ADMA
ACADEMY OF DENTAL AND MEDICAL ANESTHESIA
EDUCATION • SAFETY • TRAINING

DENTAL OFFICE EMERGENCY PROCEDURES

For All Emergencies:

1. Stop the Procedure.
2. Continue to monitor vital signs.
3. Consider calling 911 early.

All complications should be addressed using the following algorithm:

(P) Position the patient

(A) Airway

(B) Breathing

(C) Circulation

(D) Definitive treatment consisting of differential diagnosis, drugs, and defibrillation.

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ADMA HYPOXIA AIRWAY ALGORITHM

START HERE

Is the chest rising & falling?

YES

NO

Is There Ventilation?

Use:

1. Capnography
2. Phonation
3. Auscultation

NO

Check for Obstruction

1. Anatomy
2. Foreign Body
3. Laryngospasm

YES

Is There:

1. Hypoventilation?
2. Partial Obstruction?

NO

APNEA

1. Visually clear the airway.
2. Account for inventory
3. Turn ER Oxygen system to 100% @ 15L/min.
4. Establish & maintain airway using positive pressure ventilation.
5. If unsuccessful, administer reversal.

Check for Bronchospasm

1. Listen for Wheezing
2. Cycle the Blood Pressure
3. Diagnose potential causes (Asthma, COPD, Aspiration, Anaphylaxis)

Allergic Reaction (Anaphylaxis)

1. Call 911 and cease administration of the antigen.
2. Maintain the airwaywith supplemental Oxygen facemask @ 6L/min.
3. Administer Epinephrine
    - Adults 0.3-0.5 mg IM every 10-20 min. based on patient response.
    - Children 0.01 mg/kg IM (dose may be repeatedevery 10-20 min. based on patient response.)
4. Administer Benadryl(diphenhydramine)
    - Adults 25-50 mg IV
    - Children 12.5-25 mg IV
5. Administer Albeuterol inhaler 4-6 puffs as needed to reducebronchospasm.
6. Administer corticosteroids (the use of these has been advocated to treat anaphylaxis). Consider:
    - Dexamethasone
        - Adults: 4-12 mg IV or IM x1
        - Children: 4mg IV or IM x1
    - Hydrocortisone sodiumsuccinate (Solu-Cortef) 100 mg IV given slowlyover one minute. (Peds 50 mg)
7. Set the IV solutions to the maximuminfusion rate in order to give 500-1000ml of crystalloid solutionwithin a 15-30 minute period.Appropriate solutions for anaphylaxis are lactated ringers, normal saline, or plasmalyte.

Checklist Complete

APNEA

1. Clear the airway & Suction
2. Administer positive pressure ventilation with an Ambu bag @ 100% Oxygen
    a. If a patient's O2 sats return to safe levels, proceed with treatment and continue to monitor O2 Levels
    b. If a patient's O2 sats do not improve:
        i. Place an OPA and continue positive pressure ventilation. If refractory,
        ii. Use an LMA to establish an airway. Call 911 and administer reversal agents

Reversal Agents:

NALOXONE (Opioid Reversal)
.2 mg IV /IM x1

(The Pediatric Academy recommends 0.1 mg/kg. However, this is far too aggressive)

FLUMAENIL (Benzodiazepinie reversal) 0.2 mg. IV/IM Ix

The published recommended PALS doses 0.01 mg/kg. This is too aggressive if the patient is awake at the beginning of the case.

CHECKLIST COMPLETE

Bronchospasm

FIRST

1. Cycle BP. If 30-40% below baseline, turn to the Anaphylaxis checklist.
2. Check Oxygen Saturation and auscultate the lung quadrants.

    a. If Oxygen Saturation is within 5 points of baseline and wheezing is mild, proceed to Bronchospasm - Moderate (See page 8).
    b. If Oxygen Saturation is more than 5 points below baseline or wheezing is severe, proceed to Bronchospasm - Severe (See page 9)

Checklist Complete

Bronchospasm - Moderate

1. Administer supplemental O2 via facemask@ 6L/min.
2. Administer 2-4 puffs of Albuterol via inhaler.
3. In 2-5 minutes, auscultate the lung fields and check Oxygen saturation.
    a. If O2 sats or wheezing worsens, proceed to Bronchospasm Severe on page 9.
    b. If O2 sats and wheezing remain the same, repeat albuterol treatment.
    c. If O2 sats and wheezing improve, you may proceed with treatment as long as you check for wheezing every 5 min.

