Updated posters to help manage medical emergencies in the dental practice

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Medical emergencies can occur in the dental practice. The posters 'Medical Emergencies in the Dental Practice' and 'Emergency Drugs in the Dental Practice' have been designed to help dental professionals to respond effectively and safely to a medical emergency. These posters, endorsed by the British Dental Association (BDA), are included with this article. Further copies can be downloaded from: https://www.walsallhealthcare.nhs.uk/medical-education.aspx.

Duty of care

Dental practices have a duty of care to ensure that an effective and safe service is provided to their patients. The satisfactory performance in a medical emergency in the dental practice has wide-ranging implications in terms of equipment, training, standards of care, clinical governance, risk management and clinical audit.

Maintaining the knowledge and competence to deal with medical emergencies is an important aspect of all dental care professionals' (DCPs') continuing professional development (CPD).[1] The updated posters described in this article are designed to be *aide-memoires* to assist DCPs to safely and effectively manage medical emergencies occurring in their workplace.

The aim of this article is to provide an overview to the updated posters which are designed to help manage medical emergencies in the dental practice.

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Incidence of medical emergencies

Medical emergencies in the dental practice that have been reported include vasovagal syncope (63%), angina (12%), hypoglycaemia (10%), epileptic seizures (10%), choking (5%), asthma (5%) and anaphylaxis.[2] Vasovagal syncope is the most common emergency, accounting for approximately two thirds of all emergencies reported.[3]

The GDC and medical emergencies

A medical emergency could occur at any time in the dental practice. The General Dental Council (GDC)[1] states it is important to ensure that:

- There are arrangements for at least two people to be available within the working environment to deal with medical emergencies when treatment is planned to take place. In exceptional circumstances the second person could be a receptionist or a person accompanying the patient
- All members of staff, including those not registered with the GDC, know their role if there is a medical emergency
- All members of staff who might be involved in dealing with a medical emergency are trained and prepared to do so at any time, and practise together regularly in a simulated emergency so they know exactly what to do.

National guidance on the management of medical emergencies

The 'Medical emergencies in the dental practice' section of the British National Formulary (BNF)[4] provides guidelines on the management of the more common medical emergencies which may arise in the dental

