Medical Emergencies (Anaphylaxis, Fainting, Hypoglycaemia, Seizures and GDC Guidelines)

Core Subject

Aims: This article aims to discuss some of the guidelines provided by the General Dental Council (GDC) in respect of dental emergencies and the dental profession, and to give an overview on the symptoms and treatment of anaphylaxis, fainting, hypoglycaemia and seizures.

Objectives: On completion of this verifiable CPD article the participant will be able to demonstrate, through completion of a questionnaire, the ability to:

- Have knowledge of the guidelines provided by the GDC in respect of equipment and scope of practice.
- Be able to identify the causes and symptoms of anaphylaxis, fainting, hypoglycaemia and seizures.
- Be able to identify the drugs required from the emergency drugs kit for anaphylaxis, fainting, hypoglycaemia and seizures.

Introduction

If by the term emergency we mean a situation where a patient's life is in immediate danger, then we have to admit, thankfully, that there are very few true emergencies in the dental surgery. It is relatively easy to be skilful in techniques that are repeated frequently. Emergency care is performed only occasionally and in instances that involve life saving measures, may be performed once in many years. A survey of general dental practitioners conducted over a ten-year period reported a medical emergency occurring, on average, once in every 3-4 years in dental practice.¹

Although rare, real emergencies can arise, and it is extremely important that the dental care professional (DCP) can recognise the emergence of such a situation and competently fulfil their role in assisting the dentist during an emergency situation.

The General Dental Council stipulate that:

- "There are at least two people available to deal with potential 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 if 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, and practise together regularly in a simulated emergency so they know exactly what to do.” 2

**Equipment requirements – defibrillators and emergency drugs**

**Defibrillators**

The General Dental Council endorse the Resuscitation Council’s guidance that all clinical areas should have immediate access to an automated external defibrillator (AED).

**What does this mean in practice?**

Premises in which patients are seen clinically should have a defibrillator. This includes practices in which patients are seen by:

- A dentist only
- A clinical dental technician only
- A dental hygienist or dental therapist only
- A combination of members of the dental team

**Emergency drugs**

The General Dental Council endorse the Resuscitation Council’s guidance that clinical dental settings staffed by dentists, hygienists, and therapists, are to have an emergency drugs kit. Further guidance on what drugs should be contained in emergency drugs kits can be obtained from the Department of Health and via the British National Formulary (you will need to subscribe to the British National Formulary in order to log into their website.) Currently the list is as follows:

- 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
Clinical dental technicians:

The General Dental Council recognise that the Human Medicines Regulations 2012 prohibit clinical dental technicians from purchasing or holding the prescription-only medicines contained within an emergency drugs kit. Therefore, they do not expect a clinical dental technician to have an emergency drugs kit or be trained in the use of an emergency drugs kit. They are aware that CDTs who work independently will not have an emergency drugs kit on their premises.

Dental hygienists and therapists:

The Human Medicines Regulations 2012 permit dental hygienists and therapists to hold emergency drugs on their premises, but not to purchase the medicines directly. A dental hygienist / therapist practice needs to ensure that they hold emergency drugs on site. Hygienist / therapist practices without an on-site dentist can obtain an emergency kit through a prescribing dentist or doctor under a patient-group directive.

Staff skills requirements

A patient could collapse on any premises at any time, whether they have received treatment or not. It is therefore essential that all registrants must be trained in dealing with medical emergencies, including resuscitation, and possess up to date evidence of capability.

Scope of practice

Registrants must know their role in the event of a medical emergency, and ensure they are sufficiently trained and competent to carry out that role.

If the setting in which you work changes, your role in the event of a medical emergency may change as well. You must ensure that you are suitably trained and competent to carry out your new medical emergency role. This might be the case for:

- A dental hygienist moving to independent practice under direct access
- A clinical dental technician moving from a dentist’s premises to independent premises
- A dental nurse working in a school
- A dental nurse assisting with domiciliary visits

The following section of this article will provide an overview, the symptoms and treatment of anaphylaxis, fainting, hypoglycaemia and seizures.
Anaphylaxis

Overview

A severe life-threatening generalised or systemic hypersensitivity reaction – the extreme end of the spectrum, occurring when the body’s immune system reacts inappropriately to the presence of a substance that it wrongly perceives as a threat. In dentistry anaphylactic reactions may follow the administration of a drug or contact with substances such as latex. In general the more rapid the onset of the reaction the more profound it tends to be. Symptoms may develop within minutes and rapid treatment is essential.

