Medical emergencies in dental practice

Abstract

Serious medical emergencies are fortunately a rare occurrence in the dental practice environment; however, if an emergency situation is encountered a delay in treatment may result in potentially avoidable consequences. The risk of mortality or serious morbidity can be reduced by ensuring that basic emergency equipment and medications are in place, and that the dental team is appropriately trained in basic life support measures. This article aims to provide an overview of the basic emergency medications and equipment that should be present in dental practices, and to discuss specific responses to some of the more common adverse medical events that can present while providing dental treatment.

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Introduction

Medical emergencies can and do occur in a dental practice setting. The dentist has a responsibility to recognise them and initiate primary emergency management procedures in an effort to reduce morbidity and mortality when such adverse events arise. This article aims to provide an overview of the basic emergency drugs and equipment that should be present in dental practices, and to discuss specific responses to some of the more common adverse medical events that can be encountered while providing dental treatment.

Incidence

Fortunately, the incidence of emergency events seen in the general practice setting is rare but when an emergency does occur it can be life threatening. The more common problems include vasovagal syncope (faints), hypoglycaemic episodes, angina, seizures, choking, asthmatic attack and anaphylaxis (**Table 1**). Excluding syncope, adverse medical events have been reported to occur at a rate of 0.7 cases per dentist per year[1] or on average an event once every three to four years.[2] It has also been reported that medical emergencies occur in dental hospital practice more frequently but in similar proportions to those in general dental practice.[3]

Table 1. Prevalence of medical emergencies reported by dentists over a 12-month period.[1]

Emergency	Cases per dentist per year	Average number of years before a case is encountered
Vasovagal syncope	1.9	0.5
Angina	0.17	5.7
Epileptic fit	0.13	7.2
Hypoglycaemia	0.17	5.6
Asthma	0.06	15.1
Choking	0.09	11.2
Anaphylaxis	0.013	75.5
Myocardial infarction	0.006	151
Cardiac arrest	0.003	302
Unspecified collapse	0.026	37.6

Medical risk assessment

The recognition of 'at-risk' patients and subsequent appropriate management is paramount in reducing the probability of an adverse event. Acknowledgement that any dental patient may have a medical emergency during dental treatment is a key start point.

A thorough medical and drug history is mandatory and should be undertaken by the dentist in person. Patient-completed health questionnaires should be confirmed by a verbal history (**Appendix**). Identification of at-risk patients will allow modifications to be made to treatment planning and may highlight those patients whose treatment may be more appropriately conducted at specific times or in specialist centres. Medical and drug records should be updated annually, and any changes highlighted during ongoing treatment plans should be re-assessed and recorded at every visit. This is more important now than ever as we are treating an ageing population who may have substantial co-morbidities and who are undergoing complex and frequently changing medical therapies.

Emergency drugs in the general dental practice

To manage the more common medical emergencies encountered in general practice, the following drugs should be available:[4]

1. **Oxygen.**
2. **Oral glucose** solution/tablets/gel/powder.
3. **Glucagon** injection 1mg IM.
4. **Salbutamol** aerosol inhaler (100 micrograms/actuation).
5. **Adrenaline** IM injection (1:1,000, 1mg/ml).
6. **Glyceryl trinitrate** (GTN) sublingual spray (400 micrograms/dose).
7. **Aspirin** dispersible (300mg).
8. **Midazolam** 5mg/ml or 10mg/ml (buccal or intranasal).

Where possible, drugs in solution should be in a pre-filled syringe. The intravenous route for administration of drugs in medical emergencies should only be employed if the dental practitioner has had sufficient experience in gaining IV access, as much time may be lost in establishing an appropriate line. Intramuscular, inhalational, sublingual, buccal and intranasal routes are all much quicker routes of administration in an emergency. All emergency drugs should be stored in a designated storage unit, which is appropriately labelled and readily accessible, should be in date, and should undergo weekly checks.

Oxygen containers should be portable and of sufficient capacity to allow for flow rates of 10l/min. A full 'D' size cylinder contains 340l of oxygen and should allow a flow rate of 10l/min for 30 minutes. This should be adequate to oxygenate the patient to allow for arrival of the emergency services. Two cylinders are advisable to allow for potential failure of one and consideration should be given to higher volume units for more rural practices.

Medical emergency and resuscitation equipment

Access to resuscitation drugs and equipment must be immediate and all staff members must be familiar with their correct use and location. The minimum equipment recommended includes:[4]

1. **Portable oxygen cylinder** (D size) with pressure reduction valve and flowmeter.
2. **Oxygen facemask** with tubing (**Figure 4**).
3. **Oropharyngeal airways** (sizes 1,2,3 and 4) (**Figure 6**).
4. **Pocket mask** with oxygen port (**Figure 3**).
5. **Self-inflating bag** and mask apparatus with oxygen reservoir and tubing (1l size bag), where staff have been appropriately trained (**Figure 5**).
6. Variety of well fitting adult and child **face masks** for attaching to self-inflating bag.
7. **Portable suction** with appropriate suction catheters and tubing, e.g., the Yankauer sucker.
8. Single use **sterile syringes and needles**.
9. '**Spacer**' device for inhaled bronchodilators.
10. **Automated blood glucose measurement device** (**Figure 7**).

Automated external defibrillators

Myocardial infarction (MI) is usually as a result of thrombosis in a coronary artery, and over 50% of patients who die as a result of an MI will do so within the first hour. Death is usually as a result of ventricular fibrillation and in most cases this is preceded by ventricular tachycardia.