Fig. 1 Poster 1: Medical emergencies in the dental practice

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MEDICAL EMERGENCIES IN THE DENTAL PRACTICE

MEDICAL EMERGENCY	SIGNS & SYMPTOMS	TREATMENT
Adrenal crisis	• Collapse • Pallor • Cold & clammy skin • Hypotension and Dizziness • Vomiting & diarrhoea	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Call 999 • Lie flat • Oxygen 15 litres/min
Anaphylaxis	Signs & symptoms (can vary) can include: • Urticaria&/or angioedema • Flushing & pallor • Respiratory distress • Stridor, wheeze &/or hoarseness • Hypotension & tachycardia Anaphylaxis likely: • Sudden onset & rapid progression of symptoms • Life-threatening **A** &/or **B** &/or **C** • Skin &/or mucosal changes	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Call 999 • Oxygen 15 litres/min • Lie flat, elevate legs (if breathing not impaired) • Adrenaline 500 micrograms IM (0.5ml of 1:1000) • Repeat adrenaline at 5 minute intervals if no improvement **Paediatric doses of adrenaline:** < 6 yrs - 150 micrograms (0.15ml of 1:1000) 6-12 yrs - 300 micrograms (0.3ml of 1:1000) > 12 yrs -500 micrograms (0.5ml of 1:1000)
Asthma	Breathlessness & expiratory wheeze **Severe (adult):** inability to complete sentences in one breath, RR>25/min, HR>110/min **Severe (child):** inability to complete sentences in one breath or too breathless to talk or feed, RR > 40 (2-5 yrs) or > 30 (> 5 yrs), HR > 140 (2-5 yrs) or > 125 (> 5 yrs) **Life threatening:** cyanosis, poor respiratory effort, fall in HR, altered level of consciousness/confusion, exhaustion	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Sit upright • 2 puffs (100 micrograms/puff) of short acting beta agonist inhaler e.g. salbutamol; repeat doses may be necessary • If patient unable to effectively use inhaler: additional doses through spacer device • Call 999 if unsatisfactory/no response or if severe/ life threatening • While awaiting ambulance: oxygen 15 litres/min; up to 10 activations of salbutamol inhaler using a spacer device should also given (repeated every 10 minutes if necessary) • Reassure patient
Cardiac emergencies	Symptoms can vary; commonly: • Tightness, heaviness or pain in the chest • Pain may radiate to neck, jaw shoulders, left arm & back • Pallor& sweating • Nausea/vomiting • Breathlessness	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Call 999 • Comfortable position (usually sitting up) • GTN spray 2 activations sub lingual • Aspirin 300 mg orally (crushed or chewed) (unless there is clear evidence that the person is allergic to it) • Ensure automated external defibrillator (AED) is immediately accessible (should it be required) as per Resuscitation Council UK guidelines **NB** If history of angina: GTN & rest; where symptoms are mild &resolve rapidly, calling 999 usually not necessary
Epileptic seizures	• Sudden collapse& loss of consciousness • Rigidity & cyanosis • Jerking movements of limbs • Noisy breathing • Tongue may be bitten • Frothing at mouth • Incontinence may occur	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Safe environment: prevent injury, do not put anything into mouth, do not restrain • Note timings of fit • Oxygen 15 litres/min • Once jerking movements cease: recovery position & check the airway **Prolonged convulsive seizures (5 minutes or more) or repeated seizures (3 or more in an hour):** • Midazolam oromucosal solution can be given by the buccal route in adults as a single dose of 10 mg [unlicensed] **Depending on response to treatment, the person's situation and any personalised care plan,** call 999 particularly if: • Seizure is continuing 5 minutes after the emergency medication has been administered • The person has a history of frequent episodes of serial seizures or has convulsive status epilepticus, or this is the first episode requiring emergency treatment **or** • There are concerns or difficulties monitoring the person's airway, breathing, circulation or other vital signs **Paediatric doses of buccal midazolam:** 1-5 years - 5mg 5-10 years - 7.5mg > 10 years – 10mg
Hypoglycaemia	• Shaking/trembling • Slurred speech • Vagueness • Sweating and pallor • Blurred vision • Tiredness and lethargy • Confusion/aggression • Stroppy/moody • Unconsciousness	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Offer 15-20g fast acting glucose e.g. 3-4 glucose tablets, glass of orange juice or glucose gel • Impaired consciousness or if patient is unable to swallow safely: glucagon 1mg IM • Once consciousness returns, offer oral glucose • Call 999 if the patient goes unconscious • If able, measure blood sugar to confirm diagnosis **Paediatric dose of glucagon:** < 8 years of age or < 25kg: 0.5mg IM
Stroke	• Facial weakness: smile? mouth or eye drooped? • Arm weakness: raise both arms? • Speech problems: speak clearly or understand what you say? • Time to call 999	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Call 999 • Oxygen 15 litres/min • Nil by mouth
Syncope	• Feels faint/dizzy/light headed • Collapse & loss of consciousness • Pallor, sweating, slow pulse, low BP • Nausea/vomiting	• **A**irway **B**reathing **C**irculation **D**isability **E**xposure • Lie flat, elevate legs & loosen tight clothing • Consider oxygen (not usually necessary) • If becomes unresponsive, check for signs of life • Once consciousness returns, offer glucose in water or sweet tea

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Stroke Association **FAST** www.stroke.org.uk (accessed 1 May 2015)

Acknowledgements

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Further information is also available from the British Dental Association at www.bda.org/medicalemergencies

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practice. Further information is also available from the BDA (if your principal is a member) at www.bda.org/medicalemergencies.

Specific guidance is also provided by other authoritative bodies including the British Thoracic Society (asthma), the British Heart Foundation (cardiac emergencies), the National Institute for Health and Care Excellence (NICE) (epileptic seizures), the Stroke Association (acute stroke), Diabetes UK (hypoglycaemia) and the Resuscitation Council (UK) (anaphylaxis).

