Medical Emergencies in Dentistry and the Emergency Drugs Kit – Core Subject

Aims: To provide information on some of the types of medical emergency that may occur in the dental surgery and to discuss how the dental care professional may be able to assist in managing such a situation. To provide information about which emergency drug should be used in specific emergency situations.

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

- Identify the most common types of medical emergency that may occur in the dental surgery.
- Identify which patients may be considered to be ‘at risk’ of a potential medical emergency during dental treatment.
- Identify which drugs are used in particular emergencies.
- Identify the role of the dental care professional in assisting in a medical emergency in dental practice.

Introduction

The term emergency can be defined as a serious, unexpected, and often dangerous situation requiring immediate action. In dentistry this may mean a situation where a patient’s life is in immediate danger. A study conducted over a ten year period reviewed how frequently an emergency occurs in general dental practice and found that on average a practitioner may experience an emergency in a general dental practice once every four and a half years.

It is relatively easy to be skilful in techniques that are repeated frequently such as routine dental treatment; however, as we know, emergency care is performed only occasionally and instances that involve life saving measures and may be performed once in many years. It is therefore important that we keep updating our knowledge on medical emergencies so that we can ensure we are ready to take immediate action should an emergency arise.
Protocol

Every practice should have a protocol in place for dealing with a medical emergency. The General Dental Council state that:

- At least two people to be available to deal with medical emergencies when treatment is planned to take place.
- All members of staff, not just the registered team members, should know their role if a patient collapses or becomes unwell.
- All members of staff who might be involved in dealing with a medical emergency should be trained and prepared to deal with such an emergency at any time.
- Team members should practise together regularly in a simulated emergency so they know what to do if an emergency arises.
- New members of staff should take part in an induction programme which incorporates resuscitation training.\(^4\)

It is recommended that all team members complete a course of basic life support training once a year. Take time to review your practice policy and ensure you are familiar with it. (Remember to add this to your non verifiable record).\(^5\)

Medical Risk Assessment

We all know that a comprehensive medical history should always be completed for each patient and that this should be checked and updated at every appointment. Maintaining accurate documentation of a patient’s medical history allows us to identify which patients may be ‘at risk’ prior to treatment. When undertaking our medical risk assessments we need to consider that we are an aging population.

Between 1985 and 2010, the number of people aged 65 and over in the UK increased by 20 per cent to 10.3 million, in 2010, 17 per cent of the population were aged 65 and over and the number of people aged 85 and over more than doubled over the same period to 1.4 million.\(^6\) These figures demonstrate that we are now living in an aging population.

It is common for people over 65 to be taking a large number of medications on a daily basis. This is known as polypharmacy. Half of these patients may be taking five or more drugs a day.\(^7\) Therefore, completing a medical risk assessment for this group of patients has become more complex. Along with this, patients have developed higher expectations of their dental treatment, and we are providing increasingly complex treatment plans for this group of patients.

Therefore, up to date medical histories have never been more important than they now are and we should prioritise the time taken to get this information correct.
The Resuscitation Council Guidelines

If we find ourselves dealing with an emergency the Resuscitation Council guidelines advise us to:

- Stay calm and ensure that you and the staff are safe.
- Look at the patient generally to see if they 'look unwell'.
- Use the ABCDE approach

Checking the –

Airway - assess the airway looking for signs of airway obstruction and breathing problems

Breathing – check for paradoxical chest and abdominal movements (‘see-saw’ respirations) look at the depth and rhythm of breathing is it normal? Adults should be about 12-20 breaths per minute and children 20-30 breaths per minute. Check for the use of the accessory muscles of respiration (for example the neck muscles) are they contracting?

Circulation - does the patient appear to have central cyanosis which makes the lips and tongue appear blue.

Disability – Is the patient conscious? Make a rapid initial assessment of the patient’s conscious level. Use the AVPU method:

- Are they alert?
- Do they respond when you talk to them?
- Do they respond to painful stimuli?
- Or are they unresponsive to all stimuli?

Exposure - To assess or provide emergency treatment for a patient adequately you may need to loosen or remove some of the patient’s clothes, this will also allow you to see any rashes. The patient’s dignity should be respected and heat loss minimised.

The Drug Kit

It is important that all drugs should be stored together in a purposely designed storage bag or container and all members of the team should know where it is stored.

Even though, as DCPs we may not be the ones to actually administer the emergency drugs, practising as part of a team will allow us to identify roles and responsibilities in terms of getting the drug kit, phoning for an ambulance, assisting with CPR etc.
Drugs 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

Fainting

It is estimated that at least one third of all adults will experience at least one fainting episode in their life and people who faint without warning and fall could suffer a serious injury. Fainting is caused by a short term reduction in blood pressure to the brain which means the cells of the brain are not able to get enough oxygen from the blood to function properly and a person may lose consciousness.