Checklist Complete

Bronchospasm - severe

1. Halt surgery.

2. Call 911 and verify.

3. Administer supplemental O2 via facemask@ 6L/min.

4. Administer 2-4 puffs of Albuterol via inhaler. In 2-5 minutes, auscultate the lung fields and check Oxygen saturation.

    a. If O2 sats or wheezing worsens, administer 0.3-0.5 mg epinephrine IM. Pediatric 0.15-0.3 mg epinephrine IM. Re-check o2 sats and wheezing intensity after 5 minutes.

        i. If no improvement, re-administer 0.3-0.5 mg epinephrine IM. Pediatric 0.15-0.3 mg epinephrine IM
        ii. If there is an improvement, maintain oxygenation with supplemental o2 until emergency services arrive.

    b. If O2 sats and wheezing stay the same, consider 0.3 - 0.5 mg epinephrine (Pediatric 0.15-0.3 mg epinephrine IM). Monitor until ER services arrive.

    c. If O2 sats and wheezing improve, continue to halt surgery and maintain supplemental O2

Checklist Complete

Difficult airway algorithm

1. Chin Lift / Jaw Thrust

2. Pull the tongue forward, reposition the airway

3. Administer positive pressure ventilation via an Ambu Bag

4. If refractory, insert an OPA and continue PPV with an Ambu Bag

5. If refractory, place an LMA and concurrently:

    a. Call 911

    b. Administer the appropriate reversal agent(s)

        i. For Opioids: 0.2 mg naloxone IV/IM
        ii. For Benzodiazepines: 0.2 mg Flumazenil IV/IM

Checklist Complete

Emesis and aspiration

1. Place the patient in the Trendelenburg position with the head down at least 15 degrees and roll them onto their right side.
2. Clear any vomitous in the oropharynx with finger sweeps and large-bore suction.
3. If no improvement, place the patient in the supine position and intubate. It may be necessary to use muscle relaxants prior to intubation.
4. Remove any solid particles in the laryngeal region with Magills forceps at the time of intubation.
5. Oxygenate the patient as soon as possible and manage any bronchospasm if present.
6. Tracheobronchial lavage is not performed except for small volumes (5-10 mL) of saline to facilitate suction.
7. Maintain a patent airway and continue ventilation with 100% O2 en route to hospital.

Checklist Complete

FOREIGN BODY

1. Position the airway and remove the foreign body under direct visualization.

2. Consider repositioning the patient to use their intact airway to expel the foreign object.

3. Consider using the laryngoscope to directly visualize the foreign body.

4. Listen to both lung fields for residual bronchospasm.

CHECKLIST COMPLETE

HYPOVENTILATION

1. Do not administer any sedation medication during hypoventilation.

2. Place O2 nasal cannula @ 2L/min.

3. Ensure the patient's airway positioning is optimized.

4. Assess the patient's depth of sedation by talking to them and stimulating them.

    a. If the patient is in a deep state of sedation, control the airway with the Ambu Bag and mask ventilate until O2 saturations normalize.

    b. If the patient is in a moderate level of sedation, continue O2 therapy and stimulation to maintain O2 saturation.

CHECKLIST COMPLETE

LARYNGOSPASM

1. Suction the oropharynx, hypopharynx, and nasopharynx with a tonsil suction tip to remove all blood, saliva, and foreign material from the oral cavity.

2. Administer 100% oxygen with constant positive pressure ventilation via the Ambu bag. Hold pressure until laryngospasm breaks.

3. If O2 saturation becomes critical for greater than 60 seconds, administer one of the following agents to break the laryngospasm:
   a. 1.5 mg/kg Lidocaine IV
   b. 20 mg Propofol IV
   c. 20 mg Succinocholine IV

4. Upon laryngospasm breaking, provide appropriate ventilation and oxygenation with 100% oxygen via the Ambu bag.

5. As the patient's respiratory drive and mechanical ventilation normalize, assist each breath with additional positive pressure ventilation and 100% Oxygen until the patient successfully ventilates on their own

CHECKLIST COMPLETE

SEIZURE

1. Prevent injury to the uncontrolled unconscious patient.

2. Loosen clothing about the neck.

3. Place pillow under the head.

4. Place padded tongue bade between the teeth if evidence that the tongue is being traumatized.

5. Monitor cardiovascular vital signs, place 100% O2, and check the patient's blood sugar.

6. If the seizure does not resolve itself in 3-5 minutes or the patient becomes hypoxic:

    a. Control ventilation and maintain oxygenation.
    b. Administer Midazolam5 mg IV/IM x1 with airway support.