The Resuscitation Council (UK) no longer provides specific guidance on medical emergencies in the dental practice (formerly provided in their publication *Medical emergencies and resuscitation standards for clinical practice and training for dental practitioners and dental care professionals in general dental practice*). This was superseded in November 2013 by its publication *Quality standards for cardiopulmonary resuscitation practice and training in primary dental care*, in which the Resuscitation Council (UK) continues to provide helpful guidance on all aspects relating to cardiopulmonary resuscitation in the dental practice.[5]

Poster 1

The 'Medical emergencies in the dental practice' A3 poster (Fig. 1) was first produced in 2009 as an *aide-memoire* to assist dental staff to safely manage medical emergencies occurring in the dental practice.[6] It was updated[7] in 2012 and now revised again in 2015. The 2015 revisions include:

- Increased emphasis on the ***A**irway **B**reathing **C**irculation **D**isability **E**xposure* approach to the management and treatment of medical emergencies
- Inclusion of adrenal crisis in line with guidance in the BNF[4]
- New NICE guidance concerning midazolam administration for epileptic seizures (midazolam injection is no longer considered an option for buccal administration)[8]
- Emphasis on the importance of having immediate access to an automated external defibrillator (AED).[5]

The poster is intended to be placed on the wall in the surgery where it can be easily and quickly accessed should an emergency occur. The emergencies covered are listed in alphabetical order:

- Adrenal crisis
- Anaphylaxis
- Asthma
- Cardiac emergencies
- Epileptic seizures
- Hypoglycaemia
- Stroke
- Syncope.

The important signs and symptoms to look out for to help correctly diagnose each emergency are listed, together with the principles of safe and effective treatment. Where appropriate, the recommended doses of drugs (including paediatric doses) and routes of administration are also stated.

This poster can be downloaded from Walsall Healthcare NHS Trust's website: https://www.walsallhealthcare.nhs.uk/medical-education.aspx.

'ALL DENTAL STAFF SHOULD BE TRAINED AND RECEIVE REGULAR UPDATES IN THE MANAGEMENT OF MEDICAL EMERGENCIES AND POSSESS UP-TO-DATE EVIDENCE OF CAPABILITY'

Poster 2

The 'Emergency drugs in the dental practice' A4 poster (Fig. 2) was first produced in 2012 as an *aide-memoire* to assist dental staff to safely administer medications in the emergency situation.[7] This poster has also been revised in 2015 to incorporate the new NICE guidance concerning midazolam administration for epileptic seizures (midazolam injection is no longer considered an option for buccal administration).[8] The poster is designed to be kept in the emergency drugs box for quick reference. Further copies can be downloaded from Walsall Healthcare NHS Trust's website: https://www.walsallhealthcare.nhs.uk/medical-education.aspx.

Training

All dental staff should be trained and receive regular updates in the management of medical emergencies and possess up-to-date evidence of capability.[9] Running regular mock scenarios/drills involving the team approach is advised.[1] In the author's experience, some surgeries find it helpful to use the poster in the training session to increase familiarity in its use.

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 updated posters designed to help manage medical emergencies in the dental practice.