Patients may faint for a variety of reasons for example: anxiety or fear; low blood pressure; dehydration or postural hypotension (if a patient is lying down and gets up too quickly which is particularly common in dental practice).

Signs of Fainting

A patient who is about to faint will usually have more than one sign or symptom that should prompt us to know they are about to faint the most common are:

- Patient feels giddy
- Feels nauseous
- Patient appears sweaty and face appears pale
- Experiences visual disturbances (sometimes sees spots)
- Feels weak
- Expresses anxiety
- The pulse is fast and feeble at the wrist
- In most cases the patient will have a ringing sound in their ears

Management

If the patient tells you that they feel faint:

- Call for help
- Try to prevent them from falling if it is safe to do so
- If a patient feels faint whilst in the dental chair tilt the chair back
- Raise the patient’s legs so they are about 8-12ins above their head
- Loosen any tight clothing around the airway
- Apply a damp cold compress
- Reassure patient at all times
If the patient has already fainted:

- Check airway, breathing and circulation
- Be ready to call an ambulance if the patient does not immediately begin to recover.\textsuperscript{11}

Any member of the team may be involved in any of the treatment for this type of emergency and they may be required to make the emergency kit and oxygen available in case the patient’s condition deteriorates.

Getting this equipment to hand if a patient appears unwell in anyway should be normal practice protocol.

**Choking and Aspiration**

Another situation we may find ourselves faced with is when our patients start to choke. Coughing and spluttering is often the first sign of a problem. However, it could progress with the patient having difficulty breathing their breathing may become noisy or wheezing. In a severe case the patient may start to experience paradoxical chest or abdominal movements and they could deteriorate rapidly and become cyanosed or they lose consciousness.\textsuperscript{11}

**Management**

The initial treatment is to:

- Sit the patient upright.
- Allow them to cough vigorously.
- Remove any visible bodies from the mouth or pharynx.
- Aspirate with suction if necessary.
- If patient is not recovering – apply sharp blows to the back and if necessary perform abdominal thrusts to try and dislodge any obstruction.
- If patient becomes unconscious call ambulance and apply the ABCDE approach.\textsuperscript{11}

**Diabetic Crisis**

Diabetic Crisis is also known as Hypoglycaemia and hyperglycaemia. Diabetes is a long-term (chronic) condition caused by too much glucose (sugar) in the blood. It is also sometimes known as diabetes mellitus, it affects 2.9 million people in the United Kingdom. It is estimated that there are a further 750,000 people who have the condition but are unaware of it.\textsuperscript{12}

**Signs and Symptoms**

Some of the signs and symptoms of diabetic crisis are:

- Shaking/trembling
- Slurred speech
- Vagueness
- Sweating
- Double Vision
- Confusion
- Drowsiness
- Unconsciousness

If the patient is having a Hyperglycaemic attack (high blood sugar) the symptoms occur slowly, they may become flushed and warm, report being very thirsty and have a fruity odour from their breath, may feel sick or begin to start vomiting.

The patient with Hypoglycaemia (low blood sugar) may develop symptoms rapidly and appear intoxicated, display signs of anger, and confusion or disorientation. They could report that they are suddenly extremely hungry. This is the type of diabetic crisis which more commonly occurs.\textsuperscript{11}

**Management**

In the early stages if the patient is co-operative and conscious they can be given oral glucose, a glucose drink or glucose tablets and if necessary this may be repeated in 10 - 15 minutes.\textsuperscript{11}

If patient then becomes disorientated and appears to be losing consciousness and you are not confident they can swallow, glucagon should be given in the buccal gel form or intramuscular.\textsuperscript{11}

In a severe case you will need to seek medical advice. It is important, especially in patients who have been given glucagon, that once they are alert and able to swallow, they are given a drink containing glucose and if possible some food high in carbohydrate.

The patient may go home if fully recovered and they are accompanied. However, their GP should be informed and they should not drive.

**Anaphylaxis**

In dentistry anaphylactic reactions may follow the administration of a drug or contact with substances such as latex. Generally, the more rapid the onset the more severe the reaction. Symptoms can develop in minutes and the early treatment can be life saving. Anaphylaxis is a severe life-threatening, generalised or systemic hypersensitivity reaction. It is characterised by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes.\textsuperscript{13}

**Signs and Symptoms**

Some or all of these symptoms these symptoms could occur:

- Uticaria (rash).
• Erythema is redness or blotches which disappear if you apply finger pressure to them.
• Patient may complain of abdominal pain, vomit or experience diarrhoea.
• Upper airway oedema and brochospasm may develop causing the patient to go into respiratory distress.
• Patient may experience tachycardia (heart rhythm may alter beating too fast or too slow).
• Very severe case could result in a cardiac arrest.\textsuperscript{11}

