary.

YES/NO – Administer IV atropine 0.5 mg every 3-5 minutes up to 3 mg in the presence of bradycardia.

### **Hyperventilation Syndrome**

YES/NO – Maintain adequate oxygen levels while reducing carbon dioxide elimination.

If using oxygen delivery system with full face mask, closed circuit, and no carbon dioxide absorber:

YES/NO – Deliver oxygen at 600 mL/min.

YES/NO – Have patient breathe into the circuit until the rebreathing bag is distended.

YES/NO – Continue until episode subsides.

If using anesthesia reservoir or paper bag:

YES/NO – Have patient exhale and inhale into the paper bag 6-10 times/min.

If a non-sedated patients fails to respond:

YES/NO – Administer suitable sedative to abort the hyperventilation episode.

### **Seizures**

YES/NO – Prevent injury to the uncontrolled unconscious patient.

YES/NO – Loosen clothing about the neck.

YES/NO – Place pillow under the head.

YES/NO – Place padded tongue blade between the teeth if evidence that the patient's tongue is being traumatized (do not force the teeth apart).

YES/NO – Consider checking blood sugar.

### **Local Anesthetic Toxicity**

YES/NO – Immediately discontinue any further administration of the local drug.

YES/NO – Call 911.

YES/NO – Place patient in supine position.

YES/NO – Administer oxygen.

YES/NO – Maintain airway and initiate CPR.

YES/NO – Confirm or establish IV access.

YES/NO – Administer IV diazepam 5 mg over one minute OR IV midazolam 2.5 mg over one minute titrated to effect.

YES/NO – Continue to closely monitor vital signs.



## Allergic Reaction

Mild reactions usually manifest as skin reaction without other systemic signs or symptoms:

YES/NO – Identify causative agent, if time permits.

YES/NO – Remove, dilute, negate, or antagonize, if possible.

YES/NO – Administer diphenhydramine adult dose 25-50 mg PO, 10-50 mg IV at a rate generally not exceeding 25 mg/min, deep intramuscular injection of 100 mg if required (maximum daily dosage is 400 mg)  
OR

YES/NO – Chlorpheniramine maleate adult dose 5-20 mg, IV, IM, or SQ injection as a single dose; tablets or syrup, 4 mg every 4-6 hours.

Severe Reactions (Anaphylaxis) manifest with all signs of symptoms of allergic reaction with skin rash, watery eyes and nose, abdominal cramps, wheezing, tachycardia, and hypotension.

It is important to have a plan or algorithm to guide treatment of a severe allergic reaction and impending cardiovascular collapse.

YES/NO – Stop administration of the antigen.

Follow the ABCs

YES/NO – Maintain an airway with supplemental oxygen

YES/NO – Support respiration and breathing

YES/NO – Support circulation by providing an IV route for volume loading with crystalloid solution. In the adult patient, rapidly infuse 1 L lactated Ringer's solution. For children, administer fluid boluses of 20 mL/kg of lactated Ringer's solution or normal saline

YES/NO – Administer epinephrine

Intravenous: Use a premixed solution of 1:10,000 (1 mg of epinephrine in 10 mL).

- Adults: Titrate 0.2 mg (2 mL) to 0.5 mg (5 mL) to effect and repeat every 2-5 minutes as needed. (Use with caution in patient with cardiovascular disease).
- Children: 0.01 mg/kg.

Intramuscular or Subcutaneous: If an IV route is unavailable, the drug can be administered IM or subcutaneously using a 1:1,000 (1 mg/mL).

- Adults: 0.3 to 0.5 mg of a 1:1,000 concentration. This dose may be repeated at 10-20 minute intervals based on patient response.
- Children: 0.01 mg/kg. This does may be repeated at 10-20 minute intervals based on patient response.

YES/NO – As epinephrine administration continues, an H1-antihistamine may be administered IM or IV. Diphenhydramine (Benadryl) can be given IV in a dose of 50 mg for adults and older children. The child 6-12 years of age receives 25 mg. An H2 blocker, such as famotidine (Pepcid), can be administered to adults IV starting at 20 mg. The dose for children older than 1 year is 0.5mg/kg IV up to 40 mg per day.

YES/NO – Albuterol inhaler can be administered at 4-5 puffs as needed (2-4 puffs for pediatric patient)

YES/NO – Administer corticosteroids: The use of corticosteroids has been advocated in the past to treat asthma, edema or intense pruritus. Although these drugs act too slowly to be life-saving in an acute anaphylactic episode, they are important in combating immunologic reactions and regaining homeostasis. Because of their slow action, they are the last drugs administered in the therapeutic regimen.

Options include the following:

- Hydrocortisone sodium succinate (Solu-Cortef) at a dose of 100 mg IV given slowly over one minute
- Dexamethasone (Decadron) at a dose of 4 to 12 mg given slowly over one minute IV or IM
- Doses can be repeated at intervals as determined by the severity of symptoms. Because anaphylaxis is an acute process,

corticosteroid use normally can be stopped after 36 hours without adverse sequelae.

