

# Medical Emergencies: Are You Prepared?

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A decade ago, the popular movie *A Perfect Storm* told the story of an ambitious Gloucester fishing boat captain, Billy Tyne. His ill-fated journey into a confluence of meteorological factors resulted in catastrophe. As the second decade of the twenty-first century begins, it is reasonable for the dental profession to scan the “forecast” if it is to fully succeed in treating the needs of the public and simultaneously avoid peril.

## DENTISTRY'S PERFECT STORM

Currently, 4 factors are converging that, if left unaddressed, have the potential for disaster.

The overall population of dental patients is becoming increasingly ill. In part, this is demographic. The baby-boom generation is moving toward retirement and just entering the stage of life when chronic medical problems manifest. Obesity is now epidemic, with corresponding increases in cardiac and type 2 diabetic problems. Finally, advances in medicine mean seriously ill patients are increasingly able to enjoy a good quality of life, including receiving dental care. A generation ago, many cardiac or cancer patients would be homebound and outside of the dental population. Today, these same individuals are not only thriving, they are walking into dental offices. While laudable, this places an increasing level of responsibility on the treating dentist.

Dentistry has long been at the forefront of pain control. Modern local anesthetics make it possible for almost all dental procedures to be performed comfortably. However, what the profession is only beginning to recognize is that freedom from pain is significantly different than freedom from fear of the procedure. Management of a patient's apprehension toward dentistry is increasing, as evidenced by the number of practitioners now promoting “sedation dentistry.” Nowhere is this more apparent than in the area of pediatric dentistry. Increasingly, parents are expecting appointments for even the very young to be not only “fear-free,” but actually pleasant.

The nation's economic downturn has made dentists hungrier for new patients. When patients were plentiful, anxious patients were a time-consuming burden to a busy practice. As dentists seek new patients with significant dental needs, they increasingly are finding those individuals who once avoided dental care to be an ideal target market. Unfortunately, neither dental schools nor postgraduate education at large has placed much emphasis on educating dentists to address dental fear in their patients.

There is no national consensus regarding how a dental office should prepare itself for a medical emergency. In my opinion, the American Dental Association's recommendations are both scant and outdated. Efforts by state dental boards are typically in response to a specific event, usually a death in a dental office. High attendance in medical emergency courses at dental conventions illustrate that dentists are serious about being prepared for a crisis. Yet, this question remains: “*Specifically, what's a dentist to do?*”

## THE SIX LINKS OF SURVIVAL

For a dental office to be truly prepared for a medical emergency, 6 critical factors must be addressed. Together these items work together to form a chain. Like the proverbial chain, failure will occur at the weakest link. These 6 links of survival are: (1) dentist training, (2) staff training, (3) routine practice drills, (4) a written protocol with concise assignments for each person and algorithms for common situations, (5) proper medications, and (6) proper equipment.

As someone who has lectured nationally on the topic of medical emergencies, I can attest that

few offices are truly prepared in all 6 areas. Sadly, deficiencies usually are not apparent until a crisis illustrates the problem. This *viewpoint* article is intended to help the reader identify any shortcomings so that one can begin to take steps to address any deficiencies.

### **DENTISTS' TRAINING**

The extent of the dentist's medical emergency training corresponds directly to the level of services provided and the likelihood that those services will generate a complication. Clearly, an oral surgeon performing general anesthesia needs a different level of preparedness than an orthodontist who never uses local anesthetic. Yet either can have a patient who experiences a serious medical problem while under his or her care.

How much training is needed? The answer is threefold: it involves the content, technique, and frequency of the training.

*Content:* While any medical problem potentially could occur in a dental office, 12 are more likely to occur. The dentist should select courses that cover all of the following: syncope, angina, myocardial infarction, hypertension, hypotension, asthma, chronic obstructive pulmonary disease complications, hyperventilation, allergies, diabetic imbalances, epilepsy/seizure disorders, and bleeding problems.

*Techniques:* All dentists should be proficient in the physical skills of Basic Life Support (BLS) per the American Heart Association (AHA). Additionally, dentists should be competent in loading a medical syringe and injecting its contents. Most importantly, a dentist should be competent in managing a patient's airway. Statistically, most deaths in dental offices involve the failure to properly oxygenate a patient. The level of skill needed for airway management is proportional to the level of anesthesia services being provided. Yet, it is critical to remember that all dentists are one broken instrument away from an obstructed airway.

*Frequency:* Knowledge is best retained when it is conceptually simple and used frequently. The challenge with medical emergencies is that they are highly complex events and that they occur infrequently.

The AHA, which has thoroughly studied the issue of training people for cardiac crisis, has learned that both intellect and motor skill begin to degrade after as little as 2 weeks. By 2 years, knowledge loss is significant to the degree that the entire program merits repetition. Beyond that timeframe, performance deteriorates to a level where errors are likely.

*Summary:* Using: (1) the AHA research as a model for frequency, (2) the 12 medical conditions dentists should be familiar, and (3) the technical skills which must be practiced, it is reasonable to conclude that (in addition to BLS) dentists should invest about one full day (8 hours) biennially to medical emergency training. Some of that time should be participatory in nature with a live instructor.

