# Planning for a medical emergency in a dental clinic

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## Abstract

The recognition of 'high -risk' patients in dental practice and doing appropriate management is essential in reducing the chances of a medical emergency occurring. This review discusses about the importance of obtaining the medical history and adequate training of dental personnel's in dealing with medical emergency. It also provides a brief information on drugs and equipments required in managing medical emergencies at dental clinics.

**Keywords:** Emergency Drugs; Emergency Equipments.

## Introduction

An emergency can be defined as a situation that can poses an immediate risk to health, life, property, or environment of an individual.(1) Urgent intervention may be required in such conditions to prevent worsening of the situation. A study which was done in a duration of more than 10 years showed how frequently an emergency occurred in clinical practice and concluded that a dentist could come across this condition in every four and half years.(2) Emergencies may occur quite frequently or vice versa, so the clinician should be updated with the recent techniques and newer emergency drugs for the better and efficient management of medical emergencies.(3)

### Protocol

A protocol should be followed by all dental practitioners in dealing with a medical emergency. Certain guidelines have been given by the General dental council. It states that:

- Availability of minimum of 2 trained personals in managing the emergencies should to be made sure while planning for a procedure.
- All staff members, not just registered members should be aware of their part during an emergency.
- All staff members who are part of dealing with a medical emergency should be adequately trained and be ready to manage it at any given time.
- Emergency management situations should be practised by the medical team, to know how to perform properly in an actual emergency situation.
- New staff members should undergo an induction programme which includes resuscitation training.(4)
- Basic life support training exercise should be completed by all team members at least one time in a year to make sure they are ready to deliver in the time of emergency.(5)

### Medical Risk Assessment

Medical history must be documented and should be made up to date in every clinical follow up visit. This will help us in identification of a high risk patient so that better care can be given for that particular patient. Elderly people over 65 usually seems to take more number of medications on a regular basis. Most of them may be taking more than five drugs a day.(7) So it has become a complex procedure in evaluating and recording the chances of medical risk in this category of patients. Therefore, updating medical histories has become very important and we should take time to record this information correct.

### The Resuscitation Council Guidelines

The Resuscitation Council has given certain guidelines(8) which is to be followed when an emergency is dealt with. They are:

- Relax and make sure the safety of the staff members.
- Assess the general condition of the patient.
- Follow the **ABCDE** approach

**Monitoring the:**

**Airway:** Check the airway for any blockage or any difficulty in breathing.

**Breathing:** Look for paradoxical movements of chest and abdomen, and also assess the depth and rhythm of breathing. There should be about 12-20 breaths per minute for adults and 20-30 breaths per minute for children. Check for the movements of accessory muscles of respiration.

**Circulation:** Check for any signs of cyanosis.

**Disability:** Check the conscious level of the patient by the alert, voice, pain, unresponsive (AVPU) method:

- Are they alert or not?
- Is there response to talk?
- Is there response to painful stimuli?
- Are they unresponsive to all stimuli?

**Exposure:** Adequately ventilate by loosening or removing the patient's tight clothes and this should be

done by giving respect to the patient's dignity. The amount of heat loss should be minimised. During this any rashes developed should be checked.

**Basic emergency drug kits**

The needs of a typical general dentist may not be met by a commercially prepared drug kit. It is always advisable for a dentist to prepare an emergency kit by himself by stocking it with drugs that can be used easily. It should be checked regularly for the date of expiry. On replacing the expired medications, it can be stored separately as a "simulation kit" and used by the staff members for practicing in loading the drugs. Drugs must be kept in different containers and all staff in emergency team should be made aware of the location of each drug. While preparing the emergency drug kit, the method by which the drug is administered should also be considered. Most of the emergency drugs are administered intravenously, but this route may not be familiar for most of the general dental practitioners. The sublingual route of injecting drug is known to all the dental practitioners and so it can be a better alternative. Any drug which is indicated for IV administration should be non-irritating enough so that it can be used for injecting into submucosal tissues. Possible contentions include appropriate concentrations, doses, and rate of onset. As absorption of a drug is determined by the vascularity of a tissue, it is shown that the rate of drug absorption by sublingual route lies somewhere between the IV administration which gives immediate availability and IM administration. This presumption is supported by limited number of published studies.[10-12] Table 1 summarizes the drugs to be included in an emergency drug kit.

