

The Six Links of Survival™

Reference Guide

A Risk Management Resource for Medical Emergency Preparedness

Developed by

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Background: The average response time for emergency medical 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.

Educational Links

Link 1: Doctor Training

Link 2: Staff Training

Link 3: Mock Drills

Link 1: Doctor Training, **Link 2: Staff Training** and **Link 3: Mock Drills** are known as the Educational Links. Educational link compliance demands a consistent pursuit of updated knowledge, data, and information on emergency medicine within the dental office. The training received in dental school or even last year, cannot be assumed sufficient for modern medical emergency response. As with all science and technology, the disparity gap widens quickly as our knowledge base and equipment access is ever-widening. Education vigilance incorporates a system of medical emergency updates akin to consistently monitoring the temperature of a patient. It is vital to track progress to create an MEP sustainable environment. This is a process of continual quality and

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education improvement. The C.O.R.E. 16 (Critical Office Resuscitation Emergencies) are unpredictable in nature and the industry continues to learn better, safer means of responding to these issues; therefore, the Educational Links are paramount in preparing the dental team.

The decisions regarding formal and in-office training for medical emergencies are unique to each office setting; but dentists and their staff can use the acronym "**PREPS**" to make sure they are adequately addressing these training needs.

P = Participatory courses and drills are preferable.

R = Renew BLS and other life support courses every 2 years.

E = Everyone in the office should participate in BLS and CE related to medical emergency preparedness.

P = Practice on a regular basis with in-office emergency drills.

S = Stay current by regularly taking medical emergency CE courses.

Once the Educational Links are fully instituted in your practice, they should continue for the lifetime duration of your practice without interruption or discontinuance as this greatly compromises the integrity of the office's safety and readiness.

Link 1: Doctor Training

The dentist is the core of the Six Links of Survival™. Each of the other links depends upon the strength of the dentist's professional leadership. As such, the dentist must participate in an Emergency Medicine lecture either in person or online to stay current with the latest available information on Medical Emergency Preparedness (MEP).

MEP is of the utmost importance to you, your staff, your patients and the facility; and it is vital that each member becomes familiar with both the acronym and the message. MEP is the heartbeat of the rescue operation. The Six Links of Survival™ covers every topic necessary for readying a dental unit to competently handle a crisis; it is the culmination of decades of research and literature on the topic. Six Links of Survival™ training promises your patients and staff the most comprehensive, up-to-date MEP knowledge and skills in the industry.

Basic Life Support (BLS) is imperative. **Every dentist** must complete the BLS for the Healthcare Provider course that is equivalent to those offered by

both the American Heart Association (AHA) and the American Red Cross (ARC). BLS is to be taken at least once every two years under the advisory of the AHA which holds this as the maximum interim duration. Depending on the patient mix and patient acuity of the facility, more frequent reviews may be appropriate.

The dentist is the team leader, and when a medical emergency occurs, is expected to guide with efficiency and effectiveness. MEP training must include this sense of importance and urgency in order for the entire team to grasp the gravity of this preparatory instruction.

Highlights

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
- Cardiovascular System
- Respiratory System

2. The Six “P’s” of Preparation for a medical emergency

1. **Prevention:** proper use of a medical history
2. **Personnel:** staffing requirements and task pre-assignments
3. **Products:** monitors, AEDs and airway adjuncts
4. **Protocols:** office manuals to develop a planned response
5. **Practice:** ongoing training and review
6. **Pharmaceuticals:** having the proper medication on hand

3. Recognition and response to the C.O.R.E. 16 (Critical Office Resuscitation Emergencies) common to dental offices

1. Syncope
2. Angina
3. Myocardial Infarction
4. Cardiac Arrest
5. Hypertension
6. Hypotension
7. Asthma
8. Anaphylaxis

9. Hyperventilation
10. Allergic Reactions
11. Diabetes (Hypoglycemia)
12. Seizures
13. Sudden Cardiac Arrest (SCA)
14. Cerebrovascular Accident (Stroke)
15. Foreign Body Obstruction (FBO) with Airway Management
16. Local Anesthetic Toxicity

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

Link 2: Staff Training

The importance of staff training cannot be overstated. Both the Dentist and the Staff members should jointly attend an Emergency Medicine lecture, either in person or online, to stay current with the latest information, techniques, and technologies in Medical Emergency Preparedness (MEP). The Staff is comprised of the Dental Hygienists, the Dental Assistants, and the Front Office Personnel - each of which is vital to crisis outcome and patient safety. Therefore, each of these members must be incorporated into the MEP training initiative to guarantee complete facility readiness.