Automated external defibrillators (AEDs) reduce mortality from cardiac arrest caused by ventricular fibrillation and pulseless ventricular tachycardia by passing an electrical current across the myocardium. This results in depolarisation of cardiac muscle and resumption of normal conduction. Studies of survivors of sudden cardiac arrest have shown that defibrillation within one minute of witnessed cardiac arrests has led to survival rates greater than 90%.[5] CPR without defibrillation will not convert ventricular fibrillation and survival rates from sudden cardiac arrest decrease by 10% with every one-minute delay in receiving defibrillation.[5]

The provision of an AED enables all dental staff to attempt defibrillation safely with relatively little training, as AED technology does not require ECG rhythm recognition by the operator.

It is an expectation of the public that AEDs should be available in every healthcare environment and the dental surgery is not seen as an exception. AED units that are suitable for dental practices cost in the region of €1,500 and are easily sourced through online healthcare equipment suppliers.

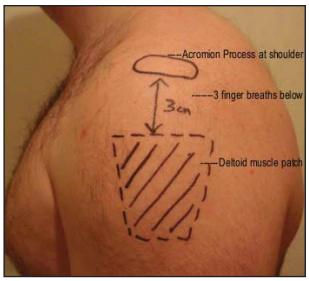


FIGURE 1: Deltoid intramuscular injection site.

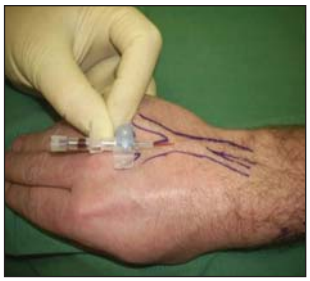


FIGURE 2: IV access to dorsal hand veins using a winged Venflon® cannula.

FIGURE 3: Pocket facemask with oxygen port.

FIGURE 4: Oxygen facemask with tubing.

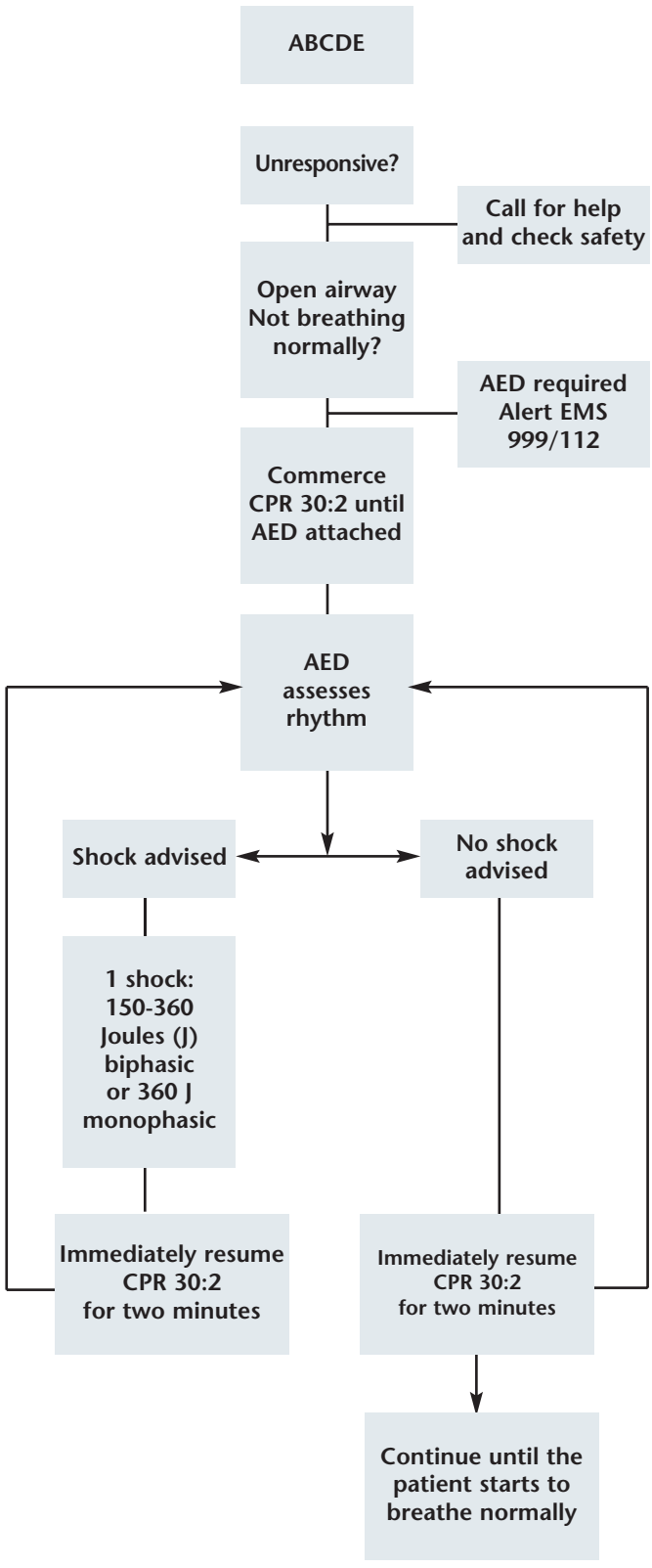
FIGURE 5: 1l oxygen reservoir with mask and tubing.

FIGURE 6: Size estimation using the angle of the mandible as an anatomical reference point.

FIGURE 7: Blood glucose estimation device.

FIGURE 8: Automated external defibrillators and chest pads on display.

Defibrillator (AED) algorithm:[6]



The primary survey in medical emergencies

- Remember to remain calm.
- Ensure that the patient, your staff and you are safe. For example, ensure there are no sharp instruments in the area that may cause further harm.
- Inspect the patient: does he/she look unwell?
- If the patient is conscious ask: "Are you alright"? If he/she is unconscious or there is no response to questioning, then shake gently and repeat the questioning.
- If the patient responds normally, then you can assume that he/she has a clear airway, is breathing normally and is maintaining cerebral perfusion.
- If answers are in short sentences or stridor is present, then an airway problem is likely.