**Drugs to be included in the Kit**

- Glyceryl Trinitrate Spray (400micrograms/dose)
- Salbutamol Aerosol Inhaler (100micrograms/actuation)
- Adrenaline Injection (1:1000, 1mg/ml)
- Aspirin Dispersable (300mg)
- Glucagon injection 1mg
- Oral Glucose Solution/tablets/gel/powder
- Midazolam 10mg (buccal)
- Oxygen.[9]

**Table 1**

| Drug | Indication | Adult Dose & Route | Paediatric Dose & route |
|---|---|---|---|
| Adrenaline | Anaphylaxis | 500 micrograms(0.5 ml 1:1000) IM<br>It can be repeated at 5 min interval if no improvement | <6 yrs: 150 micrograms (0.15 ml 1:1000) IM<br>6-12 yrs:300 micrograms (0.3ml 1:1000) IM<br>>12 yrs: 500 micrograms (0.5 ml 1:1000) IM<br>May be repeated at 5 min interval if no improvement |
| Aspirin | If a heart attack is suspected | 300 mg oral (crushed or chewed) | N/A |
| Glucagon | Hypoglycaemia (if the patient is unable to swallow safely e.g., unconscious) | 1 mg IM | <8 yrs (or <25 kg): 0.5mg IM<br>>8 yrs (or >25 kg): 1 mg IM |
| Glucose (fast acting) | Hypoglycaemia (patient co-operative & able to swallow safely) | 15-20g fast acting glucose e.g. 3- 4 glucose tablets, glass of orange juice or glucose gel | Dose as for adults |
| Glyceryl trinitrate spray | Angina or suspected heart attack | 2 actuations sublingually | N/A |
| Midazolam | Prolonged convulsive seizures(>=5 mts) or repeated seizures(>=3 in a hour) | Midazolam oromucosal solution can be given by buccal route in adults as a single dose of 10 mg | 1-5years : 5 mg buccal<br>5-10 years : 7.5 mg buccal<br>>10 years : 10 mg buccal |
| Short acting beta agonist(e.g. salbutamol) inhaler | Asthma attack | 2 actuations inhaled<br>Use spacer device if necessary<br>Repeated doses may be necessary | Dose as for adults |

**Equipment**

The following age appropriate equipment must be readily available for dentists, dental specialists, dental therapists, dental hygienists, oral health therapists, orthodontic auxiliaries, and clinical dental technicians:

- Oxygen cylinder, regulator and associated equipment suitable for delivering high flow oxygen
- Bag mask device with oxygen reservoir
- Basic airway adjuncts (oropharyngeal airways)

The following age appropriate equipment must *additionally* be readily available for dentists and dental specialists:

- Syringes and needles for drawing up and administering drugs a stethoscope, blood pressure cuff,
- Spacer device to deliver Salbutamol.

Dentists should also consider having an automated external defibrillator (AED), as a means to treat cardiac arrest.

## Conclusion

It is the responsibility of an oral health practitioner to put their patients' interests first, and practise safely to protect it and provide good care. The practitioner's ability to deal with medical emergencies that can arise during daily clinical practice is a significant way of meeting their responsibility upto the expectations of their patients. The minimum standard of requirements regarding the equipment and drugs used in the practice should be followed by all health care practitioners. These include preventive care and care which is delivered at "off-site" facilities such as mobile units, domiciliary care or rest homes.

## References

1. "UK Government Advice on Definition of an Emergency" *(PDF). Archived from* the original *(PDF) on 2007-06-06.* Retrieved 2007-05-30
2. Atherton, G., McCaul, J. and Williams, S. (1999) Medical Emergencies in General Dental Practice. Part 1: Prevalence over a 10 year Period. British Dental Journal. 186 (2) January pp.72-9.
3. The General Dental Council Standards Guidance (2006). The Principles of Team Working. General Dental Council: London.
4. The General Dental Council Standards Guidance (2006). The Principles of Team Working. General Dental Council: London.
5. The General Dental Council (2008) Continuing Professional Development for Dental Care Professionals. General
6. Dental Council: London.
7. UK National Statistics (2011) Available from: http://www.statistics.gov.uk/hub/population/ageing/older-people/index. html (accessed 20/011/12).
8. 7 Heuberger, A. and Caudell, K. (2011) Polypharmacy and Nutritional Status in Older Adults: A Cross-Sectional Study. Drugs and Aging. 28(4) pp.315-3.
9. Resuscitation Council UK (2008) Standards for Clinical Practice and Training for Dental Practitioners and Dental Care Professionals in General Dental Practice. Available at: http://www.resus.org.uk/pages/MEdental.pdf#search= "dental" (accessed 20/12/2012).
10. Resuscitation Council UK. (2008) Medical Emergencies and Resuscitation. Available from: http://www.resus.org.uk/pages/MEdental.pdf (Accessed 20/12/2012).
11. Rajpal S, Ali R, Bhatnagar A, Bhandari SK, Mittal G. Clinical and bioavailability studies of sublingually administered atropine sulfate. *Am J Emerg Med*. 2010;28:143–50. [PubMed]
12. Heniff MS, Moore GP, Trout A, Cordell WH, Nelson DR. Comparison of routes of flumazenil administration to reverse midazolam-induced respiratory depression in a canine model. *Acad Emerg Med*. 1997;4:1115–8. [PubMed]
13. Hosaka K, Jackson D, Pickrell JE, Heima M, Milgrom P. Flumazenil reversal of sublingual triazolam: A randomized controlled clinical trial. *J Am Dent Assoc*. 2009;140:559–66.[PMC free article] [PubMed]