Symptoms

Characterised by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes.

- Life-threatening Airway: swelling of the face/throat/tongue, hoarse voice, stridor, difficulty swallowing.
- Generalised itching, especially of the hands and feet.
- Life-threatening Breathing: increased respiratory rate, wheeze, cyanosis.
- Life-threatening Circulation: pale skin, clammy, low blood pressure, faintness, drowsiness, collapse.

Treatment

- Secure the airway
- Phone 999 or 112 and say ‘Anaphylaxis’
- Adrenaline (IM) using a blue needle (or a green needle if the person is obese). The dose is repeated if necessary at 5 minute intervals according to the patient’s condition.

<table>
<thead>
<tr>
<th>Age</th>
<th>Volume</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>0.50 ml</td>
<td>500 micrograms</td>
</tr>
<tr>
<td>Child more than 12 years</td>
<td>0.50 ml</td>
<td>500 micrograms</td>
</tr>
<tr>
<td>Child 6 – 12 years</td>
<td>0.30 ml</td>
<td>300 micrograms</td>
</tr>
<tr>
<td>Child less than 6 years</td>
<td>0.15 ml</td>
<td>150 micrograms</td>
</tr>
</tbody>
</table>

- Oxygen - 15 litres per minute with a non-rebreather mask and reservoir.
- Patient Positioning – A patient with an airway or breathing problem should sit up. However, any patient who collapses, or is shocked, or who feels faint or light-headed, must be laid flat (with legs raised) and kept in that position until his/her blood pressure has returned to normal.
Fainting (Syncope)

Overview

Fainting is a defensive mechanism employed by the brain, when the blood and oxygen supply to the brain becomes too low. A trigger causes the nervous system to temporarily malfunction, leading to a drop in heart rate and blood pressure. Simple faint is the most common medical emergency seen in the dental practice. Some patients are more prone to fainting than others and it is wise to treat these patients in a supine position.

A similar clinical picture may be seen in Carotid Sinus Syndrome where mild pressure on the neck in some patients - usually elderly leads to a vagal reaction resulting in fainting. This situation could progress to bradycardia or even cardiac arrest. Therefore, an awareness of this possibility is important.

Symptoms

The person may:

- Feel light-headed or dizzy.
- Become very pale.
- Pulse rate slows.
- Low blood pressure
- Have ringing in their ears.
- Yawn.
- Feel weak.
- Nausea and/or vomiting.
- Have little or no warning at all and pass out.

Treatment

- Oxygen - 15 litres per minute with a non-rebreather mask and reservoir.
- Keep the person on the floor (consider the recovery position).
- If a person feels faint (but hasn’t fainted) lay the person down and raise the legs.
- After fainting, the person should return to normal fairly quickly.
- Phone 999 or 112 if the person does not recover after a few minutes.
- Repeated episodes of fainting need medical follow-up.

Check for the presence of a very slow heart rate (<40 per minute) which may drop the blood pressure. This is usually caused by a vaso-vagal episode. The drop in blood pressure may cause transient cerebral hypoxia and give rise to a brief seizure.
Hypoglycaemia

Overview

Insulin-treated diabetic patients attending for dental treatment under local anaesthesia should inject insulin and eat meals as normal. If food is omitted the blood glucose will fall to an abnormally low level (hypoglycaemia). Patients can often recognise the symptoms themselves and this state responds to sugar in water or a few lumps of sugar. Children may not have such prominent changes but may appear unduly lethargic.

Symptoms

- Shaking / trembling
- Sweating.
- Pins and needles in the lips and tongue.
- Headache.
- Double vision.
- Palpitation.
- Difficulty in concentration / vagueness.
- Slurring of speech.
- Aggression and confusion / Seizures
- Skin pale and clammy.
- Change of behaviour.
- Convulsions.
- Unconsciousness.