Airway:

Assess airway patency:

Gurgling suggests a liquid or semi-solid foreign body obstruction.

Partial obstruction: Inspiratory 'stridor' (laryngeal level or above), expiratory 'wheeze' suggests lower airway obstruction.

Complete obstruction: No breath sounds, silent chest.

Breathing:

Assess for signs of respiratory distress:

Sweating, central cyanosis (tongue, mucous membranes), use of accessory muscles of respiration (neck muscles) and abdominal breathing.

Listen to the breath sounds by placing your ear over the mouth.

Count respiratory rate (RR): Normal adult RR is 12-20 breaths/min; child is 20-30 breaths/min.

Assess depth and symmetry of inspiration by observing chest expansion.

Circulation:

Assess carotid pulse or radial pulse.

Look at the colour of the hands and fingers: are they blue, pink or mottled?

Assess the limb temperature by feeling the patient's hand: is it cool or warm?

Assess capillary refill time: apply blanching pressure for five seconds on the fingertip at heart level. Normal refill time is <3 seconds.

Check blood pressure equipment and competency allows.

Disability:

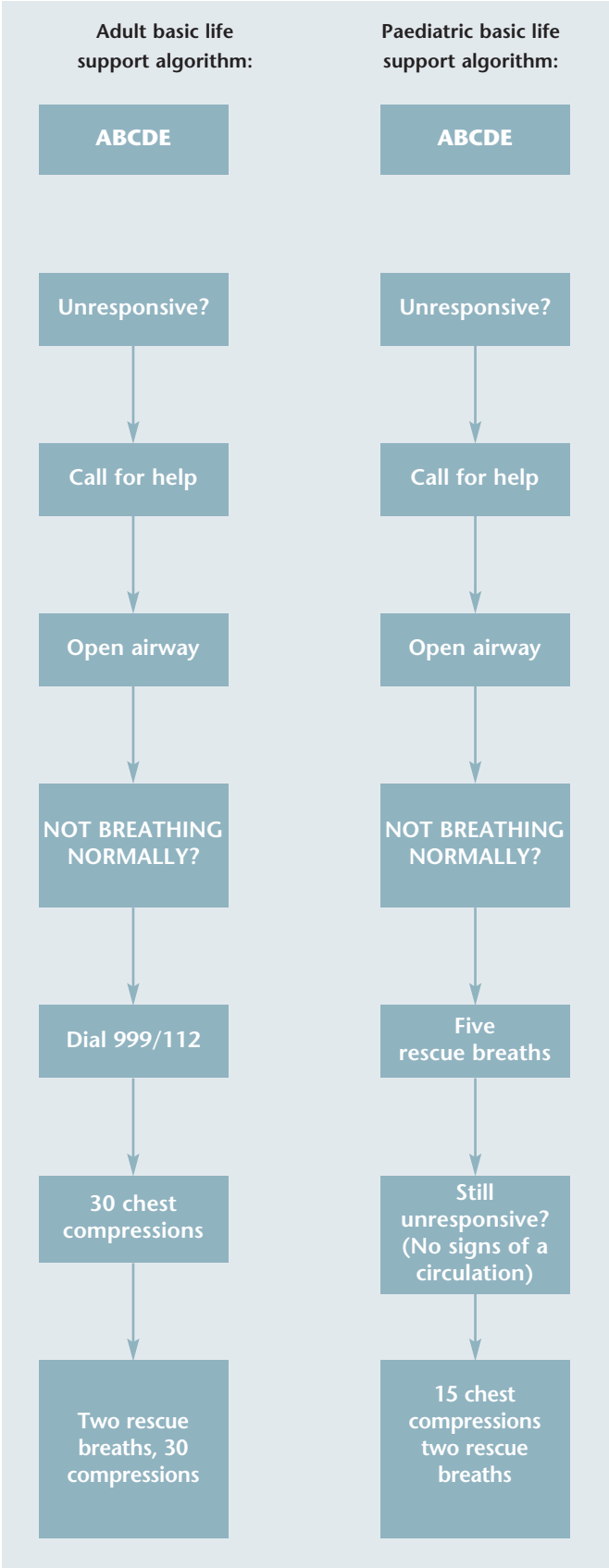
Assess the level of consciousness with AVPU score:

- **A**lert?
- Responds to **V**ocal stimulus?
- Responds to **P**ain?
- **U**nresponsive?

Examine **pupils** for size, equality and light reflex.

Exposure:

Loosen or remove some of the patient's clothes if necessary to allow for a thorough assessment. Respect the patient's dignity and minimise heat loss.

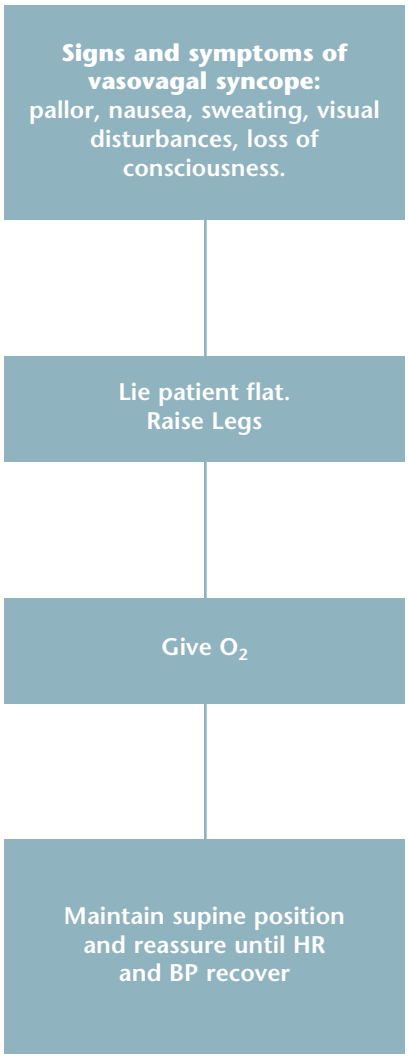


Specific responses to emergency situations

Vasovagal syncope

Syncope is defined as sudden, transient loss of consciousness, with spontaneous recovery. This is a neurally mediated response and is commonly provoked by emotion, pain, fear or standing for long periods. Physiologically, it involves reflex bradycardia with or without peripheral vasodilation. It is unlikely to occur if the patient is lying supine.