Because a medical emergency can occur when the dentist is not physically on the premise (e.g. Registered Dental Hygienist (RDH) general supervision) or the medical crisis may happen to the dentist, all staff need to be trained on how to handle an emergency without the participation of the dentist. Currently, RDHs are allowed to administer local anesthesia in 44 states; undoubtedly, they will need comprehensive training in handling an adverse reaction that may occur before, during, or after the injection is received. Similarly, assistants work side-by-side with the dentist and are essential to the team. Likely, they will be one of the first people who witness the medical crisis. Without proper knowledge, valuable moments can be lost in confusion or in a slow reaction to crisis signs and symptoms. Also, the front office personnel facilitate front end action, including overseeing the reception area where events may occur, as well as guiding EMS into the office during a medical emergency. The question is not if staff should be trained, but when and how; our answer is urgently and excellently. Crises are not to be denied, but confronted; and total-staff training arms the office with the competence and confidence to achieve this task.

The MEP acronym and meaning should become part of your team's language fluency and awareness activity. MEP is the critical lifeline for the

successful rescue of a distressed patient in your office. The Six Links of Survival™ covers every area that your Staff will need to know to be fully prepared for an emergency situation. The Six Links™ is the merging of decades of research and expertise - the core response that is addressed in every book, article, and blurb on crisis management. The Six Links™ is the nucleus of authentic life-affirming action. It is imperative that every member of the dental team, particularly the staff, be MEP ready and able to fill-in for other members if necessary.

Part of this commitment includes taking the Basic Life Support (BLS) for Healthcare Provider course that is equivalent to those offered by American Heart Association (AHA) or American Red Cross (ARC) at least every two years. AHA states that two years is the absolute maximum time allowable between BLS course completion and that healthcare providers would benefit from more frequent study and practice. Patient mix and patient acuity determines the degree of complication prediction which translates into increased BLS frequency; however, it is crucial to remind the dental team that medical emergencies happen at any time, at any place, to anyone; the issue is whether your staff is ready to respond.

The staff team will assist the team leader if and when a medical emergency occurs in your office. These events are unannounced and unforeseeable. Your role as the TEAM leader requires that you are fluent in MEP response and that your staff is similarly skilled in this area as every second counts in patient suffering and even death. Now is the time to get ready and stay ready.

Highlights

Over the period of two years, each member of the dental team 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:

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16. Local Anesthetic Toxicity

Please Note: 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 medical emergency drills are paramount for preparation. These should be performed on a monthly basis, with a set date and time to maintain consistency. Most importantly, the tone of the drill should be serious; otherwise, the likelihood is that the instruction will be undermined. Annual drills are not sufficient due to employee turnover and insufficient exposure to the material. The “once a year” mentality sets the staff up for failure instead of success.

Consider this: if you had to perform CPR/BLS/PALS/ACLS right now, would you be able to? What are the correct steps, life-saving tips - what first and when? If you are honest with yourself, there is a great chance that you will confront more questions than answers. Recertification is mandatory every two years; however, this minimum is far below optimal. AED use is a perfect example of this natural disparity: could you seamlessly operate this life-saving technology without pause?

The point is that training is a continual and repetitive process. This fact should be stressed in your offices. Mandatory attendance by all members should be expected and documented. Each member has a unique role in a medical emergency and should be expertly prepared to fill that need according to the office's individual medical emergency response plan. This includes total participant knowledge of the plan itself, the contents and uses of the emergency drug kit, as well as the location and operation of the AED. It is also plausible that a member, including the dentist, may be unavailable; therefore, each member should be able to substitute in other positions and the emergency plan should flow without hindrance.

