

Updated guidance on medical emergencies and resuscitation in the dental practice

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IN BRIEF

- Outlines the updated guidance relating to oxygen therapy, medications and automated external defibrillators.
- Provides an overview to the professional responsibilities of dental professionals.

This article outlines the updated guidance relating to the management of medical emergencies in the dental practice. The incidence of medical emergencies in the dental practice is discussed. The key recommendations from the Resuscitation Council UK on the treatment of medical emergencies in the dental practice are listed, with specific reference to oxygen therapy, medications and automated external defibrillators. An overview to the professional responsibilities of dental practitioners and dental care professionals is provided.

INTRODUCTION

Every dental practice has a duty of care to ensure that an effective and safe service is provided for its patients. The satisfactory performance in a medical emergency or resuscitation attempt in the dental practice has wide-ranging implications in terms of resuscitation equipment, resuscitation training, standards of care, clinical governance, risk management and clinical audit.¹

In 2006, the Resuscitation Council (UK)² published guidance on clinical practice and training in medical emergencies and resuscitation for dental practitioners and dental care professionals (DCPs) in general dental practice. This guidance was updated in June 2011.³

The aim of this article is to provide an overview to the main changes in this guidance as well as a revision of the key recommendations.

MEDICAL EMERGENCIES IN DENTAL PRACTICE: INCIDENCE

A survey of dentists (300 responded) in England⁴ found that over a 12 month period they had encountered:

- Vasovagal syncope (63%) – 596 patients affected

- Angina (12%) – 53 patients affected
- Hypoglycaemia (10%) – 54 patients affected
- Epileptic fit (10%) – 42 patients affected
- Choking (5%) – 27 patients affected
- Asthma (5%) – 20 patients affected
- Cardiac arrest (0.3%) – one patient affected

A survey of 620 dentists in Germany⁵ found that over a 12 month period:

- Fifty-seven percent had encountered up to three emergencies
- Thirty-six percent had encountered up to ten emergencies
- Vasovagal episode was the most common reported emergency – average two per dentist
- Forty-two dentists (7%) had encountered an epileptic fit
- Twenty-four dentists (4%) had encountered an asthma attack
- Five dentists (0.8%) had encountered choking
- Seven dentists (1.1%) had encountered anaphylaxis
- Two dentists (0.3%) had encountered a cardiopulmonary arrest.

GENERAL DENTAL COUNCIL GUIDELINES ON MEDICAL EMERGENCIES

*Standards for dental professionals*⁶ emphasises that all dental professionals are responsible for putting patients' interests first, and acting to protect them. Central to this responsibility is the need for dental

professionals to ensure that they are able to deal with medical emergencies that may arise in their practice. Such emergencies are, fortunately, a rare occurrence, but it is important to recognise that a medical emergency could happen at any time and that all members of the dental team need to know their role in the event of one occurring.

The General Dental Council, in its publication *Principles of dental team working*,⁷ states that the person who employs, manages or leads a team in a dental practice should ensure that:

- There are arrangements for at least two people available to deal with medical emergencies when treatment is planned to take place
- All members of staff, not just the registered team members, know their role if a patient collapses or there is another kind of medical emergency
- All members of staff who might be involved in dealing with a medical emergency are trained and prepared to deal with such an emergency at any time
- Practise together regularly in a simulated emergency so they know exactly what to do.

Maintaining the knowledge and competence to deal with medical emergencies is an important aspect of all dental professionals' continuing professional development. The above guidance has been endorsed in the Resuscitation Council (UK) statement.

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RESUSCITATION COUNCIL (UK) STATEMENT

The Resuscitation Council (UK)'s statement *Medical emergencies and resuscitation standards for clinical practice and training for dental practitioners and dental care professionals in general dental practice*² provides guidance and recommendations concerning medical emergencies that may occur in the dental practice. It was revised in June 2011 to incorporate the new resuscitation guidelines as well as other best practice. It has been endorsed by the General Dental Council.

Key recommendations

The key recommendations in the statement are that

- Every dental practice should have a procedure in place for medical risk assessment of their patients
- All dental practitioners and dental care professionals should follow the systematic 'ABCDE' approach when assessing an acutely sick patient
- Specific emergency drugs and items of emergency medical equipment should be immediately available in every dental practice (this should be standardised throughout the UK)
- Every clinical area should have immediate access to an automated external defibrillator (AED)
- Dental practitioners and dental care professionals should receive training in cardiopulmonary resuscitation (CPR), including basic airway management and the use of an AED, with annual updates
- Regular simulated emergency scenarios take place in the dental practice
- Dental practices should have a protocol in place for calling medical assistance in an emergency (this will usually be calling 999 for an ambulance)
- All medical emergencies should be audited.

Resuscitation algorithms

The new algorithms from the 2010 Resuscitation guidelines (basic life support and automated external defibrillation) have been included.

Oxygen

Oxygen cylinders should be easily portable and enable the delivery of an adequate

flow rate of oxygen, eg 15 litres per minute. The British Thoracic Society has recently published guidance on the use of high flow oxygen.⁸ This has caused concern and confusion regarding its safety. The Resuscitation Council UK³ have very clearly stated that 'in any critically ill patient the initial administration of high flow oxygen (15 litres per minute) is the correct course of action'.