Algorithm for the management of syncope:



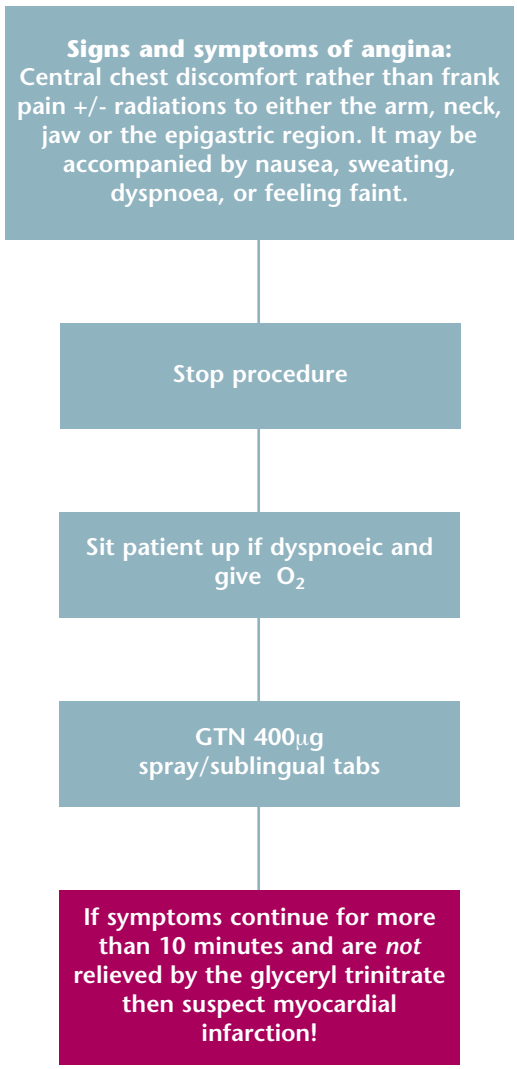
Patients with significant medical problems, or when syncope is prolonged or complicated by seizure activity, should be transferred to a hospital environment for further assessment as indicated.

Angina

Angina pectoris is the result of myocardial ischaemia caused by an imbalance between myocardial blood supply and oxygen demand. Typically, angina is precipitated by exertion, eating, exposure to cold, or emotional stress. It lasts for approximately one to five minutes and is relieved by rest or glyceryl trinitrate.

It can be classified as:
Stable: induced by effort and relieved by rest.
Unstable: occurring at increasing frequency or severity or at rest.
Decubitus: precipitated by lying flat.
Variant: caused by coronary artery spasm (rare).

Algorithm for the management of angina:



Myocardial infarction

Myocardial infarction (MI) is the irreversible necrosis of heart muscle secondary to prolonged ischaemia. This usually results from an imbalance of oxygen supply and demand. Approximately 90% of MIs result from an acute thrombus that obstructs an atherosclerotic coronary artery, resulting in complete occlusion of the vessel.

Algorithm for the management of acute myocardial infarction:

Signs and symptoms of MI:
Severe central crushing chest pain with possible radiations to arms, neck, jaw, epigastrium. Nausea and possibly vomiting, sweating, pallor, cold sweaty skin, dyspnoea.
Signs of pump failure: hypotension, tachycardia.

↓

Alert EMS: 999/112

↓

Patient positioning: sitting up if SOB; flat if faint.

↓

Give high flow O_2

↓

Give asprin 300mg chewed or sucked

↓

Monitor vital signs until EMS arrive. Prepare to initiate basic life support.

Epilepsy

This is a recurrent tendency to spontaneous, intermittent, abnormal electrical activity in a part of the brain, manifesting as seizures.[7]

Seizure types are characterised firstly according to whether the source of the seizure within the brain is localised (partial or focal seizure) or widely distributed (generalised seizures). Partial seizures are further divided on the extent to which consciousness is affected. If it is unaffected, then it is termed a simple partial seizure; otherwise, it is a complex partial seizure. A partial seizure may spread within the brain and become a secondary generalised seizure. Generalised seizures are divided according to the effect on the body but all involve loss of consciousness. These include absence (petit mal), myoclonic, clonic, tonic, tonic-clonic (grand mal) and atonic seizures.

Status epilepticus

Traditionally, status epilepticus was characterised by 30 minutes of continuous seizure activity or by multiple consecutive seizures without return to full consciousness between the seizures. It is now thought that a shorter period of seizure activity causes neuronal injury and that seizure self-termination is unlikely after five minutes. As a result, some specialists suggest times as brief as five minutes to define status epilepticus.[8]

The Resuscitation Council (UK) guidelines from 2006 recommend that medications should only be administered if convulsive movements occur for greater than five minutes or recur in quick succession.[4] Intravenous diazepam is considered first-line treatment for control of prolonged seizures; however, it may be more appropriate to administer a single dose of midazolam via the buccal or intranasal route in a dental practice setting depending on the experience of the dental clinician in gaining IV access.