CHECKLIST COMPLETE

ANGINA PECTORIS

1. Call 911 and discontinue surgery.

2. If the patient reports a history of Angina Pectoris, treat with the patient's usual dose of Nitroglycerin.

3. If the patient does not report a history of Angina Pectoris, begin the MI protocol.

CHECKLIST COMPLETE

ASYSTOLE (CARDIAC ARREST) | PEA



1. Call 911 and verify.
2. Begin high quality CPR and call for the AED.
    a. CPR = 30 chest compressions followed by 2 breaths with Ambu Bag @ 15 L/min
    b. 15 chest compressions followed by 2 breaths for children
3. Place AED as soon as possible, evaluate with the AED, follow AED instructions.
    a. If the AED verifies non-shockable rhythm, resume high quality CPR and concurrently call for Epinephrine.
4. Administer Epinephrine 1 mg IV push followed by 10cc fluid flush.
    a. 0.01 mg/kg for pediatric patients
5. Circulate the Epinephrine with CPR for 2-3 minutes (about 6 cycles).
6. Check for a pulse, BP, and rhythm.
7. Resume high quality CPR.
8. Refer to the ACLS Algorithm for adults and refer to the PALS Algorithm for children.

CHECKLIST COMPLETE

BRADYCARDIA

1. If HR is <50and the patient is symptomatic with hypotension,

    a. Administer 250-300cc fluid IV.

    b. Administer 100% O2 @ 6L/min.

    c. Adjust the patient to a Trendelenburg position.

    d. Thoroughly investigate the possibility of an arrhythmia by examining the rhythm strip.

2. If still symptomatic, administer Atropine 0.3 mg IV (0.15 mg IV for pediatric patients).

    a. May repeat this dose every 10 minutes (up to 3 total times).

NOTE: The supplied 1mg pre-filled syringes are not effective for AV blocks.

Take precautions in the presence of MI and Hypoxia due to the increased O2 demand.

CHECKLIST COMPLETE

HEART ATTACK - MI - ANGINA PECTORIS



1. Call for 911 & an AED.

2. Terminate the surgery and all stimulation of the patient.

3. Administer Oxygen at 6L/min via non-rebreather face mask.

4. Ensure that you are fully monitoring the patient to specifically include the ECG. Set the BP cuff to cycle a reading at 1-minute intervals.

5. Verify the integrity of IV access.

6. Administer 325 mg Aspirin - ask the patient to chew and swallow it.

7. Administer one 440 mcg tablet of Nitroglycerin sublingually every 5 minutes if chest pain persists and the systolic BP is > 90.

8. Administer morphine 1 to 3 mg or fentanyl 25 to 50 mcg, IV every 5 minutes to control pain if systolic blood pressure is > 90. Watch carefully so the patient does not become overly sedated or lose respiratory drive.

9. Verify the AED is placed and on standby. Monitor vital signs closely. Watch for any new onset arrhythmias / cardiac arrest.

CHECKLIST COMPLETE

HIGH BLOOD PRESSURE - NON-EMERGENT

1. Define the blood pressure.

Systolic BP between 175 & 200 is in the non emergent range. Use this protocol.
Diastolic BP between 95 & 110 is in the non emergent range. Use this protocol.

For a systolic BP above 200, use the Hypertensive Emergency Protocol (see Page 21).
For a diastolic BP above 110, use the Hypertensive Emergency Protocol (see page 21).

2. Diagnose the cause:

a. Check for optimal local anesthetic conditions.

b. Ensure the patient does not need to void their bladder.

c. Check the patient's positioning.

d. Check the patient's level of sedation.

3. If Step 2 does not bring the patient's blood pressure down, temporarily pause surgery for 5-10 minutes and consider rescheduling if the patient's BP does not normalize.

Antihypertensives are dangerous to use for treatment of intrasurgical high blood pressures because when the surgery is complete the antihypertensive can drive the patient's BP to dangerously low levels

CHECKLIST COMPLETE

HYPERTENSIVE CRISIS / EMERGENCY

If Diastolic BP is >120 OR Systolic pressure is >200,

Esmolol

1. For immediate control dosing, administer 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.

2. For gradual control dosing (where there is time to titrate), administer a loading dose infusion of 500 mcg/kg/min for 1 minute followed with a 50 mcg/kg/min over 4 minutes.