Highlights

- **Mock drills of medical emergencies should occur monthly but no less than every other month.**
- **All of the following C.O.R.E. 16 (Critical Office Resuscitation Emergencies) common to dental offices should be covered within your mock drills:**
 1. Syncope
 2. Angina
 3. Myocardial Infarction
 4. Cardiac Arrest
 5. Hypertension
 6. Hypotension
 7. Asthma
 8. Anaphylaxis
 9. Hyperventilation
 10. Allergic Reactions
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- **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.**
- **The date, topic covered and list of attendees should be documented.**

Please Note: Mock drills may be developed within the office or purchased from an outside vendor.

Physical Links

Link 4: Medical Emergency Plan

Link 5: Emergency Drug Kit

Link 6: Proper Equipment

Link 1: Medical Emergency Plan, Link 2: Emergency Drug Kit and Link 3: Proper Equipment are known as the Physical Links. The dental team will be accountable for authoring a medical emergency plan specific to their office as well as purchasing the appropriate equipment and necessary emergency medications for their reserves. Action is needed to achieve each of these three links individually. These actions must be taken seriously and in conjunction with the Educational Links. This creates one complete chain cycle known as the Six Links of Survival™.

The C.O.R.E. acronym, meaning Critical Office Resuscitation Emergencies, delineates the primary 16 medical emergencies. Another “CORE” exists to aid in the retention of the Physical Links; this CORE is referred to as Critical Operatory Response Equipment. It consists of the three facets of the Physical Links which a dentist and team will need to access; these are: 1) a written, visible medical emergency plan, 2) all emergency medications, and 3) all proper medical equipment.

The Medical Emergency Plan is the action blueprint; once designed, it must be built into the facility through continual development, maintenance, and practice. This document must be visible at all times and easily accessible for quick retrieval.

Seven foundational medications plus oxygen are required in all dental offices. For ease in remembering, the algorithm A – G, O is used. **Please note:** Oxygen, although technically a medication, is covered under equipment because of its heavy dependency on the related armamentarium.

A = Aspirin (MI)

B = Bronchodilator (inhaler for use in asthma)

C = Coronary Artery Dilator (e.g. nitroglycerine)

D = Diphenhydramine (histamine blocking agent)

E = Epinephrine (cardiac arrest, anaphylaxis, some asthma)

F = Fainting (ammonia inhalants to stimulate CNS during syncope)

G = Glucose (hypoglycemia)

O = Oxygen

Compliance with the Physical Links is a task to be nurtured by the entire dental team in that medications and equipment need maintenance and monitoring to ensure proper functionality. Proper equipment working condition can only be assured by constant review, testing, and use in mock drills. Emergency medications can be maintained by monthly monitoring and a system of First-In, First-Out use and replacement. Expired medications are unacceptable and potentially dangerous if an emergency arises.

Advance anesthesia techniques demand the availability of more advanced emergency medications in addition to those previously listed.

Link 4: Written Medical Emergency Plan

A medical emergency plan or emergency response plan is required in every dental office. This is simple logic. This plan needs to be easily located and visible at all times where it can serve as reminder and guide to the team. The plan should have a Team Leader, the Dentist, as well as a backup who is capable of filling in if needed. Each member of the team will be assigned specific duties and this role should be second nature to the member, meaning that these duties, as indicated on the plan, should be understood thoroughly and without a doubt. Most importantly, each position should have a substitute should a team member be absent from the office. When a medical emergency occurs, the response should be well-organized, tightly controlled, and expertly executed with all members quickly and calmly alerted. This streamlined process includes an alarm system, paging system, lighting system, or some other means of immediately communicating the emergency to all team members to activate the planned response.