Once pulse oximetry is available (usually commenced by the paramedics), the patient's oxygen saturation levels can be accurately measured then the given amount of oxygen can be titrated accordingly. If the oxygen saturations are 94% or more, oxygen is not needed.

The guidance on oxygen delivery for a suspected heart attack has changed: assuming pulse oximetry is not available, high flow oxygen (15 litres per minute) may be administered if the patient is cyanosed (blue lips) or if his/her level of consciousness deteriorates.

Pulse oximetry

Some dental practices will have a pulse oximeter (usually the ones that administer IV sedation). If available, pulse oximetry should be used to guide the delivery of oxygen to the sick patient. The target oxygen saturation level is (94-98%).³

Automated external defibrillator

It is recommended that all dental practices should have immediate access to an automated external defibrillator (AED) (Fig. 1). AEDs are suitable for use in adults and in children over eight years of age. Some AEDs can be modified eg use of paediatric pads/connection, to increase their suitability for use in children between one and eight years of age; dental practices that treat children regularly should consider purchasing this modification for their AED.³ If this modification is not available, the standard AED can be used in a child over one year of age.

Medications

All drugs should be stored together in a purposely-designed 'Emergency Drug' storage container. The list of medications which should be available in the dental practice has not changed (see Fig. 2). However, further clarification regarding the storage and administration of midazolam has been provided.



Fig. 1 Automated external defibrillator (AED)

Drug	Indications	Doses & Routes	Paediatric Dose
Adrenaline 1:1000	Cardiac arrest	10mg (10ml) IV or IO	0.1mg/kg (0.1ml/kg)
Aspirin 75mg	Myocardial infarction	300mg PO	50-100mg PO
Atropine 1mg	Bradycardia	1-3mg IV	0.02-0.05mg/kg IV
Benzocaine	Local anaesthesia	2-4% topical	0.5-1% topical
Bupivacaine 0.5%	Local anaesthesia	1-2ml IV	0.1-0.2ml/kg IV
Flumazenil 10mg	Benzodiazepine overdose	2-5mg IV	0.05-0.1mg/kg IV
Midazolam 5mg	Sedation	2-5mg IV	0.1-0.2mg/kg IV
Propofol 10mg	Sedation	2-5mg IV	0.1-0.2mg/kg IV

Fig. 2 Poster: Emergency drugs in the dental practice

Emergency	Signs & Symptoms	Management
Cardiac arrest	Loss of consciousness, no response to shouting, no breathing, no pulse	Call for help, start CPR, use AED
Stroke	Face drooping, arm weakness, speech difficulty	Call 999, do not give food/drink
Seizure	Uncontrolled jerking movements	Protect patient, do not restrain
Choking	Inability to breathe, cough, or speak	Heimlich manoeuvre
Diabetic emergencies	Hypoglycaemia: sweating, confusion, drowsiness Hyperglycaemia: thirst, dry mouth, blurred vision	Check blood glucose, give oral glucose for hypoglycaemia
Respiratory emergencies	Wheezing, chest tightness, difficulty breathing	Give oxygen, use inhaler
Medication emergencies	Overdose, allergic reaction, toxicity	Stop medication, call 999 for severe reactions

Fig. 3 Poster: Medical emergencies in the dental practice

Buccal midazolam

The Resuscitation Council (UK)³ has reiterated the importance of administering buccal midazolam if 'seizures are prolonged (convulsive movements lasting five minutes or longer) or recur in quick succession'.

Although midazolam was until recently not licensed for buccal administration, it is recommended in the British National

Formulary, by the Advanced Paediatric Life Support course, the Royal College of Paediatrics and Child Health, the Scottish Dental Clinical Effectiveness Programme (SDCEP) and the Resuscitation Council (UK).³ Buccolam® (buccal midazolam) has recently received a license to treat seizures⁹ and further information about ordering, prescribing and administration is awaited.

Midazolam has been reclassified as a Schedule 3' Controlled Drug. As such:

- A written prescription is required
- It does not need to be kept in a locked cupboard
- It does not need to be kept on a controlled drug register
- It can be ordered following the conditions laid out by the Royal Pharmaceutical Society of Great Britain *Guidance Medicines, ethics and practice: a guide for pharmacists and pharmacy technicians, section 1.2.14.*¹⁰

DEBRIEFING FOLLOWING AN EVENT

Following an event such as a medical emergency, the Resuscitation Council

(UK) recommends a period of 'debriefing' which will enable dental staff to reflect on how the event was managed and how the patient was treated. Discussion could take place on how a similar event could and perhaps should be managed if it were to happen again.

For further information, access the Resuscitation Council UK's website: www.resus.org.uk.

CONCLUSION

Every dental practice has a duty of care to ensure that an effective and safe service is provided for its patients. This article has provided an overview to the Resuscitation Council (UK)'s updated guidance on clinical practice and training in medical emergencies and resuscitation for dental practitioners and dental care professionals in general dental practice.

The *Medical emergencies in the dental practice* poster (Fig. 3), which includes the current guidelines for the management of medical emergencies in the dental practice can be downloaded from: <https://www.walsallhealthcare.nhs.uk/>

information-for-healthcare-professionals.aspx (Fig. 2 can also be accessed at this link).

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