

Review Article

EMERGENCY DRUGS AND EQUIPMENTS IN DENTAL PRACTICE

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Abstract:

The life-threatening emergencies can occur any time, any- where and to anyone. The recognition of 'at-risk' patients and subsequent appropriate management is paramount in reducing the probability of an adverse event. Obtaining vital signs provides a baseline measurement from which alterations in the patient's condition can be determined. This review discusses about the importance of obtaining vital signs, past and present medical history and provides brief information regarding drugs and equipments for managing medical emergencies at dental offices.

Keywords: Emergency drugs; Emergency equipments.

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Introduction

During root canal therapy, a 68-year-old male patient becomes pale, perspires profusely, and clutches his chest. He appears confused, seizes briefly, and is now unresponsive to verbal stimuli. He is not breathing and no pulse can be felt in the carotid artery. Do you know how to handle this situation?¹

The life-threatening emergencies can occur any time, any- where and to anyone. Such situations are somewhat more likely to occur within the confines of the dental office due to the increased level of stress which is so often present. For example, Fear and anxiety may make these patients prone to medical emergencies such as syncope and hyperventilation. Dentists must be prepared to manage medical emergencies which may arise in practice.² Changing demographics in the population, leading to increased longevity have led the people having medical conditions which predispose to a medical emergency or taking medication may influence their dental management and persons aged above 65 years or over are considered to be taking medication with a potential effect on dental care.³ The most

commonly reported emergency is syncope (fainting), accounting for at least half of all medical emergencies. Other frequently cited emergencies include hypoglycemia, angina, seizures, choking, asthma, and swallowing of foreign bodies. In a hospital setting, the relative proportion of different types of emergency events is the same as in private practice, but the frequency of emergency events is higher.⁴

Medical risk assessment

The recognition of 'at-risk' patients and subsequent appropriate management is paramount in reducing the probability of an adverse event. Acknowledgement that any dental patient may have a medical emergency during dental treatment is a key start point. A thorough medical and drug history is mandatory and should be undertaken by the dentist in person.⁵

A constant review of physiology will be beneficial in correctly interpret a patient's medical history and vital signs, and in relating the signs and symptoms to the patient's potential response to treatment.⁶ The health history should include information regarding the patient's past and present health status. It should also

include questions indicating problems the patient may not be aware of, but which may alter treatment.¹ Patient-completed health questionnaires should be confirmed by a verbal history. Identification of at-risk patients will allow modifications to be made to treatment planning and may highlight those patients whose treatment may be more appropriately conducted at specific times or in specialist centres. Medical and drug records should be updated should be re-assessed and recorded at every visit.⁵

Vital Signs

Obtaining vital signs provides a baseline measurement from which alterations in the patient's condition can be determined. This is a practice not frequently seen in dental offices. Vital signs-blood pressure, pulse, respirations, and temperature-should be measured prior to each treatment. Taking a temperature as part of the vitals check will often indicate if the patient has an infection. An oral temperature in excess of 99.6° Fahrenheit (37.5° Centigrade) is a good indicator of the presence of a viral or bacterial infection. The other vitals-pulse, blood pressure, and respirations-can be taken while the thermometer is in the patient's mouth, thus using little additional chair time.¹

Emergency Drugs

Drugs that should be promptly available to the dentist can be divided into two categories. The first category represents those which may be considered essential. These drugs are summarized in Table 2. The second category contains drugs which are also very helpful and should be considered as part of the emergency kit. These supplementary drugs are summarized in Table 3.⁷

Emergency Equipments

In the management of medical emergencies, it is important to remember the role of oxygen in maintaining the cell, the basic living unit of the body. In any emergency situation, major concern

should be how this event will affect the supply and/or demand for oxygen to each organ.⁵ An automatic external defibrillator (AED) is an adjunct piece of equipment every office should consider having available as part of the office emergency kit. The 2010 AHA Guidelines for Cardiopulmonary Resuscitation (CPR) recommend a change in the Basic Life Support (BLS) sequence of steps from A-B-C (Airway, Breathing, Chest compressions) to C-A-B (Chest compressions, Airway, Breathing) for adults, children, and infants (excludes newborns). This fundamental change in the CPR sequence will require reeducation of everyone who has ever learned CPR, but the consensus of the experts is that the benefit will justify the effort.¹

Medical emergencies can be alarming to any clinician but these situations are less alarming if proper preparations are made.³

The literature review regarding preparedness of dentists regarding management of medical emergencies at their clinics shows a worrisome situation. Gupta et al⁸ in a study stated that less than half (42.1%) of the dentists reported having received practical training in management of medical emergencies during their undergraduate and postgraduate and found that the most commonly available emergency drugs in treatment areas were oral glucose (82.2%) and adrenaline (65.8%), less than one-fourth of the respondents had the pocket mask (13.0%), bronchodilator spray (24.7%), diazepam (20.5%) and glyceryl trinitrate (17.8%). However results were different in a study carried out by Muller MP⁹ et al who stated that 567 dentists (92%) took part in emergency training following graduation (23% participated once and 68% more than once). The survey regarding availability of emergency kits at dental office carried out by Gbotolorun OM¹⁰ et al showed that 91.1% respondents in the study had no emergency kit in their dental clinics in Lagos (p < 0.05). Broadbent IM¹¹ et al

Table 1: Patient Medications which may alter treatment

acetylsalicylic acid (Aspirin) and warfarin (Coumadin®)	Blood thinner, increased risk of bleed
antibiotics (pencillins, cephalosporins, macrolides, sulfonamides)	Prescribed for preventative measur infection, can cause xerostomia

carried out a study and found that more than half of the respondents were dissatisfied with the training they had received for medical emergencies as undergraduate students, and 28 (14.1 percent) currently felt inadequately prepared for an emergency in practice. When asked how their preparedness could be improved, 165 (83.3 percent) opted for hands-on courses, 15 (7.5 percent) opted for lectures alone, and 5 (2.5 percent) opted for other courses alone. The extent of treatment by the dentist requires preparation, prevention and then management, as necessary. Prevention is accomplished by conducting a thorough medical history with appropriate alterations to dental treatment as required. The most important aspect of nearly all medical emergencies in the dental office is to prevent, or correct, insufficient oxygenation of the brain and heart. Therefore, the management of all medical emergencies should include ensuring that oxygenated blood is being delivered to these critical organs. This is consistent with basic cardiopulmonary resuscitation, with which the dentist must be competent. This provides the skills to manage most medical emergencies, which begin with the assessment, and if necessary the treatment of airway, breathing and circulation (the ABCs of CPR). Usually, only after these ABCs are addressed should the dentist consider the use of emergency drugs.⁷ This suggests that although training is received in the theoretical aspect of emergencies, participants are not particularly confident to treat emergencies and may require further practical training. Effective management of an emergency situation in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action.¹² Thus, need of the hour is framing

of legislations and rules regarding availability and time to time update of the emergency medical kits.

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