FIGURES 9, 10, 11, and 12: An example of how to place an unconscious patient into the lateral recovery position – always ensure that the chin is in an elevated position to maintain airway patency.

Algorithm for the management of seizures seen in patients with epilepsy:

Signs and symptoms: Prodrome: change in mood or behaviour, which is not part of the seizure. An **aura** may immediately precede a fit. This has been described as a "strange feeling in the gut", a sensation of déjá vu, or strange smell or flashing lights, and is a feature of a seizure. **Major seizure:** a sudden spasm of muscles producing rigidity (tonic phase) this may be accompanied by jerking movements of the head, arms and legs (clonic phase). The victim becomes unconscious and may have noisy or spasmodic breathing, salivation and urinary incontinence.

↓

Remove dangerous objects from the mouth and around the patient

↓

Lie patient flat

↓

Turn patient to the recovery position

↓

Recovery in <5 minutes

- Yes → Reassure patient and discharge with responsible adult
- No → Consider status epilepticus → **Alert EMS: 999/112** → High flow O_2

↓

Midazolam buccally/intranasally;
10mg – adults/child >10 years
7.5mg – child 5-10 years
or
Diazepam 10mg IV over two minutes
(2.5mg over 30 seconds)

Hypoglycaemia

Plasma glucose is normally maintained at levels between 3.6 and 5.8mmol/l. Cognitive function deteriorates at levels <3mmol/l. In people with diabetes, the most common cause is a relative imbalance of the administered versus required insulin or oral hypoglycaemic drugs.

Algorithm for the management of hypoglycaemia:

Symptoms and signs of hypoglycaemia:
sweating, pallor, tachycardia, irrational or violent behviour, decreased consciousness, seizure and coma. Medic-alert bracelet or chain.

- **Conscious/ co-operative** → Give 10-20mg of glucose (two teaspoons of sugar, 200ml of milk or non-diet soft drink) OR give "hypo-stop gel" sublingually
- **Conscious/ unco-operative** → Gluscagon 1mg: can be given SC, IM or IV. Children under 25kg (eight years): give 0.5mg Glucagon

Asthmatic attack

Asthma is characterised by recurrent episodes of dyspnoea, cough, and wheeze caused by reversible airway obstruction.

Ireland has the fourth highest prevalence of asthma worldwide with approximately 470,000 (one in eight) people affected by the chronic condition. Its prevalence in 13- to 14-year-old school children increased by 40% between 1995 and 2003 (15.2% to 21.6%). It is the most common respiratory disease in adults; approximately 80 people die in Ireland every year from it – this is more than one death per week – and 30% of these are under 40 years of age.[9]

Algorithm for management of an asthmatic attack:

Signs and symptoms:
dyspnoea, wheeze, cough and sputum
Severe: Inability to complete sentences, tachycardia >110, respiratory rate >45/min.
Life-threatening: "silent chest" on auscultation, cyanosis, sweating, flush, bradycardia/hypotension.

↓

Remain calm. Sit patient up and loosen tight clothing.

↓

High flow O_2

↓

Salbutamol metered dose inhaler with volumatic spacer – one puff and allow six breaths. Repeat every minute for five minutes or until symptoms improve.

↓

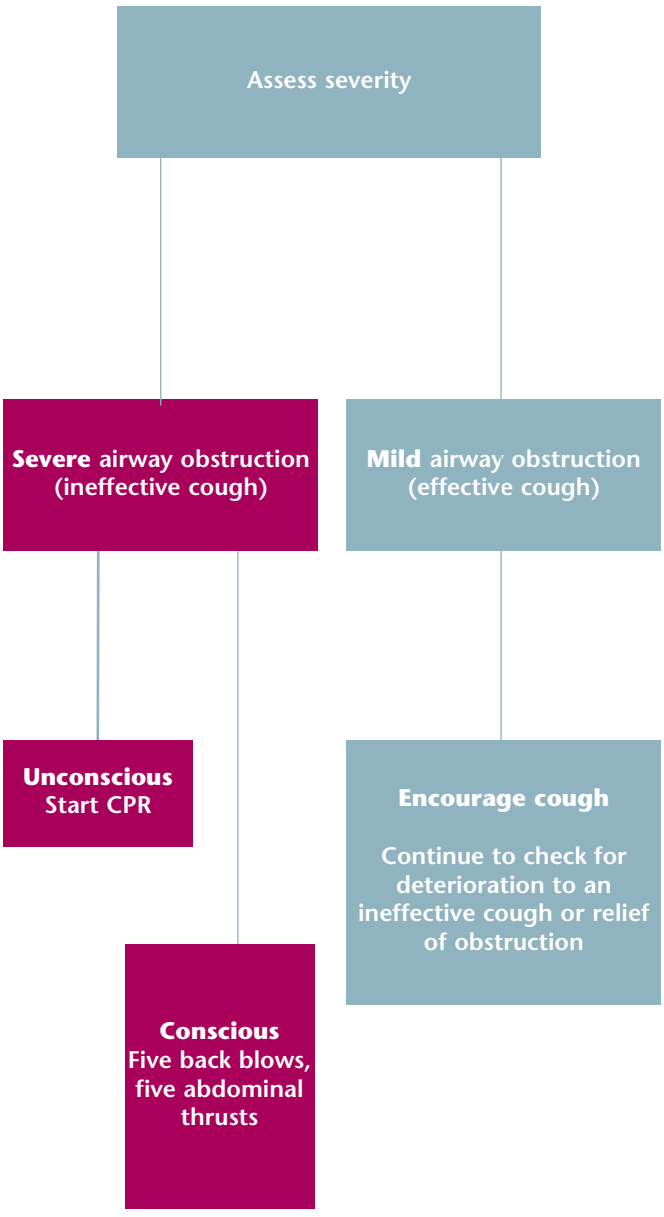
If no improvement after five minutes, alert EMS 999/112 and repeat spaced salbutamol. Consider giving 100mg hydrocortisone IM or IV and monitor ABC untill EMS arrive.