The team leader is responsible for recognizing and initiating the decision to notify EMS. When the EMS order is given, one team member is in charge of making that call. There can be no confusion whether EMS has been contacted. Additionally, it is advisable to become familiar with EMS services in your area. Estimated time of arrival to your office in the event of an emergency should be identified prior to any actual occurrence. The average EMS response time for urban areas is 11 minutes and 15 minutes for rural areas. However, this wait can be longer if EMS is occupied or circumstances prevent expediency. Time is critical and therefore cannot be discounted. There is no embarrassment in calling EMS; a false alarm is better than a funeral. **If in doubt, call EMS out!**

Highlights

1. **Every dental office shall have a written medical emergency response plan.**
2. **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.**
3. **The plan must contain all of the following**
 - 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.
 - General instruction on calling emergency medical services (EMS), including the address and best point of entry into the office for EMS.
 - A general review of CPR guidelines, airway management, and patient positioning.
 - A list of the signs and symptoms and an algorithm outlining the appropriate response for each of the following C.O.R.E. 16 (Critical Office Resuscitation Emergencies) common to dental offices.
 1. Syncope
 2. Angina
 3. Myocardial Infarction
 4. Cardiac Arrest
 5. Hypertension
 6. Hypotension

7. Asthma
8. Anaphylaxis
9. Hyperventilation
10. Allergic Reactions
11. Diabetes (Hypoglycemia)
12. Seizures
13. Sudden Cardiac Arrest (SCA)
14. Cerebrovascular Accident (Stroke)
15. Foreign Body Obstruction (FBO) with Airway Management
16. Local Anesthetic Toxicity

Please Note: Offices offering dental hygiene services under general supervision should also have a set of supplemental algorithms for circumstances when the dentist 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: Emergency Drug Kit

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. All members either administering or assisting with the administration of the drugs during an adverse event must have an in-depth understanding of the associated practical uses and complications of each specific drug. 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). Finally, a system of First-In, First-Out use and replacement should be implemented.

Highlights

The following seven emergency medications should be known by name and function. They are the foundational medications that are required in **all** dental offices. **Multiple doses of each of these medications should be kept on hand at all times. Please Note:** Oxygen, although technically a medication, is covered under equipment because of its heavy dependency on the related armamentarium.

1. Aspirin
2. Albuterol Inhaler

3. Nitroglycerin
4. Diphenhydramine
5. Epinephrine
6. Ammonia Inhalants
7. Glucose Tablets

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.

*Offices not routinely loading syringes are encouraged to purchase epinephrine and a pre-loaded device such as a Twin-jet or EpiPen.

Please 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.

Link 6: Proper Equipment

The following is a comprehensive list of the fundamental equipment necessary for MEP readiness in your office. Even if the entire team is expertly trained, these items are irreplaceable and highly important to your facility and patient's safety. Your staff must understand the purpose of each item as well as how to use or operate these efficiently and effectively. In many cases, this will require further training (i.e. AED) and frequency of use to gain a familiarity with the practical application of these life-saving machines and products. Mock drills and open forum discussions are ways to gain this mastery. Additionally, it is vital to perform routine maintenance and equipment checks often, tracking these dates, times, and surveyors to ensure that the equipment is kept in optimal operational capacity. Equipment updates, information, and education are also essential to maintaining a Six Links of Survival™ office. The proper training, the proper plan, and the proper equipment allow the proper people to provide patient safety - always.

Highlights

Automated External Defibrillator (AED)

- The only treatment for Sudden Cardiac Arrest (SCA), use of AED is taught in all CPR/BLS courses

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)

An office that has the Six Link of Survival™ in place on a continual, active basis is a patient-rescue-ready office. If not, the safety and wellbeing of staff and patients is threatened. If your office is Six Link™ ready, take advantage of listing your practice on the RMBF, Inc. website free-of-charge by taking the Six Links™ Pledge. A great initiative deserves to be celebrated. Join the list and let your patients know that your word is your promise and your promise is protection. <http://www.rmbfinc.org/six-links-of-survival/pledge/>

If you need vendor assistance in preparing for Six Links completion, please visit RMBFINC.org for a list of companies that have partnered with us by donating a portion of their sales back to the foundation as a means of advocating for MEP. Each step and each dollar is a gift of compassionate care for pediatric patients.