# Six Links of Survival

**Medical Emergency Readiness for Dental Assistants**

## The Six Links of Survival for Dental Assistants

### Overview

The Dental Assistant will be supporting the dentist when a medical emergency event occurs with a patient. The Dental Assistant will be the *"Very First, First Responder".*

As the *Very First, First Responder*, you must know that medical emergencies can happen anywhere at any time.

The **Six Links of Survival** will assist you to expertly recognize, identify, and respond to medical emergencies that can occur while treating dental patients. Here is an overview of the six links:

LINKS 1, 2, and 3 are the ***Educational Initiatives:***

- Link 1 – Dentist Training
- Link 2 – Staff Training
- Link 3 – Mock Practice Drills

LINKS 4, 5, and 6 are the ***Physical Initiatives***

- Link 4 – Written Medical Emergency Plan
- Link 5 – Emergency Medications
- Link 6 – Emergency Equipment

Obtaining the required education and physical items in the **Six Links of Survival** will not only prepare you, it will protect you, your dentist, and your patient should a medical emergency happen in your office.

# Six Links of Survival for Dental Assistants

The material used to develop this guide is a compilation from various texts, literature and the clinical experience of the authors. It is designed to be concise and emphasize what preparation is needed to respond to the most likely medical emergency situations for the Dental Assistant.

## Why You Need this Guide

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 are actual response times and are based on the primary EMS unit being available and not already responding to another call. If an alternate EMS squad must be dispatched, the response time will be longer. Consequently, dental offices should be prepared to manage a medical crisis, without outside assistance, for up to 30 minutes.

**The Six Links of Survival** is an overview 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.

A trained Dental Assistant could be the difference between Life or Death of a patient during that time. If Dental Assistants serve as the “gate keeper” for getting and maintaining a solid foundation in medical emergency preparedness, and if they serve as the Patient Safety Coordinator, and if they insist on implementing the necessary actions to make that dental office safe on a continual basis, the patient is more likely to survive before help arrives.

It should be noted that adverse outcomes and death may result even if the dental team is ready, and the emergency is handled correctly. However, education, preparation and repeated rehearsal by the entire dental team will optimize the chances of a favorable result.

# Six Links of Survival for Dental Assistants

## Why This Guide was Prepared

This guide was created to prepare the dental healthcare team when a medical or sedation emergency occurs during a patient's dental visit. The Dental Assistant is the key component of that team and must be ready to assume a crucial role.

It is not enough to have an emergency drug kit. Many facilities have an emergency drug kit but are unprepared for the actual emergency when a drug kit might be needed. The time to become familiar with the emergency kit, and all of the actions that go with using the kit, is not during a crisis but prior to the emergency through continuing education and mock emergency drills.

Additionally, a medical emergency plan should be developed so that every person knows and understands his/her role during a medical emergency event. This creates more efficient and effective treatment during the emergency.

The Dental Assistant plays the most crucial role in having the dental office ready for medical emergencies. Armed with the information in this guide, you will be prepared to assume your role and duties in emergency preparedness and in actual office emergencies. The key to properly preparing for and managing a medical emergency is education, training, and experience.

This guide also contains foundational information on various disease states that will assist the dental healthcare team in lifelong learning related to these subjects. More and more people are seeking dental care and many of these patients will have some form of a medically-compromised state. This guide will prepare you for these complex patients.

# Six Links of Survival for Dental Assistants

Remember, you will be the…

*"Very First, First Responder"*

## Disclaimer



AAFDO and authors of this guide are NOT responsible (as a matter of product liability, negligence or otherwise) for any injury resulting from any material contained herein. This publication contains information relating to general principles of medical care which should not be construed as specific instructions for individual patients. Manufacturers' product information and package inserts should be reviewed for current information, including contraindications, dosages, and precautions.

# Six Links of Survival for Dental Assistants

## Link 1: Dentist Training

**Basic Life Support Certification** - Each dentist needs to complete, at least every two years, a Basic Life Support course at the healthcare provider level equivalent to those offered by American Heart Association or American Red Cross. 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.

**Medical Emergencies Continuing Education** - Over the period of two years, a dentist should take one or more courses on medical emergencies. Although not universally available, dentists should favor training that is participatory or experiential in nature with opportunities for hands-on practice.

Regardless of state licensing requirements, course(s) completed during 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 of, and timely and effective response to, medical problems common to dental offices, including:

- 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

# Six Links of Survival for Dental Assistants

## Understanding Patient Risk Factors

Patients with these risk factors increase the risk of a medical emergency:

1. Geriatric patients
2. Pediatric patients
3. Medical advances prolonging life
4. Advanced Surgical techniques
5. Longer procedure times on patients
6. Increased use of local anesthetics, sedatives, narcotics, analgesics, & antibiotics
7. Increased drug combinations such as local anesthetics, sedatives, & narcotics
8. Medically-compromised patients either having one disease or multiple diseases such as diabetics, hypertensives, stroke victims, dialysis patients, hepatic patients, & immunocompromised patients.
9. Medications for one disease state as in #8 or multiple medications for multiple disease states
10. Coronary Artery Disease, and/or Peripheral Vascular Disease
11. Non-compliant patients in regard to their pharmacological therapy
12. Obese patients
13. Obstructive Sleep Apnea

# Six Links of Survival for Dental Assistants

## Mitigating Patient Risk Factors

One of the best ways to reduce the risk of a medical emergency occurring in the dental office is training in how to best use the patient's history and physical examination for risk reduction. (Please note the use of the word "reduce" as risk can be reduced but cannot be totally eliminated.)