Choking

Foreign bodies may cause either mild or severe airway obstruction. A severe airway obstruction can progress to unconsciousness and cardiac arrest within minutes.

Mild obstruction: Patient can answer questions, speak, cough and breathe.
Severe obstruction: Inability to answer questions, dyspnoea, wheeze, silent cough, cyanosis, unconsciousness.

Algorithm for the management of foreign body obstruction:



Anaphylaxis

Anaphylaxis is a generalised immunological condition of sudden onset, which develops after exposure to a foreign substance. It ultimately results in the release of inflammatory mediators (histamine, prostaglandins, thromboxanes, platelet-derived growth factors and leukotrienes) producing clinical manifestations.
Early treatment with intramuscular adrenaline is the treatment of choice for patients having an anaphylactic reaction. It is an alpha-receptor agonist and receptor binding reverses peripheral vasodilation and reduces oedema. It also has beta-receptor activity and activation results in dilation of the bronchial airways, an increase in myocardial contractility, and suppression of histamine and leukotriene release.

Algorithm for the management of anaphylaxis:

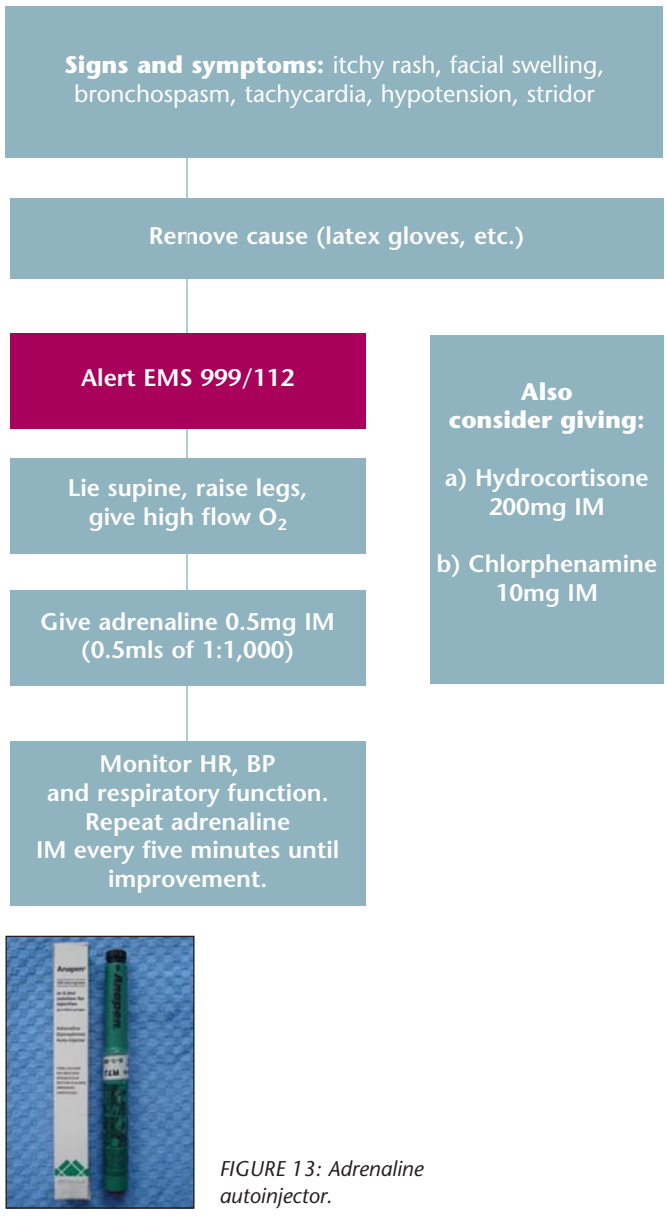


FIGURE 13: Adrenaline autoinjector.

Hyperventilation

Hyperventilation is breathing occurring more deeply and rapidly than normal. The normal adult respiratory rate is 11-18/min but anxiety can result in a hyperventilatory state. CO_2 is 'blown off' and results in a decrease in arterial pCO_2. The resultant fall in arterial CO_2 concentration causes cerebral vasoconstriction and respiratory alkalosis.

Algorithm for the management of hyperventilation:

Signs and symptoms:
Tingling of the fingers or lips, tetanic spasm of the peripheries, and dizziness. Unconsciousness can develop due to relative cerebral hypoxia.

↓

Reassure patient and advise simple breathing exercises – breath through nose, count to eight, out through the mouth, count to eight, hold for count of four at the end of expiration.

↓

Re-breathing into a paper bag can also be beneficial as it results in an increased inspired CO_2.

↓

If the patient loses consciousness, maintain airway and place the patient into the recovery position until consciousness is regained.

Adrenal crisis

The adrenal cortex produces three steroid hormones, which include glucocorticoids (cortisol), mineralocorticoids and androgens. Cortisol is the most important human glucocorticoid. It is essential for life, and regulates or supports many important metabolic, cardiovascular, immunologic and homeostatic functions in the body. An acute exacerbation of chronic cortisol insufficiency results in 'adrenal crisis', and is most commonly precipitated by surgical stress or sepsis. Primary adrenal insufficiency is rare and is due to adrenal gland destruction. This is most commonly idiopathic in nature but may also occur with certain types of infections such as tuberculosis. Secondary adrenal insufficiency is a relatively common phenomenon. It may occur as a consequence of hypothalamic–pituitary disease, or more commonly due to suppression of the hypothalamic–pituitary axis by exogenous steroid therapy. Cortisol production is increased as a response to stress; however, if the adrenal cortex is unable to synthesise an adequate quantity of cortisol, required to meet increased demands, a crisis may be precipitated and a potentially life-threatening medical emergency may develop.