### **STAFFS' (TEAM) TRAINING**

Imagine a building on fire. Fire trucks, a chief, and several firefighters arrive. However, none of the firefighters have been trained or know what to do. Obviously, the result would be catastrophic. The chief's attention, instead of being focused on the fighting the fire, would be focused on the firemen: helping and supervising them.

The same argument can be made for the team in dental offices. Are they active participants in helping the dentist manage a medical emergency, or are they merely well-intended and uneducated bystanders?

Based on malpractice cases, not only the doctors but also their teams are expected to be well-trained for handling medical emergencies. A poorly or untrained support team slows the actions of the doctor by requiring time to be wasted receiving directions on tasks that should have been preplanned. Secondly, a second pair of eyes is beneficial to the dentist's eyes when observing and monitoring the status of a patient.

Entire office teams need training, yet sadly few doctors currently provide it to an adequate degree.

### **MOCK DRILLS**

With the exception of oral surgeons, the running of mock medical emergency drills appears almost nonexistent.

This is especially disappointing for 2 reasons. First, given that medical emergencies are infrequent events, mock drills are the only method to maintain competency between formal training sessions. Second, learning is best achieved in small increments. Although lengthy programs have their value, as already described, the fact remains: more knowledge is retained if it is presented in small portions over a longer time period.

Granted, preparing medical emergency drills for use at a staff meeting is probably something many dentists would rather not organize. The good news is that vendors of in-office medical emergency drills already exist. These “prepackaged” exercises allow participants the opportunity to refine their preparations. Additionally, continuing education credit is awarded for the time invested.

### **A MEDICAL EMERGENCY PLAN**

Some dental offices deny the need for adequate preparation for medical emergencies because their intent is to rapidly call Emergency Medical Support (EMS) and turn responsibility over to others. This approach is sadly naïve. In reality, dental offices need to be prepared not only to administer CPR but also to manage less dramatic problems for extended time periods. Delays in EMS response time can occur both in urban areas with large, full-time departments as well as small, volunteer departments.

To prepare properly, one needs a plan. A plan is not a textbook sitting on the shelf. Rather, it should be a simple document readily accessible at multiple locations throughout the office (especially the clinic area).

At the simplest level, the plan should contain 2 essential components. First, it should contain specific directions for each member of the dental team. Everyone should know who is assigned the task of retrieving the oxygen tank, calling EMS, and calming the other patients on the premises. The second major component of the emergency plan should be a series of algorithms that assist the dentist in identifying the problem and display the appropriate treatment protocol.

### **MEDICATION LIST**

At the simplest level, the medication list of a dentist is as simple as *ABCDEFGH*. One is likely to be considered negligent if the 7 basic medications are not readily available:

1. *A is for aspirin* (used to retard platelet clotting during a myocardial infarction).
2. *B is for bronchodilator* (eg, albuterol to open the lower airway during acute asthma).
3. *C is for coronary artery dilator* (eg, nitroglycerine to increase oxygen flow to coronary arteries).
4. *D is for diphenhydramine* (an antihistamine for allergic attacks).
5. *E is for epinephrine* (used in full cardiac arrest, anaphylaxis, and severe asthma).
6. *F is for fainting* (ammonia inhalants for cerebral stimulation).
7. *G is for glucose* (hypoglycemia).

Additional medications may be appropriate based on the nature of the practice. These items can be purchased individually or in commercially available kits.

### **EQUIPMENT**

Almost all dental offices have some type of oxygen for emergency use. It may be a designated tank or part of a nitrous oxide unit. Most dental offices have the equipment for positive pressure oxygen

delivery on the nonbreathing patient. However, most dental offices do not have the appropriate oxygen equipment for the impaired but breathing patient. Cannulae and nonbreathing masks are rare devices in dental offices outside of oral surgeons. This is particularly sad, given that many major medical events could either be avoided or minimized by the early introduction of oxygen. Remember, most (by a wide margin) dental office deaths were ultimately caused by failure to oxygenate the patient.

Other additional equipment that offices need to include are a paper bag (hyperventilation), medical syringes with needles (at least 3 sizes of blood pressure cuffs), and a glucose monitor. Given that price is dropping considerably and that the AHA now includes use of an automatic electric defibrillator (AED) as part of BLS for healthcare providers, the presence of an AED is now widely accepted as the standard of care.

## SUMMARY

Billy Tyne sailed ill-equipped directly into a “perfect storm” at the cost of his boat, his crew, and his life. As a profession, we must not allow our own hubris to ignore the challenges that we are now facing: increasingly complex medical histories, more patients desiring sedation treatment, and more dentists expanding their scope of clinical services. Sadly, a nationally recognized set of guidelines has yet to be adopted. In the meantime, each member of the profession must be prepared to properly respond to any medical crisis that may occur in the dental office. The 6 links of survival provides a solid basis to meet that need.

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*Disclosure: Dr. Sangrik has no financial interest in any company mentioned in this article and received no compensation for writing this article.*