EMERGENCY DRUGS: AN IMPORTANT TOOL IN DENTAL EMERGENCIES
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ABSTRACT
Although minor medical emergencies occur usually in the dental clinics, a life threatening emergencies can arise. Every time there may not be medical facilities available in time and in nearby places. Thus there should be readily available medical equipment during emergency situations, along with the emergency drugs. This article aims to provide an overview of the basic emergency drugs and equipment that should be present in dental practices.
Keywords: Dental clinic, Emergency drugs, Medical emergencies.

INTRODUCTION
Medical emergencies can occur in general dental practice, which are unpredictable and fortunately uncommon¹. The dental practitioner has the responsibility to identify the emergency situation and initiate primary emergency management procedures².
The medical emergency that can arise in the dental clinic and for which the dental practitioner should be able to respond includes chest pain, cardiac arrest, anaphylaxis, epileptic attack, hypoglycemia, asthmatic attack and allergic reactions³⁴⁵. If the dentist is unprepared and major emergency occurs in the dental chair, the outcome may be disastrous¹.
It is a well-known principle fact that dental clinic settings should have a minimum level of the emergency equipment and emergency drugs in order to manage the potentially life threatening medical emergency situations and also in order to support to the patient until the arrival of the emergency services³. Usually, in case of emergencies in the dental practice, the intravenous route of the drug administration is not preferred. Instead, intramuscular, sublingual, inhalational, buccal or intranasal routes are the easier ways to administer drugs in emergencies. Also whenever possible, the drugs in solution form should be held in pre-filled syringes, which should be ready to administer⁵.

Emergency drugs:
Most commonly used emergency drugs are summarized in table 1.
Emergency drugs can be classified as⁶:

Category I: Represent those drugs which are considered essential. These drugs include epinephrine, nitroglycerin, antihistamines, salbutamol, aspirin and oxygen.
Category II: It contains drugs which are also helpful and considered as part of the emergency kit. It includes drugs like glucagon, ephedrine, hydrocortisone, morphine, naloxone, midazolam and flumazenil.

Importance of training for the use of emergency drugs:
There is a significant difference between the theoretical knowledge of how to treat an emergency and being able to put such cognitive skills to practical use. Only constant review and training will keep the dental team sharp. Along with the adequate preparation, thorough knowledge of the patient’s emergency condition and its management is also important¹. For this purpose the use of algorithms can be helpful, where application of these skills and knowledge is applied.2 Also in case of children, as they are different from adults, it is recommended that the dentists and staff involved in the treatment of significant number of patients should complete a course in pediatric advanced life support².

Precautions to be taken:
1. Drugs should be kept at readily available and suitable place.
2. The drugs should be regularly checked for the expiry dates⁶.
3. Drugs must be kept in their original packaging as purchased or dispensed. This is a legal requirement and drugs should never be decanted into alternative containers⁸.
Other basic indicated requirements:

1. Along with the emergency drugs, other basic equipment that should be promptly available includes stethoscope, oxygen delivery system, blood pressure cuff, syringes and needles.

2. Also dental practitioner should also keep an automated external defibrillator (AED), as a means to manage cardiac arrest patient. Its use can be easily learned and it requires knowledge of basic CPR with a small amount of additional training.

3. Regular continuing education in medical emergencies and review of pharmacology, certification in basic life support (BLS), and advanced cardiac life support (ACLS), are the best methods to prepare for emergencies. Without prompt attention to the ABCs (airway, breathing, circulation) of cardiopulmonary resuscitation, drugs are of little value.

Also, research in the dental pharmacotherapeutic field has been so rapid in recent years that the regular updating of dental practitioners’ knowledge about new drugs, drug interactions, and useful therapeutic trends is necessary. This is only possible with the help of continuing education programs, attending conferences, and reading various dental journals and dental magazines to gain appropriate knowledge on the use of drugs and their pharmacokinetics.

CONCLUSION

Although the emergency situations arise less commonly in dental clinics, there are chances that such conditions can arise. Therefore, each and every dental practitioner should have basic life supporting emergency drug kits and also have knowledge of management of such situations.

### REFERENCES


### Table 1: Emergency drug kit to be kept in dental clinic

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indications</th>
<th>Adult Dosage and Route of Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine (Adrenalin)-1:1000</td>
<td>Anaphylaxis, Cardiac arrest</td>
<td>0.5 ml intravenously</td>
</tr>
<tr>
<td>Methylprednisolone sodium succinate (Solu-Medrol)-125 mg Monovile</td>
<td>Cardiac arrest, Anaphylaxis, Acute adrenocortical insufficiency</td>
<td>125 mg intravenously, given slowly</td>
</tr>
<tr>
<td>Sodium bicarbonate–7.5%</td>
<td>Cardiac arrest</td>
<td>1 mEq/kg intravenously initially, then half this every 10 minutes</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl) 10 mg/ml</td>
<td>Acute allergic reaction, Extrapyramidal reaction to phenothiazine</td>
<td>5 ml intravenously</td>
</tr>
<tr>
<td>Aromatic spirits of ammonia-</td>
<td>Syncope</td>
<td>one ampule, by inhalation</td>
</tr>
<tr>
<td>crush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyceryl trinitrate–0.6 mg tablet</td>
<td>Angina pectoris</td>
<td>one tablet sublingually</td>
</tr>
<tr>
<td>Morphine sulfate–15mg/ml</td>
<td>Myocardial infarction</td>
<td>1 ml subcutaneously or intravenously</td>
</tr>
<tr>
<td>Phenylephrine hydrochloride (Neo-Synephrine Hydrochloride) – 1:500</td>
<td>Toxic reaction to local anesthetic</td>
<td>1 to 2 ml intravenously</td>
</tr>
<tr>
<td>Dextrose in water–5%</td>
<td>Hypovolemia, IV route for drug administration</td>
<td>1000 ml IV drip</td>
</tr>
<tr>
<td>Diazepam– 5 mg/ml</td>
<td>Severe or prolonged convulsion</td>
<td>1 to 8 ml intravenously (titrated)</td>
</tr>
<tr>
<td>Naloxone hydrochloride (Narcan)–0.4 mg/ml</td>
<td>Narcotic depression</td>
<td>1 ml intravenously or intramuscularly</td>
</tr>
<tr>
<td>Isoproterenol hydrochloride aerosol–0.25%</td>
<td>Bronchospasm</td>
<td>one or two inhalations</td>
</tr>
<tr>
<td>Physostigmine salicylate – 1mg/ml</td>
<td>CNS depression following diazepam administration</td>
<td>0.5 to 2 ml intravenously (slow titration)</td>
</tr>
<tr>
<td>Atropine sulphate–0.1 mg/ml</td>
<td>Bradycardia with hypotension</td>
<td>0.5 - 1.0 mg IV</td>
</tr>
</tbody>
</table>

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