Since the 1950s, it has been common practice to prescribe pre-operative supplemental steroids to provide 'stress coverage' to patients identified as having adrenal insufficiency. However, available evidence no longer supports routine recommendations for steroid supplementation for all dental procedures.[10] Salivary cortisol studies have shown that non-surgical dental procedures do not stimulate cortisol production at levels comparable to those of oral surgery,[11] and it is now accepted that routine non-surgical dental treatment presents a negligible risk for the development of an adrenal crisis, and steroid cover is no longer necessary.[12]

The situation is less clear for those patients requiring surgical dental treatment and it would seem wise to ensure that these patients are covered until further evidence is made available. In general, risk reduction can be achieved in at-risk patients by scheduling them for early morning appointments (endogenous cortisol levels are higher), ensuring that their usual steroid dose has been taken before the procedure, and providing adequate analgesia and anxiety control medications if necessary.

Algorithm for the management of an acute adrenal crisis:

Signs and symptoms:
confusion, sweating, vomiting, diarrhoea, hypotension, loss of consciousness, convulsions and ultimately circulatory collapse.

↓

Give high flow O_2

↓

Place patient supine

↓

Alert emergency services 999/112

↓

Administer hydorcortisone 200mg IV or IM

Staff training

Staff must undergo training in the management of emergencies to a level based on their clinical responsibilities. Skills learned should be refreshed annually and training can be undertaken within the general practice or at designated training centres. All new staff members must undergo resuscitation training as part of their induction.

A questionnaire survey among UK dentists reported that one in five deemed themselves "not very well" or "not at all" prepared to manage medical emergencies should they arise in their surgeries, and 96% expressed a need for further training.13 The need for continued training was also expressed by Australian dentists, where just over half deemed themselves proficient in CPR.14 In Ireland there also appears to be an inadequate availability of refresher courses in this important area. The management of medical emergency situations should therefore be a core subject in the proposed continued professional development programme.

Clinical audit

To ensure that the response to emergency situations is maximised, it is advised that regular audits be conducted in the practice. Emergency medical drugs and equipment need to be checked on a weekly basis. Response times of staff during training sessions need to be appropriate. Any emergency events that occur require recording and debriefing. Where deficiencies are identified, steps need to be taken to implement improvement.

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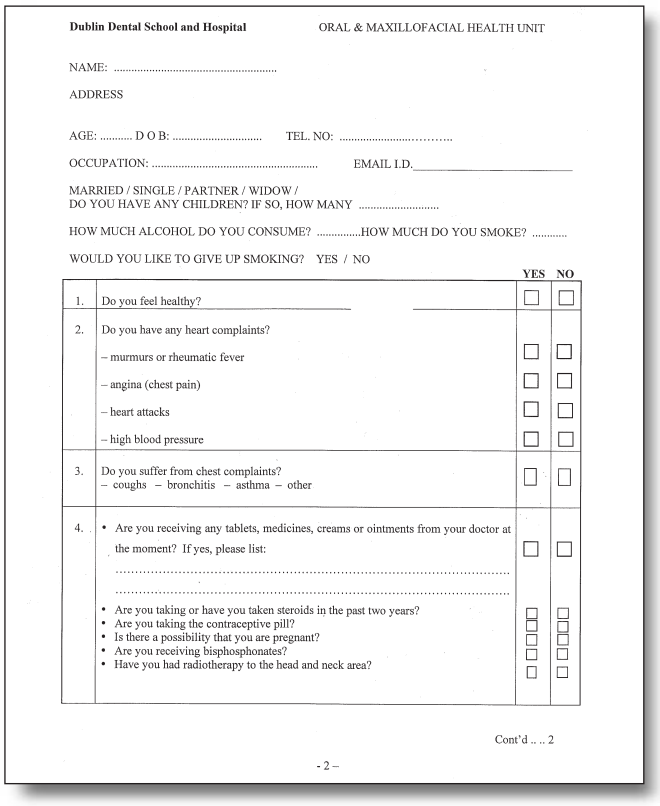
Appendix



Dublin Dental School and Hospital ORAL & MAXILLOFACIAL HEALTH UNIT

NAME: .....

ADDRESS

AGE: ..... D O B: ..... TEL. NO: .....

OCCUPATION: ..... EMAIL I.D._____

MARRIED / SINGLE / PARTNER / WIDOW /
DO YOU HAVE ANY CHILDREN? IF SO, HOW MANY .....

HOW MUCH ALCOHOL DO YOU CONSUME? .....HOW MUCH DO YOU SMOKE? .....

WOULD YOU LIKE TO GIVE UP SMOKING? YES / NO

		YES	NO
1.	Do you feel healthy?	☐	☐
2.	Do you have any heart complaints?		
	– murmurs or rheumatic fever	☐	☐
	– angina (chest pain)	☐	☐
	– heart attacks	☐	☐
	– high blood pressure	☐	☐
3.	Do you suffer from chest complaints? – coughs – bronchitis – asthma – other	☐	☐
4.	• Are you receiving any tablets, medicines, creams or ointments from your doctor at the moment? If yes, please list:	☐	☐
	• Are you taking or have you taken steroids in the past two years?	☐	☐
	• Are you taking the contraceptive pill?	☐	☐
	• Is there a possibility that you are pregnant?	☐	☐
	• Are you receiving bisphosphonates?	☐	☐
	• Have you had radiotherapy to the head and neck area?	☐	☐