3. If an adequate therapeutic effect is not seen in 5 minutes, administer a loading dose infusion of 500 mcg/kg/min for 1 minute followed with a 100mcg/kg/min.

Labetalol (a selective alpha 1 blocker, and non selective beta blocker)

1. Initial adult dose is 5 -20 mg IV over 2 minutes followed by 2 mg/min (maximum dose, 300 mg) IV infusion.

2. Onset 5 minutes, duration 3-6 hours.

Hydralazine (a direct vasodilator for patient who can tolerate an increase in heart rate and cardiac output but who has a history of asthma)

1. Initial adult dose is 5 mg IV, can titrate up to 25 mg.

2. Onset 5 minutes, duration 2 hours.

NOTE:
Therapeutic approaches to treating perioperative hypertension are directed at producing vasodilatation 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.

CHECKLIST COMPLETE

HYPOTENSION

1. Stop the procedure.

2. Place the patient in the supine position with legs elevated.

3. Administer 100% oxygen using mask or ambu bag.

4. Re-evaluate blood pressure, heart rate, and rhythm and treat arrhythmias.

5. Administer a bolus of isotonic fluid.

6. Titrate ephedrine or phenylephrine to preserve adequate systemic pressures (Ephedrine is generally used unless there is tachycardia and hypotension in which case phenylephrine may be a better choice.)

7. Ephedrine
   a. Dilute a 50 mg/mL vial in 9 mL of saline to make a 5 mg/mL solution
   b. Administer at a dose of 2.5 - 5 mg IV, which can be repeated until the blood pressure is stabilized
   c. The drug's effects occur in approximately 1 minute, peak at 15 minutes, and last approximately 1 hour.

8. Phenylephrine
   a. Dilute a single dose vial (10 mg/mL) in 9 mL of saline
   b. Discard 9 mL and dilute with an additional 9 mL of saline to create a 0.1 mg/mL concentration
   c. Administer via IV in 0.1 mg/mL increments until the desired effects are achieved. The effects are
      seen within 1 minute and last for approximately 20 minutes.

CHECKLIST COMPLETE

INTRA-ARTERIAL INJECTION

1. Recognize the Problem:
    a. Signs of intra-arterial injection may include severe pain on injection, blanching of the skin, or immediate signs of vascular spasm.
2. Cease Injection Immediately:
    a. Stop administering the medication as soon as intra-arterial injection is suspected.
3. Remove the Needle:
    a. Carefully and promptly remove the needle from the injection site to prevent further damage or complications.
4. Apply Pressure for a minimum of 5 minutes:
    a. Apply gentle but firm pressure to the injection site for at least 5-10 minutes to control bleeding and reduce the risk of hematoma formation.
5. Warm Compress:
    a. Apply a warm compress to the affected area to promote vasodilation and improve blood flow.
6. Administer Local Vasodilators:
    a. If available, inject 1% plain lidocaine (without epinephrine) around the site of injection to help relieve pain and reduce vascular spasm.
7. Elevation:
    a. Elevate the affected limb to promote venous return and reduce swelling.
8. Monitor for Complications:
    a. Observe for signs of ischemia, compartment syndrome, or embolic events.
    b. Monitor pulse oximetry and the distal pulse to ensure adequate circulation to the affected limb.
9. Transfer to Higher-Level Care:
    a. If signs of tissue ischemia, severe vascular spasm, or other complications develop, transfer the patient to a hospital for further management.
10. Documentation & Patient Follow-Up:
    a. Record the incident, including the suspected drug injected, volume, location of the injection site, and interventions performed. Schedule follow-up appointments to monitor for delayed complications, such as tissue necrosis or vascular damage.

Additional Notes: Prevention remains the best approach. Use aspiration techniques before injection to confirm the absence of blood return.

CHECKLIST COMPLETE

NEW ONSET CARDIAC ARRHYTHMIA WITH STABLE BLOOD PRESSURE

1. Call 911.

2. Place 100% Oxygen at 10 L/min via facemask.

3. Cycle BP cuff every minute and evaluate the rhythm.

4. Place the AED and evaluate.

5. Continually palpate radial pulse and monitor. If patient's BP or pulse fails, then turn to the appropriate ER Response page.

CHECKLIST COMPLETE

PHLEBITIS

1. If there is no infection, the treatment includes warm compresses and anti- inflammatory medications such as ibuprofen. Compression stockings may be helpful.