#### YES/NO – Follow-up Measures

Pharyngeal edema and upper airway obstruction can occur and persist after the administration of epinephrine. Endotracheal intubation or tracheotomy may be necessary to secure an airway. If shock continues, the patient should be placed in a slight Trendelenburg position to provide circulatory support. If the patient develops dyspnea and wheezing, a semi-reclining position may be more helpful. If a significant decrease in blood pressure persists despite appropriate volume expansion and the use of epinephrine, an adjunctive vasopressor should be considered. (See section on treatment of hypotension for management of the problem)

Seizures may occur during allergic reactions and usually are due to circulatory and/or respiratory inadequacy. If convulsions persist after corrective measures have been taken to ensure cardiorespiratory sufficiency, diazepam, 1 mL (5 mg), can be administered IV for 1 minute, with midazolam (2.5 mg over one minute) used as an alternative. It is important to wait 2 minutes for the effect before giving another dose.

After successful treatment of a severe allergic reaction, the patient should be hospitalized and observed for 24 hours, receiving prophylactic antihistamines. Anaphylactic reactions have been known to recur after the initial effects of the counteracting drugs have worn off.

#### **Malignant Hyperthermia**

Following are the primary signs of impending MH:

- Increase in end-tidal carbon dioxide (doubling or tripling, may occur rapidly or during 10 to 20 minutes)
- Unexplained tachycardia, tachypnea, hypercarbia
- Generalized muscle rigidity
- Masseter muscle rigidity

- Hyperthermia (often a late sign)
- Respiratory and/or metabolic acidosis
- Sudden/unexpected cardiac arrest (consider as secondary to hyperkalemia and treat as such)

Contact telephone number: 1-800-MHHYPER (1-800-644-9737)

Emergency Treatment (Caution these protocols may not apply to every patient and may require alteration according to specific patient needs)

Acute Phase:

YES/NO – Immediately activate the EMS for patient transport and notify receiving hospital to prepare for continuing treatment of an MH patient

YES/NO – Immediately discontinue use of all volatile inhalation anesthetics and succinylcholine. Hyperventilate with 100% oxygen at high gas flows, at least 10 L/min. The circle system and carbon dioxide absorbent need not be changed.

YES/NO – Solubilize the dantrolene according to manufacturer's instructions. If using the older formula, (Dantrolene), it takes time to mix the solution, so it is recommended that 1 person be designated for this task.

YES/NO – Administer dantrolene, 2 to 3 mg/kg initial bolus rapidly, with increments up to a total of 10 mg/kg. Continue to administer dantrolene until signs of MH (e.g., tachycardia, rigidity, increased end-tidal carbon monoxide, and temperature elevation) are controlled. Occasionally, a total dose greater than 10 mg/kg may be needed.

YES/NO – Administer bicarbonate to correct metabolic acidosis, as guided by blood gas analysis. In the absence of blood gas analysis, administer 1 to 2 mEq/kg.

YES/NO – Simultaneously with the previous steps, actively cool the hyperthermic patient with IV cold saline (not Ringer's lactate) 15 mL/kg every 15 minutes 3 times

- Surface cool with ice and hypothermia blanket. A supply of ice or an ice machine is helpful for this purpose.
- Monitor closely because excessively vigorous treatment may lead to hypothermia.

YES/NO – Arrhythmias usually respond to treatment of acidosis and hyperkalemia. If they persist or are life threatening, use standard antiarrhythmic agents, except calcium channel blockers, which may cause hyperkalemia and cardiovascular collapse.

YES/NO – Determine and monitor end-tidal carbon dioxide concentrations; arterial, central, or femoral venous blood gases; serum potassium and calcium levels; clotting studies; and urine output.

YES/NO – Treat hyperkalemia with hyperventilation, bicarbonate, and IV glucose and insulin (10 U of regular insulin in 50 mL of 50% glucose titrated to potassium level or 0.15 U/kg of regular insulin in 1 mL/kg of 50% glucose). Life threatening hyperkalemia also may be treated with calcium (e.g., 2-5 mg/kg of calcium chloride).

YES/NO – Ensure urine output of greater than 2 mL/kg/h by hydration and/or administration of furosemide and additional mannitol, if necessary. Consider central venous or direct arterial monitoring because of potential fluid shifts and hemodynamic instability.

YES/NO – Sudden unexpected cardiac arrest in children: Children younger than 10 years old who experience sudden cardiac arrest after succinylcholine administration in the absence of hypoxemia and anesthetic overdose should be treated initially for acute hyperkalemia. In this situation, calcium chloride should be administered with other means to reduce serum potassium levels. Affected children should be presumed to have subclinical muscular dystrophy, and a neurologist should be consulted.

## **Part III**

### **Discussion**

This part of the inspection should be conducted in private with the practitioner being inspected.

YES/NO – Completed Simulated Emergencies

Comments:

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Recommendations/Remediation:

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Signatures of inspectors:

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Printed names of inspectors:

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License / Permit number of inspectors:

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

Signature of practitioner being inspected:

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Printed name of practitioner being inspected:

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

Practitioner being inspected must maintain an original or copy of this inspection for 5 years, WAC 246-817-774.

DRAFT