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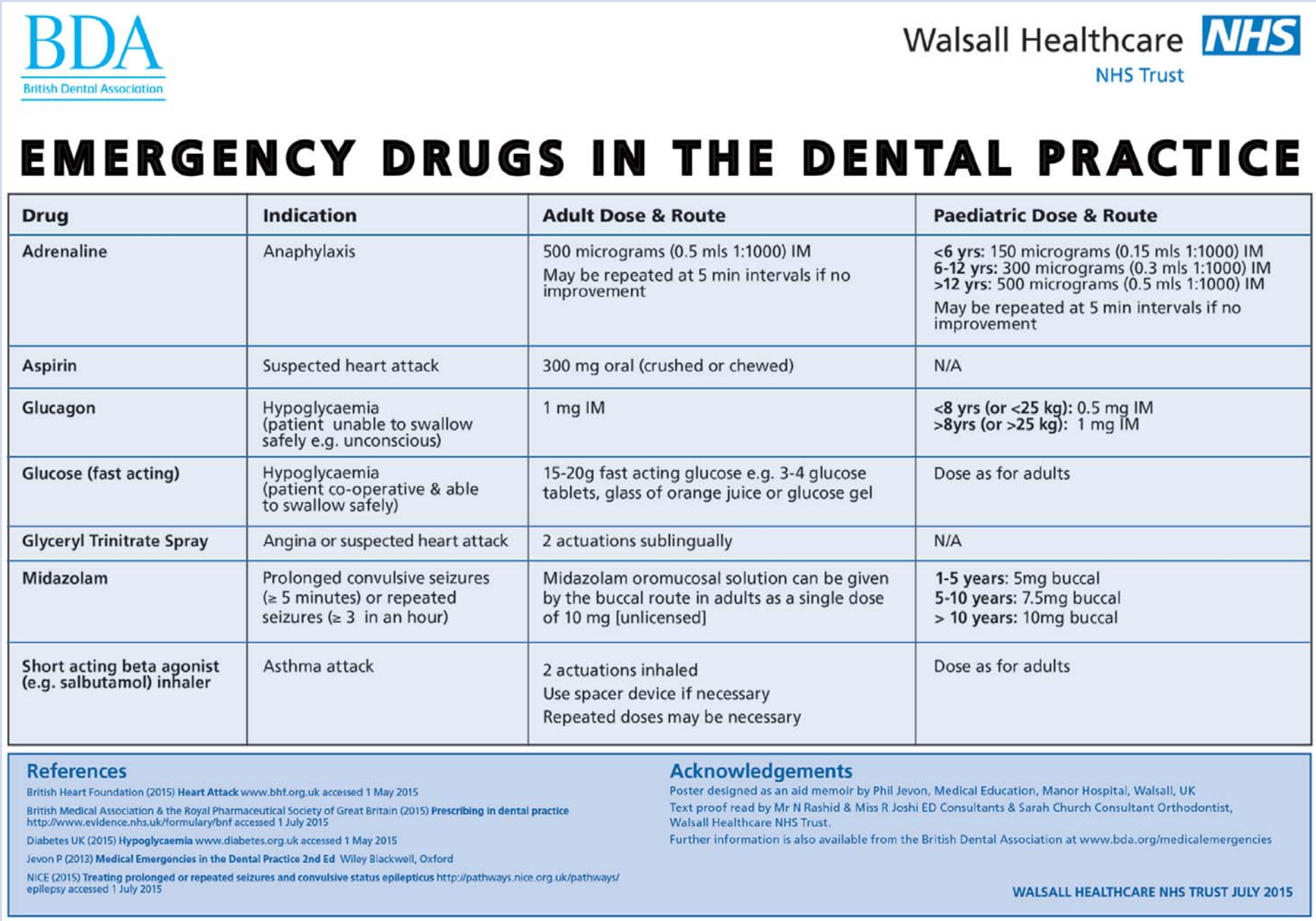

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EMERGENCY DRUGS IN THE DENTAL PRACTICE

Drug	Indication	Adult Dose & Route	Paediatric Dose & Route
Adrenaline	Anaphylaxis	500 micrograms (0.5 mls 1:1000) IM May be repeated at 5 min intervals if no improvement	**<6 yrs:** 150 micrograms (0.15 mls 1:1000) IM **6-12 yrs:** 300 micrograms (0.3 mls 1:1000) IM **>12 yrs:** 500 micrograms (0.5 mls 1:1000) IM May be repeated at 5 min intervals if no improvement
Aspirin	Suspected heart attack	300 mg oral (crushed or chewed)	N/A
Glucagon	Hypoglycaemia (patient unable to swallow safely e.g. unconscious)	1 mg IM	**<8 yrs (or <25 kg):** 0.5 mg IM **>8yrs (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 minutes) or repeated seizures (≥ 3 in an hour)	Midazolam oromucosal solution can be given by the buccal route in adults as a single dose of 10 mg [unlicensed]	**1-5 years:** 5mg buccal **5-10 years:** 7.5mg buccal **> 10 years:** 10mg buccal
Short acting beta agonist (e.g. salbutamol) inhaler	Asthma attack	2 actuations inhaled Use spacer device if necessary Repeated doses may be necessary	Dose as for adults

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British Heart Foundation (2015) **Heart Attack** www.bhf.org.uk accessed 1 May 2015

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Fig. 2 Poster 2: Emergency drugs in the dental practice