You must collect adequate information to establish a complete baseline history on all new patients and an adequate updated history on patients returning to the office. Each dental office should design a history and physical format that works best for them. Subjects that should be covered in your history and physical format include:

- Baseline history
- Medications
- Past/current medical conditions
- Allergies*
- Need for, and results of, medical consultation(s)
- Baseline vital signs – pulse, blood pressure, respirations, & temperature
- ASA Classification
- Airway Classification (Mallampati)
- Body Mass Index (BMI)

*Allergies must be covered in detail, so the dentist is made aware of any known pre-existing allergies, either to environmental agents or medications. Allergic reactions in the dental office can result in serious life-threatening symptoms. Recognizing any predisposing allergic history may avoid this life-threatening emergency from occurring.

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After evaluating the history, the general health, and the current physical evaluation determine if the patient requires medical consultation. The decision to seek medical consultation should be documented in the patient's record. The reason for the consultation as well as the outcome of such consultation should be clearly indicated in the record so both the dentist and staff are aware of the consultation result for each subsequent patient visit.

The physical examination that the dentist provides for each new patient, and for every recall, should include a recording of the patient's vital signs. As a minimum, recordings should include blood pressure, heart rate, respiratory rate and temperature. Pulse oximetry is a great adjunct as it gives you a baseline on the room air oxygenation saturation rate.

This information should be available and readily accessible in every patient's chart in the event a medical emergency were to occur. The team would then be able to compare the patient's status during the emergency with the baseline data recorded in the chart. Also, EMS personnel, if called, will upon arrival be able to conduct a comparison of the patient's data.

If your practice does not have tool to mitigate patient risk factors, please visit the AAFDO website and download the Patient Risk Factor Matrix. This tool uses the H&P results and calculates your patient's risk factor score using a combination of:

- ASA Classification
- Metabolic Function
- Body Mass Index
- Blood Sugar Level
- Apnea Hypopnea Index
- Medications

The tool then provides expert guidance on treatment options based on the Risk Factor score calculated from the Matrix.

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## Training to Interpret and Use ASA Classifications

Every dentist providing sedation or anesthesia services must understand how to effectively us the American Society of Anesthesiologists (ASA) Classification of Physical Status.

**ASA 1**: A normal, healthy person

**ASA 2**: A person with mild to moderate Systemic disease that does not limit function

Examples: Diabetes Mellitus, Obesity, Essential Hypertension, Bronchitis

**ASA 3**: A person with severe systemic disease that limits the person's function

Examples: Uncontrolled Hypertension, Angina Pectoris, History of Myocardial Infarction, Poorly controlled Diabetes Mellitus

**ASA 4**: A person with severe disease that is life-threatening with or without surgery

Examples: Congestive Heart Failure, Persistent Angina Pectoris, Advance Heart, Renal or Pulmonary Dysfunction

**ASA 5**: A moribund person who is not expected to survive regardless of surgery

Examples: Ruptured aortic abdominal aneurysm, Pulmonary Embolus

**ASA E**: A person who needs emergency surgery

## Link 2: Staff Training

**Basic Life Support Certification:** Each member of the dental team needs to complete, at least every two years, a Basic Life Support course at the healthcare provider level equivalent to those offered by American Heart Association or American Red Cross. 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**.**

**Advanced Life Support for Dental Assistants (ALSDA) Certification:** Dental Assistants should complete this highly specialized course that equips the Dental Assistant to take the lead role in maintaining and preparing the dental office for office-based medical emergencies.

**Medical Emergencies Continuing Education**: Over the period of two years, staff members should take one or more courses on medical emergencies. A minimum of 12 hours of continuing education is recommended. Although not universally available, staff should favor training that is participatory or experiential in nature with opportunities for hands-on practice.

Regardless of state licensing requirements, course(s) completed during 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, including:

- 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, including:

- Syncope
- Cardiovascular disease: angina, infarction and cardiac arrest
- Blood pressure anomalies: hypertension and hypotension
- Asthma
- Anaphylaxis
- Hyperventilation
- Allergic reactions
- Diabetes
- Seizures
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- Foreign Body Obstruction (FBO) with airway management
- Local Anesthetic Toxicity

## Link 3: Mock Emergency Drills

Mock emergency drills should occur monthly but no less than every other month. Mock drills should not be a lecture. They must be an opportunity for an experiential learning session with the whole dental team, including the dentist. The objective of the mock emergency drill is to practice in real time every physical and verbal action you would take in an actual emergency. Drills are an opportunity to build muscle memory so that under the stress of a real emergency you will perform flawlessly and automatically.

