

The Six Links of Survival™

Reference Guide

A Risk Management Resource for Medical Emergency Preparedness

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Background: The average response time for medical emergency services (EMS) to respond to a 911 call can be 11 minutes in an urban setting and 15 minutes in a rural setting. These times were based on the primary EMS unit being available and not already responding to another call, necessitating an alternate squad being dispatched. Consequently, dental offices should be prepared to manage a medical crisis for up to 30 minutes without outside assistance. The Six Links of Survival™ is a checklist of the educational needs and physical items necessary to fulfill the needs of a dental patient in that time period between the identification of a medical problem and the arrival of outside assistance.

Links 1, 2 and 3 are the Educational Links

Link 1 – Doctor Training

Link 2 – Staff Training

Link 3 – Mock Drills

Links 4, 5, and 6 are the Physical Links

Link 4 – Written Medical Emergency Plan

Link 5 – Medications

Link 6 – Proper Equipment

Link 1: Doctor training

✓Each dentist needs to take a Basic Life Support course at the healthcare provider level equivalent to those offered by American Heart Association or American Red Cross at least every two years. The AHA believes two years is the absolute maximum between reviewing the skills of BLS and many healthcare providers would benefit from more frequent study and/or practice. Depending on the nature of the dental practice, the medical health of the anticipated clientele and complexity of services offered, more frequent review may be appropriate.

✓Over the period of two years, a dentist shall take one or more courses on medical emergencies. The sum of the course(s) over the two-year period should cover all of the topics in the following three areas:

- 1) A review of normal physiology with an emphasis on the systems that play important roles during a medical emergency
 - Peripheral nervous system
 - Respiratory system
 - Cardiovascular system

- 2) The Six "P's" of Preparation for a medical emergency
 - Prevention: proper use of a medical history
 - Personnel: staffing requirements and task pre-assignments
 - Products: monitor, medications and airway adjuncts
 - Protocols: office manuals to develop a planned response
 - Practice: ongoing training and review
 - Pharmaceuticals: having the proper medication on hand

- 3) Recognition and response to medical problems common to dental offices
 - Syncope
 - Cardiovascular disease: angina, infarction and cardiac arrest
 - Blood pressure anomalies: hypertension and hypotension
 - Asthma
 - Anaphylaxis
 - Hyperventilation
 - Allergic reactions
 - Diabetes

- Seizures
- Sudden Cardiac Arrest (SCA)
- Cerebrovascular Accident (Stroke)
- Foreign Body Obstruction (FBO) with airway management
- Local Anesthetic Toxicity

✓ Although not universally available, dentists should favor training that is participatory in nature with hands-on involvement.

Link 2: Staff training

✓ Each member of the dental team needs to take a Basic Life Support course at the healthcare provider level equivalent to those offered by American Heart Association or American Red Cross at least every two years. The AHA believes two years is the absolute maximum between reviewing the skills of BLS and many healthcare providers would benefit from more frequent study and/or practice. Depending on the nature of the dental practice, the medical health of the anticipated clientele and complexity of services offered, more frequent review may be appropriate.

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✓Because a medical emergency can occur when the dentist is not physically on the premise (e.g. RDH general supervision) or the medical crisis may happen to the dentist, all staff need to be trained on how to handle an emergency with the participation of the dentist.

✓Although not universally available, dentists should favor training for their staff that is participatory in nature with hands-on involvement.

➤Dentists shall develop a mechanism to train newly hired staff to be competent and productive members of the entire team during a medical emergency.

Link 3: Mock Drills

✓Mock drills of medical emergencies should occur monthly but no less than every other month.

✓Attendance, date of the drill and topic covered should be documented.

✓Mock drills should not be a mere lecture, but an opportunity for interaction of the staff with the dentist. Equipment used in a particular scenario should be demonstrated.

✓All of the following topics should be covered within your mock drills:

- Individual staff assignments during any medical emergency
- Syncope
- Cardiovascular disease: angina, infarction and cardiac arrest
- Blood Pressure Abnormalities: Hypertension and hypotension

- Asthma
 - Anaphylaxis
 - Hyperventilation
 - Allergic reactions
 - Diabetes
 - Seizures
 - Sudden Cardiac Arrest (SCA)
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 - Local Anesthetic Toxicity
- ✓ Mock drills may be developed within the office or purchased from an outside vendor.