Treatment

- Initially glucose 10-20mg is given by mouth either in liquid form, Lucozade original non diet 55ml or Coca-cola 100ml or sugar/sugar lumps.

- **GlucoGel** can be given if the patient is co-operative and has an intact gag reflex. Twist off the cap and squeeze the gel into the mouth and swallow. Alternatively, GlucoGel can be squeezed inside the cheek, and the outside of the cheek then gently rubbed to aid absorption. Repeat after 10 – 15 minutes if necessary.

- **Glucagon** is given when the patient is uncooperative / does not have an intact gag reflex / is unable to swallow safely / has an impaired level of consciousness. Administer IM into the upper arm or into the antero-lateral aspect of the thigh (single dose only).

<table>
<thead>
<tr>
<th>Age</th>
<th>Volume</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>1 ampoule</td>
<td>1 milligram</td>
</tr>
<tr>
<td>Children &gt; 8 years old or &gt; 25kg</td>
<td>1 ampoule</td>
<td>1 milligram</td>
</tr>
<tr>
<td>Children &lt; 8 years old or &lt; 25kg</td>
<td>0.5 ampoule</td>
<td>500 micrograms</td>
</tr>
</tbody>
</table>

If any difficulty is experienced, or if the patient does not respond, then phone 999 or 112.
Seizure

Overview

Epilepsy is a symptom of an underlying neurological disorder rather than a condition in its own right. An epileptic seizure is the result of a sudden burst of excess electrical activity with the brain in which an individual's awareness of the surroundings may be impaired and their behaviour altered. It can be as discernible to the person experiencing it or to an observer. Epilepsy is usually considered active if a person is taking anti-epileptic medication and has had a seizure in the last 2 years.

Symptoms

Signs and symptoms of a tonic-clonic seizure are:

- The body stiffens (tonic stage).
- If standing, the person may fall (usually backwards).
- The muscles relax and contract rhythmically, causing the convulsion (clonic stage).
- Breathing may become laboured (i.e. difficult or noisy) and may stop for up to 40 seconds. The person may become cyanosed.
- Generally a seizure has a sudden onset and a specific end point.
- Seizures are usually brief lasting from a few seconds to a few minutes.
- They are frequently followed by a period of drowsiness and confusion.

Treatment

- Time the seizure - note the time the seizure started and stopped.
- Protect the individual from further injury by clearing their mouth of all instruments and moving equipment out of reach.
- Recline the dental chair to the supine position as near to the floor as possible.
- Avoid putting your fingers in the person's mouth.
- Most seizures are self-limiting and the individual will recover quite rapidly.
- Some people will sleep quite deeply after a seizure and they should be placed in the recovery position.

- Phone 999 or 112 if:
  - The seizure lasts 2 minutes longer than usual for that person.
  - The seizure has already lasted 5 minutes, and is continuing.
  - The person has repeated generalised seizures without recovery in between.
  - There is a slow recovery or you have any concerns.
  - It is the person's first seizure.
  - The person is injured.

- Oxygen - 15 litres per minute with a non-rebreather mask and reservoir (during an active convulsion).
• Buccal Midazolam – for a tonic-clonic seizure that fits the criteria highlighted in red above.

<table>
<thead>
<tr>
<th>Age</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>10 milligrams (mg)</td>
</tr>
<tr>
<td>Above 10 years</td>
<td>10 milligrams (mg)</td>
</tr>
<tr>
<td>Child 5 to 10 years</td>
<td>7.5 milligrams (mg)</td>
</tr>
<tr>
<td>Child 1 to 5 years</td>
<td>5 milligrams (mg)</td>
</tr>
</tbody>
</table>

Single dose only (even if the patient vomits) into the buccal sulcus.

**Conclusion**

Medical emergencies in dental practice are not common but could occur at any time. Such events are less alarming and best managed if they have been anticipated and if mechanisms are in place and regularly reviewed for dealing with them. Applying basic principles is key for effective management.

**Non-Verifiable CPD Tips**

We recommend that you carry out non verifiable CPD related to this subject. Please go to the non-verifiable section of our website to choose and complete it. Please remember to update your non-verifiable record once you have completed it.

© 2016 Sue Bagnall and Nicky Gough

**References**