2. If an infection is present, symptoms may include redness, fever, pain, swelling, or breakdown of the skin. Refer to the MD for antibiotic treatment.

CHECKLIST COMPLETE

SYNCOPE

1. Immediately d/c the stimulation

2. position the patient legs up

3. Monitor the HR and BP

4. If the HR is below 50 bpm and the BP remains 20% lower, consider atropine 0.4 mg Iv x 1.

5. If no response, call 911 and consider epinephrine 0.1 mg IV x 1.

CHECKLIST COMPLETE

Tachycardia - Symptomatic

Narrow Complex Tachycardia with Regular Rhythm and HR >150 AND symptomatic.

1. Administer Adenosine

    a. Adults: 6 mg rapid IV push.
        i. May repeat up to 12 mg IV.
    b. Children: 0.1 mg/kg first dose.
        i. May repeat 0.2 mg/kg x2
        ii. Max incremental dose 6 mg.
        iii. Max total dose 12 mg.

· Adenosine is the drug of choice for stable narrow complex tachycardia.

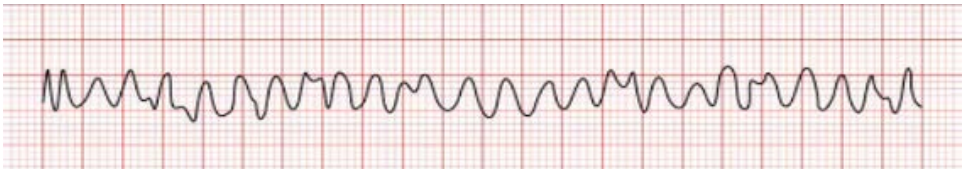
· It is effective in terminating those rhythms due to re-entry involving the SA or AV node.

· It does not convert A-Fib, A-Flutter or, V-TACH!

· Side effects flushing, chest pain, Asystole.

Checklist Complete

Ventricular Fibration



1. Call 911 and verify.
2. Begin high quality CPR and call for the AED.
    a. CPR = 30 chest compressions followed by 2 breaths with the Amby Bag @ 15 liters/minute of 100% Oxygen.
    b. 15 chest compressions followed by 2 breaths for children.
3. Place AED as soon as possible.
4. Evaluate with the AED, if it is a shockable rhythm follow the AED's instructions:
    a. After AED Delivers Shock, Resume 2 minutes of CPR as soon as shock is delivered.
    b. After 2 minutes of CPR, Check for pulse / AED analyze.
    c. After AED Delivers second Shock, Resume CPR as soon as shock is delivered.
5. Administer Epinephrine 1 mg IV push followed by 10 ml's of flush.
    a. Do not interrupt CPR during the administration of Epinephrine if possible.
    b. 0.01 mg/kg epinephrine for pediatric patients followed by 10 ml's of flush.
6. Circulate the Epinephrine with CPR for 2-3 minutes (about 6 cycles).
7. Check for a pulse, BP, and rhythm.
8. Resume high quality CPR.
9. Refer to the ACLS Algorithm for adults. For children, refer to PALS Algorithm.
    a. Both Algorithms are found at the end of the manual.

Checklist Complete

Ventricular Tachycardia -Pulseless



1. Call 911 and verify.
2. Begin high quality CPR and call for the AED.
    a. CPR = 30 chest compressions followed by 2 breaths with the Amby Bag @ 15 liters/ minute of 100% Oxygen.
    b. 15 chest compressions followed by 2 breaths for children
3. Place AED as soon as possible.
4. Evaluate with the AED, if it is a shockable rhythm follow the AED's instructions:
    a. After AED Delivers Shock, Resume 2 minutes of CPR as soon as shock is delivered.
    b. After 2 minutes of CPR, Check for pulse / AED analyze
    c. After AED Delivers second Shock, Resume CPR as soon as shock is delivered.
5. Administer Epinephrine 1 mg IV push followed by 10 ml's of flush.
    a. Do not interrupt CPR during the administration of Epinephrine if possible.
    b. 0.01 mg/kg epinephrine for pediatric patients followed by 10 ml's of flush.
6. Circulate the Epinephrine with CPR for 2-3 minutes (about 6 cycles).
7. Check for a pulse, BP, and rhythm.
8. Resume high quality CPR.
9. Refer to the ACLS Algorithm for adults. For children, refer to PALS Algorithm.
    a. Both Algorithms are found at the end of the manual.