### Your performance in a real emergency will always sink to the level of your training.

The Dental Assistant, serving in the role of the Patient Safety Officer, will lead the mock emergency drills and ensure role-playing occurs with all team members. It is critical to simulate, as much as is possible, every action you take during a mock emergency drill. Any equipment used in a particular emergency scenario should be demonstrated by simulated use. Required verbal callouts should be made out loud as if the emergency were really occurring.

All mock emergency drill training sessions must be documented. At a minimum, record the attendance, date of the drill, and the scenario/topic of the drill. Should your practice ever be the subject of a lawsuit, your training records will become very important.

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All of the following topics should be covered within your series of 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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If you do not have training scenarios or a training schedule for each of these topic areas, visit the AAFDO website and download the Mock Medical Emergency Drills Guide. This drills guide will provide you with:

- 23 complete Mock Emergency Drills
- 23 medical emergency treatment algorithms
- Emergency Drug Kit Inventory Checklist
- Medical Emergency Plan
- Pre-Training Checklist
- Post-Training Checklist

## Link 4: Written Medical Emergency Plan

Each dental office should have a written medical emergency response plan. Keep the plan in an easily accessed location in the clinical area of the dental facility. Placing the "Plan" in multiple locations around the office may be appropriate in some practice locations.

Plans should contain the following:

1. Specific task assignments for each member of the dental team, both full and part time. Ensure all tasks are covered even when operating with a reduced staff.
2. General instructions on calling medical emergency services (EMS), including the address of the dental office and the best point of entry into the office for EMS.
3. A general review of CPR guidelines, airway management and patient positioning (Trendelenberg and Semi-Fowlers).
4. A list of the signs and symptoms that indicate the patient is in distress, and an algorithm outlining the appropriate response for each of the following distress or emergency situations.
    - 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)
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Offices offering dental hygiene services under general supervision should also have a set of customized and supplemental medical emergency plans for circumstances when the dentist is not on the premises.

If your practice does not have a written medical emergency plan, please visit the AAFDO website and download the free Sample Mock Drill. The free resource includes a sample medical emergency plan.

## Link 5: Emergency 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 the complexity of services offered. However, the following seven medications are needed in **all** dental office settings:

- 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
- Ammonia inhalants, 1 box of 10
- Glucose tablets, 15 mg/tablet, 1 vial of 10 tablets and 1 tube of instant glucose

(Note: Oxygen, although technically a medication, is covered under "equipment" because of its heavy dependency on the related equipment.)

As, part of your documented emergency response plan, inventory inspections must be systematically scheduled at regular intervals. This responsibility should be designated, by name, to one person in the office. Their primary responsibility is to check and document the medications to ensure that none will expire before the next anticipated inspection.

BONUS TIP: Offices not routinely loading syringes are encouraged to purchase epinephrine and a pre-loaded device such as an 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.)

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If you do not have an emergency medications checklist, visit the AAFDO website and download the Mock Medical Emergency Drills Guide. This drills guide will provide you with a checklist for inventory of your emergency medications.

(Link 6 is on the next page.)

## Link 6: Emergency Equipment

To ensure patient safety and survival during a medical emergency, every office must be equipped with the following (as a minimum):

- 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: Sources should include:
    - 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.

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- Supplies to Supplement a Breathing Patient
  - Nasal cannula (3)
  - Non-rebreathing masks (3)
- Supplies to Supplement a Non-Breathing Patient
  - A set of 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)

- Syringes - 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 ⅝ in.
  - 5cc / 22 GA X 1 in.

(Continued on the next page.)

## Conclusion

Dental Assistants do not know when they will face a medical emergency that will require the use of the **Six Links of Survival**. Therefore, they must have ***recent*** training experience in responding to medical emergencies. Recency of experience can only be developed by following a regular monthly schedule to rehearse, as a team, all of the various emergencies that require the use of emergency drugs and equipment.

None of us know when our patient's life may depend on our readiness. Should you lose a patient in your office, it will be "on you" and the dental team. You'll own the performance that led to the tragic outcome. The result will not be the responsibility of your state dental board, nor your malpractice company. The responsibility will be all yours.

Will you be ready? Did you conduct enough realistic training? Did you practice all 23 mock emergency drills? Did you debrief your performance? Did you maintain currency with the ***Six Links of Survival***? Did you have your office inspected to identify any strengths or weaknesses? Did you care enough to truly prepare?

Will the next event, when it happens, be a **career-defining** or **career-ending** medical emergency? If you don't have the knowledge and skill to flawlessly respond to an emergency due to inadequate training and preparation, you never "rise to the occasion," rather you will sink to the level of your training.

### Don't regret the result you'll get because of the work you didn't put in.

Are you ready to accept that outcome? If not…

### Get prepared and stay prepared!