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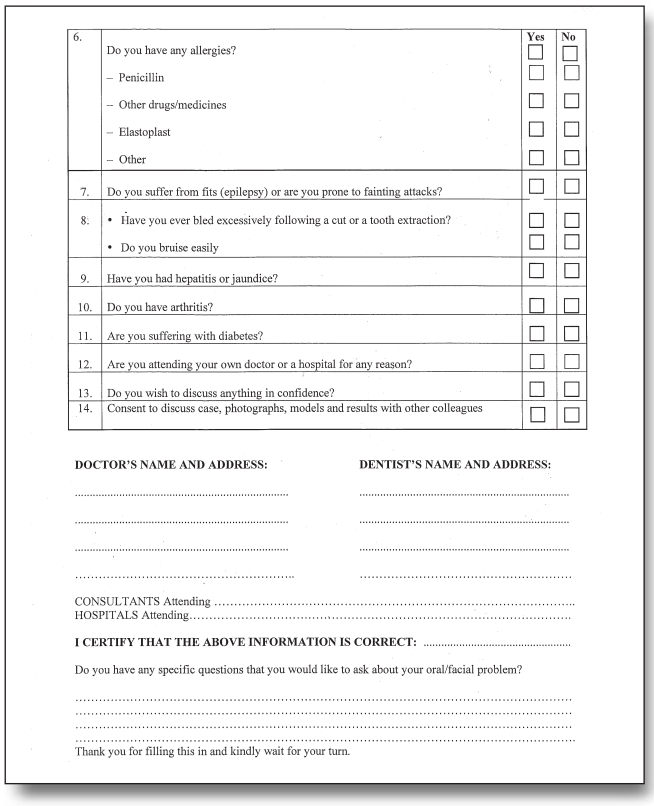

		Yes	No
6.	Do you have any allergies?	☐	☐
	– Penicillin	☐	☐
	– Other drugs/medicines	☐	☐
	– Elastoplast	☐	☐
	– Other	☐	☐
7.	Do you suffer from fits (epilepsy) or are you prone to fainting attacks?	☐	☐
8.	• Have you ever bled excessively following a cut or a tooth extraction?	☐	☐
	• Do you bruise easily	☐	☐
9.	Have you had hepatitis or jaundice?	☐	☐
10.	Do you have arthritis?	☐	☐
11.	Are you suffering with diabetes?	☐	☐
12.	Are you attending your own doctor or a hospital for any reason?	☐	☐
13.	Do you wish to discuss anything in confidence?	☐	☐
14.	Consent to discuss case, photographs, models and results with other colleagues	☐	☐

DOCTOR'S NAME AND ADDRESS:

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DENTIST'S NAME AND ADDRESS:

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.....
.....

CONSULTANTS Attending .....
HOSPITALS Attending.....

I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT: .....

Do you have any specific questions that you would like to ask about your oral/facial problem?

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.....
.....

Thank you for filling this in and kindly wait for your turn.

Alveolar lymphangioma in infants: report of two cases

Précis

Two cases are presented of alveolar lymphangiomas found in newborns. Presentation, diagnosis and management are discussed. Photographs are shown to help practitioners to recognise these lesions.

Abstract

The alveolar lymphangioma is a benign but relatively rare condition found only in the oral cavities of black infants. Dentists practising in Ireland may be unaware of this condition due to its racial specificity. This paper presents two case reports of multiple alveolar lymphangiomas found in black infants in a children's hospital in Ireland. The epidemiology, aetiology, clinical presentation, histology, and management options are discussed. The photographs should aid the practitioner in recognising these lesions.

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Introduction

There are several minor conditions of the oral cavity found in newborns. Fortunately, most are benign and self-limiting. The general practitioner may be familiar with the more common conditions such as alveolar and palatal cysts (also known as Bohn's nodules, Epstein's pearls and dental lamina cysts), natal teeth (present at birth), and neonatal teeth (those erupting in the first month of life). In contrast to these common conditions, which are seen in all ethnic groups, the alveolar lymphangioma is a benign but relatively rare condition found only in the oral cavities of black infants.

Case 1

A five-month-old male, born in Ireland to Nigerian parents, was referred by his cardiologist to the Dental Department at Our Lady's Children's Hospital, Crumlin. The reason for referral was a "fleshy overgrowth on the lower gum". The patient had an unremarkable birth, and was diagnosed post-natally with Tetralogy of Fallot. At the time of examination, he was awaiting open heart surgery, but was stable. The patient's mother gave a history of bilateral oral lesions of three months' duration. These lesions did not appear to cause any discomfort and did not interfere with feeding. Examination revealed the presence of two lesions, one on each side at the lingual surface of the mandibular ridge. The lesion on the right hand side was yellowish in colour and 6mm in diameter. The lesion on the right had a bluish colour and was 3-4mm in diameter. No treatment was necessary, and anticipatory guidance in relation to oral health for children with congenital heart disease was provided to the patient's mother. On review two months later, both lesions had completely resolved, and the oral cavity was found to be normal.

Case 2

A four-week-old male, born in Ireland to a Nigerian mother and Sierra Leonean father, was referred by his cardiologist to the Dental Department at Our Lady's Children's Hospital, Crumlin. This patient had a diagnosis of hypoplastic left heart syndrome made antenatally. He had undergone a Norwood procedure when he was three days old. Now stable, his cardiologist referred him to the Dental Department in relation to swellings in the mouth. The duration of these lesions was unknown. On examination, four lesions were identified, one in each quadrant. The bluish, fluctuant swellings were approximately 6mm in diameter, located on the crest of the ridge in the upper arch, and on the lingual surface of the ridge in the lower arch, all at the first primary molar region. Their clinical features were highly characteristic of the alveolar lymphangioma and no further investigations were necessary. This