Management

• ABCDE approach should be used to recognise and assess the patient.
• If airway is clear lie the patient flat and elevate the legs.
• Oxygen 10-15 litres per minute.
• Adrenaline should be administered 500 micrograms.
• If there is no improvement after 5 minutes the adrenaline should be repeated.
• Wheezing can be treated with Salbutamol inhaler.
• All patients need to be sent to hospital following an anaphylactic attack.\textsuperscript{11}

Epilepsy

More than half a million people have epilepsy in the UK which equates to about one in every 100 people. One in every 20 people will have a one off epileptic seizure at some point in their life, however, this does not mean they have epilepsy.\textsuperscript{15}

Epilepsy is a neurological condition that affects the brain and a physical condition that causes the body to experience a seizure. It is described as the tendency to have repeated seizures that start in the brain and is usually only diagnosed after the person has had more than one seizure.\textsuperscript{15}

Signs and Symptoms

The signs and symptoms of an epileptic attack are:

• The patient may experience a sudden loss of consciousness - this is when the patient becomes rigid and cyanosed (known as the tonic phase).
• Jerking movements of limbs.
• Patient may bite their tongue.
• Patient may experience frothing of the mouth.
• May experience Incontinence.
• After seizure the patient may be floppy and unconscious.
• The patient will regain consciousness after a variable time and may remain confused for some time.\textsuperscript{11}

Management

The ABCDE approach should be used to assess the patient. You should ensure the patient is safe and not attempt to put anything in the patient’s mouth. The patient should not be restrained. If necessary administer oxygen and Midazolam from the drug kit. Once the jerking has stopped the patient should be placed in the recovery
position. If the patient experiences a prolonged seizure or you have difficulty monitoring the patient or it is the first time a patient has experienced a seizure an ambulance should be called.\textsuperscript{11}

\section*{Angina}

Angina is a syndrome (collection of symptoms) that is caused when the oxygenated blood flow to the heart is restricted. This is most commonly caused by hardening and narrowing of the arteries which affects the flow of blood. The term used for hardening and narrowing of the arteries is atherosclerosis.\textsuperscript{14}

It is estimated that 1 in every 12 men and 1 in every 30 women between 55 and 64 years of age have angina in England. This figure rises to 1 in every 7 men and 1 in every 12 women who are over 65 years of age.\textsuperscript{14}

\subsection*{Signs and Symptoms}

- Chest pain
- A feeling of pressure or heaviness in the chest
- Pain can extend into the stomach, back or jaw
- Sweating
- Nausea
- Breathlessness\textsuperscript{14}

\subsection*{Management}

Patients with a history of angina normally take a medication called Glyceryl Trinitrate which is widely used and provides immediate relief from the symptoms of angina.

Or, they may take a tablet form Isosorbide Dinitrate tablets. Patients with angina normally carry their medication with them and they can use up to three sprays. Glyceryl Trinitrate can be used from your drug kit if the patient does not have their own medication with them. Oxygen may also be given.

If the patient does not fully recover at this stage an ambulance should be called.\textsuperscript{14} If patient deteriorates you would need to use the ABCDE approach as a patient with a serve angina attack which could progress to a heart attack.

\section*{Myocardial Infarction}

A study of emergencies in dental practice undertaken in 2008 suggested one heart attack occurs in dental practice in one in every 638 960 patients. So, hopefully it is not an emergency many of us will ever have to deal with.\textsuperscript{2}
Signs and Symptoms

As we have already discussed initially you may be dealing with an angina attack that then develops and with the patient experiencing the following signs and symptoms:

- The patient may report a severe crushing pain – which can radiate to neck, jaw, shoulders left arm and back.
- Skin may appear pale and clammy.
- They could report that they feel sick and may vomit.
- Pulse may be weak.
- Blood pressure may fall.
- Shortness of breath.\(^1\)

Management

The initial management if you suspect a patient is having a heart attack is to:

- Call an ambulance.
- Apply the ABCDE Approach.
- Put the patient in a sitting position.
- You should give them Oxygen 10 – 15 litres minute.
- Use their GTN Spray.
- While waiting for the ambulance you can give them 300mg Aspirin crushed or chewed.
- Reassure.\(^1\)

Defibrillators

It is recommended that all dental practices have immediate access to an automated external defibrillator. However, at present it is not mandatory.

Once opened a defibrillator is automatic and will talk the operator through using it.
If the patient collapses and you do not have a defibrillator this is the flow chart for resuscitation.

**Post Treatment**

Following treatment for any medical emergency it is very important that we always record everything accurately and comprehensively in the patients notes and make time to reflect and debrief as a team. This will enable us to learn as much as we can about what happened during the medical emergency, what role each team member played and how you could improve your clinical practice.

**Portfolio Tip**

Review your practice medical emergency protocol and remember to record it in your non verifiable record.

New non verifiable CPD has been added to the non verifiable section of the website

© 2013 Sue Bagnall and Nicky Gough
References