Link 4: Written Medical Emergency Plan

- ✓ Each dental office shall have a written medical emergency response plan.
- ✓ The plan shall be kept in an easily accessed area in the clinical portion of the dental facility although multiple placement of the plan may be appropriate in some offices.
- ✓ The plan must contain all of the following
 - 1) Specific task assignments for each member of the dental team, both full and part time. Attention needs to be paid to making sure all tasks are covered even with a reduced staff.
 - 2) General instruction on calling medical emergency services (EMS), including the address and best point of entry into the office for EMS.
 - 3) A general review of CPR guidelines, airway management and patient positioning (Trandelenberg and Semi-Fowlers).
 - 4) A list of the signs and symptoms and an algorithm outlining the appropriate response for each of the following situations.

- Syncope
- Cardiovascular disease: angina, infarction and cardiac arrest
- Hypertension
- Hypotension
- Asthma
- Anaphylaxis
- Hyperventilation
- Allergic reactions
- Diabetes
- Seizures
- Sudden Cardiac Arrest (SCA)
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✓Office offering dental hygiene services under general supervision should also have a set of supplemental algorithms for circumstances specialized for when the dental is not on the premises.

✓The medical emergency response plan may be either made by the individual office or purchased from a vendor and supplemented with office-specific information.

Link 5: Medications

✓The list of emergency medications varies in dental offices based on the nature of the dental practice, the medical health of the anticipated clientele and complexity of services offered. However, the following seven medications are needed in all dental office settings. (Note: Oxygen, although technically a medication, is covered under equipment because of its heavy dependency on the related armamentarium.)

- Aspirin, 81 mg chewable tablets, 1 bottle of 25
- Albuterol inhaler, one unit
- Nitroglycerin, 0.4 mg, tablets or spray
- Diphenhydramine, 50 mg/cc, 2 ampules
- Epinephrine, 1 mg/cc (1:1000), 2 ampules * see below
- Ammonia inhalants, 1 box of 10
- Glucose tablets, 15 mg/tablet, 1 vial of 10 tablets and 1 tube of instant glucose

✓Office not routinely loading syringes are encouraged to purchase epinephrine and a pre-loaded device such as a Twin-jet or EpiPen. (Note: Some states do not permit EMS units to carry epinephrine. Epinephrine has a short half-life and may need to be re-administered. Consequently, the inventory of epinephrine may need to be increased based on the length of time it takes for EMS to respond and transport to a hospital emergency department.)

✓An adequate number of the following syringes need to be available for the delivery of the medications via subcutaneous, intramuscular or sublingual techniques.

- 1cc / 25 Ga X $\frac{5}{8}$ in.
- 5cc / 22 GA X 1 in.

✓A designated person shall be assigned the task of checking the inventory of medications to assure that none will expire before the next anticipated inspection. Inspections should occur at regular intervals (e.g. beginning and ending of daylight savings time).

Link 6: Equipment

✓Monitors

- Glucose monitor (Inspection is required to assure the battery is working and the test strips have not expired.)
- A stethoscope
- A method of taking blood pressures
- Aneroid sphygmomanometers typically are made with the cuff permanently attached. Therefore multiple sizes are necessary. A typical dental office needs at least three sizes available: adolescent (or small adult), standard adult and large adult. The anticipated clientele of a practice (e.g., pediatric dentistry) may require different or a wide range of sizes.
- Automatic blood pressure machines designed for home monitoring are inaccurate at low blood pressures and should not be relied upon during an emergency.
- Hospital-grade automatic blood pressure machines may be reliably used during an emergency. However, a manual backup should be available in the event of device failure.

✓Oxygen

- Source

- A portable oxygen source (E-tank, holding apparatus, regulator and universal oxygen port.)
 - A supplemental oxygen source (This may be a second E tank of oxygen or a nitrous oxide unit.)
 - A portable nitrous oxide unit with multiple oxygen tanks meets the requirement for both an oxygen source and a reserve, if it is fitted with a universal oxygen port.
- Supplies to Supplement a Breathing Patient
 - Nasal cannula (3)
 - Non-rebreathing masks (3)
 - Supplies to Assist a Non-breathing Patient
 - A set oral-pharyngeal airways in seven sizes
 - A pocket mask
 - A disposable bag-valve-mask (commonly called a BVM or Ambu® bag)
 - Supplies to Assist a Patient with an Obstructed Airway That Cannot Be Cleared By Non-Invasive Means
 - A commercially available cricothyrotomy kit
- or
- 10 Ga. Angiocatheter
 - 5 cc Syringe with the needle removed
 - No. 7 Endotracheal tube

✓Other Supplies

- Paper bag
- Backup Suction
- Magill Forceps
- Thermometer
- Medical tape
- Flashlight
- Penlight
- Pen and paper to record history of the event (Commercial forms are also available)