Checklist Complete

HYPERVENTILATION SYNDROME

1. Maintain adequate oxygen levels while reducing carbon dioxide elimination.

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

i. Deliver oxygen at 600 mL/min.

ii. Have patient breathe into the circuit until the rebreathing bag is distended.

iii. Continue until episode subsides.

b. If using anesthesia reservoir or paper bag:

i. Have patient exhale and inhale into the paper bag 6-10 times/min

CHECKLIST COMPLETE

VENIPUNCTURE COMPLICATIONS

Hematoma

1. Apply pressure to the venipuncture site.

Extravasation

1. 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:

2. Infiltrate 1% plain lidocaine (xylocaine) at the site, if needed for pain.

3. Administration of ibuprofen, and possible use of steroids and antibiotics may be necessary to prevent or lessen the sloughing.

Phlebitis

1. Apply heat to the area.

2. Administer ibuprofen or other nonsteroidal anti-inflammatory drugs, steroids and antibiotics.

3. Limit motion to alleviate symptoms.

4. Seek appropriate consultation if severe symptoms persist beyond 3 or 4 days.

CHECKLIST COMPLETE

LOCAL ANESTHETIC TOXICITY

1. Immediately discontinue any further administration of the local drug.

2. Call 911.

3. Place patient in supine position.

4. Administer oxygen.

5. Maintain airway and initiate CPR.

6. Confirm or establish IV access.

7. Administer IV diazepam 5 mg over one minute titrated to effect OR IV midazolam 2.5 mg over one minute titrated to effect.

8. Continue to closely monitor vital signs.

CHECKLIST COMPLETE

Malignant Hyperthermia (1/3)

The 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, hyper-cardia
- 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.

1. Acute Phase

2. Immediately activate the EMS for patient transport and notify the receiving hospital to prepare for continuing treatment of an MH patient.

3. 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 to be changed

Cont on next page

Malignant Hyperthermia (2/3)

4. Solubilize the dantrolene according to manufacturer's instructions. If using the older formulation, (Dantrolene), it takes time to mix the solution, so it is recommended that 1 person be designated for this task.

5. 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 (eg, tachycardia, rigidity, increased end-tidal carbon dioxide, and temperature elevation) are controlled. Occasionally, a total dose greater than 10 mg/kg may be needed.

6. Administer bicarbonate to correct metabolic acidosis, as guided by blood gas analysis. In the absence of blood gas analysis, administer 1 to 2 mg/kg.

6. 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.

8. Surface cool with ice and hypothermia blanket. A supply of ice or an ice machine is helpful for this purpose.

9. Monitor closely because excessively vigorous treatment may lead to hypothermia.

10. 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.

11. 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.

12. 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 (eg, 2-5 mg/kg of calcium chloride).

Cont on next page

Malignant Hyperthermia (3/3)

13. 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.

14. Sudden unexpected cardiac arrest in children: Children younger than 10 years 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.

Checklist Complete

AIRWAY EQUIPMENT

- E-Cylinder > 1000 psi
- Regulator Check
- Ambu Bag Check
- Oral Airway
- LMA
- Suction
- Reversal Agents

CHECKLIST COMPLETE

Discharge Guide

1. Check and document that the patient is ALERT to PERSON, PLACE, and TIME

2. Check and document Respiratory Rate and Oxygen Saturation on room air

3. Check and document Heart Rate and Blood Pressure

4. Check and document a Walk Test

5. Check and document a Pain Scale (1/10) 1 = Least 10 = Most

6. A Wheel Chair must be used to transport the patient to their car

7. A Caregiver must be present for 12 hours

8. The Dentist must examine and sign the discharge sheet

Checklist Complete

Hypoglycemia

In a DiabeticPatient: hypoglycemia is indicated by a fasting blood sugar level of 70 milligrams per deciliter (mg/dL) or lower.

1. If the patient shows mental status changes or diaphoresis with low blood sugar levels, then treat with concentrated IV dextrose 50% (D50W). Administer 10-25 g of dextroseIV (20 g of oral dextrose concentrate can be used if there is no IV access).

2. Monitor blood sugar levels by re-checking blood sugar levels in 15 minutes.

    a. If the mental status changes and diaphoresis worsensor blood sugar levels do not improve re-dose 25 g of dextrose IV and re-check again in 15 minutes.

    b. If the blood sugar levels improve then continue to monitor blood sugar levels every 15 minutes until the patient is discharged.

Checklist Complete