

*Operational Guide for School
Oral Health Program*

Emergency Medicine

Medical Emergencies in The Dental Office ⁵⁵

Emergency Kit

The dental clinic should be adequately equipped not only to deliver routine dental care for patients but also should be set up for appropriate management and stabilization of any potential office emergency. This requires that each clinic should be equipped with a minimum of a blood pressure cuff and stethoscope. The clinic should also have the followings available:

1. First-aid kit.
2. Oral airway with a bag system (ambu- bag).
3. High vacuum suction.
4. Disposable syringes (2, 5, and 10 ml) needles (19 and 21 gauge) and a tourniquet, butterfly needles and IV canulae.
5. Alcohol wipes.
6. Oxygen tank (Size E with low flow regulator).
7. Glucometer.

8. Drugs*:
 - a. Adrenaline: 1:1000 solution.
 - b. Hydrocortisone: 100 mg and water for injection.
 - c. Benzodiazepine: 4 mg ampoules or midazolam 10 mg ampoules.
 - d. Glucose as dextrose 20 % or 50 % solution and oral glucose solution.
 - e. Chlorpheniramine: 20 mg injection.
 - f. Flumazenil 100 μ gm, 5 ml ampoule.
 - g. Glucagon 1 mg injection.
 - h. Glyceryl trinitrate spray.
 - i. Salbutamol inhaler.
 - j. Atropine 3 mg injection.

*Only authorized dentists with a valid license of training on advanced basic life support are able to use these medications

(Table 23)

Medical condition	Causes	Signs & Symptoms	Management
Diabetes	Hypoglycemia	Warm skin, rapid full pulse, dilated pupils, rapid onset of coma.	1- Give glucose orally if conscious. 2- If unconscious give either 50 ml 50 % dextrose IV or glucagone 1 mg IM, then oral glucose when patient arouses
	Hyperglycemia	Dry skin and mouth, weak rapid pulse, low blood pressure, acetone on breath, vomiting, hyperventilation	Put up an IV infusion of 8.4% bicarbonate.
Chest Pain	Angina	1 – Substernal pressure 2 – Sensation of heaviness 3 – Radiate to throat, jaw, or shoulder 4 – May last for 15 minutes 5 – Short breath 6 – Nausea 7 – Relieved by nitroglycerin	1-Stop the procedure. 2-Give glyceryl trinitrate 500 µg tablets sublingually or 400 µg spray. 3-Isosorbide 5 mg sublingually.
	Myocardial infarction	If severe may indicate angina or myocardial infarction. Both exhibit severe retrosternal pain (Heavy and crushing).	1-Stop the procedure. 2-Call for help. 3-Give oxygen. 4-Give diamorphene 5 mg IM or IV. 5-Give 12.5 mg prochlorperazine IM as antiemetic. 6-Lay the patient flat only if he is hypotensive

(Table 24)

Medical condition	Causes	Signs & Symptoms	Management
Cardiac Arrest	Myocardial infarction, hypoxia, anesthesia overdose.	<ol style="list-style-type: none"> 1- It is recognized by sudden loss of consciousness and absence of arterial pulses. 2- Pallor. 3- Cyanosis. 	<ol style="list-style-type: none"> 1- Call for help. 2- Clear and maintain airway. 3- Institute cardiopulmonary resuscitation. 4- Give IV infusion of 8.4 % sodium bicarbonate.
Anaphylactic Shock	Penicillins are the commonest offender, the reaction start few minutes after paranteral injection.	Loss of consciousness, facial flushing, itching, numbness, wheezing, facial swellings, cold clammy skin with a thin pulse, and falling blood pressure.	<ol style="list-style-type: none"> 1- Place patient supine with legs raised. 2- Call for help. 3- 0.5 ml of 1:1000 adrenaline IM. 4- Up to 500 mg of hydrocortisone IV. 5- Up to 20 mg of chlorphenaramine slowly IV. 6- Oxygen by mask.
Corticosteroid Insufficiency	Stress or trauma in patients on steroids.	<p>It is recognized by :</p> <ol style="list-style-type: none"> 1- Collapse. 2- Weakness. 3- Nausea. 4- Hypotension that does not respond to laying the patient flat. 	<ol style="list-style-type: none"> 1- Lay the patient flat with legs raised. 2- Call for help. 3- Give 200 mg Hydrocortisone IV. 4- Give glucose if there is hypoglycemia. 5- Put up an IV infusion of the normal saline or glucose – saline.
Epilepsy	<ol style="list-style-type: none"> 1- Some drugs. 2- Starvation. 3- Menstruation 4- Not taking anticonvulsants. 5- Fever (children between 3 months and 5 years). 6- Local anesthetic toxicity. 	<ol style="list-style-type: none"> 1- Loss of consciousness. 2- Widespread jerking. 3- Incontinence. 	<ol style="list-style-type: none"> 1- Stop the procedure. 2- Clear the airway. 3- Protect the patient from hurting himself. 4- Most fits resolve within 5 minutes, failing this treat as status epilepticus as follow:- <ol style="list-style-type: none"> 1- Control seizures with 10mg diazemuls IV for adults and rectal diazepam for young children. 2- Maintain hydration. 3- Treat hyperthermia as required.

(Table 25)

Medical condition	Causes	Signs and Symptoms	Management
Respiratory Obstruction	<ol style="list-style-type: none"> Mechanical obstructions. Pressure on airway. Bronchospasm. 	<ol style="list-style-type: none"> Audible wheezes and coughing. Increased respiratory effort. Rapid pulse. Cyanosis. Inability to speak. Respiratory arrest. 	<p>If the patient cannot cough the object out :</p> <ol style="list-style-type: none"> Young children should be held upside down. Do not slap the patients back. The Heimlich maneuver may clear the airway. Failing this, the object must be removed by the endoscope.
Asthmatic Attack	<p>Precipitating factors:</p> <ol style="list-style-type: none"> Respiratory infection. Seasonal change. Allergies. Exercise. Pollutants. Anxiety. 	<ol style="list-style-type: none"> Tachypnea. Shortness of breath. Pressure on chest. Wheezing. Prolonged expiratory phase. Rapid pulse. Cyanosis. 	<ol style="list-style-type: none"> Keep the patient upright. Patients normal bronchodilator (salbutamol, Ipratropium- bromide). Call for help. Oxygen. Hydrocortizone 200 mg IV. Salbutamol 2.5 mg or terbutaline 5 mg / nebulizer. Aminophylline 250 mg given slowly IV over 15 minutes.
Hyperventilation	<ol style="list-style-type: none"> Psychogenic etiology. Low arterial carbon dioxide levels. 	<ol style="list-style-type: none"> Rapid breathing. Paresthesias. Acute anxiety. Light headedness. 	<ol style="list-style-type: none"> Stop treatment. Breathing into a bag or cupped hands. Place chair in upright position.
Collapse	<ol style="list-style-type: none"> Syncope Myocardial Infarction. Cardiac arrest. Hypoglycemia. Stroke. Corticosteroid Insufficiency. Epilepsy. Anaphylaxis. Drug reaction. 	<ol style="list-style-type: none"> Pallor. Flushed feeling. Sweating. Nausea. Vomiting. Weakness Light headedness. Dimming vision. Bradycardia. 	<ol style="list-style-type: none"> Lay the patient flat with legs slightly elevated. Loosen clothing in presence of witness. Inhale ammonia. Call for help. If he does not immediately recover, check the pulse, if slow this may be vasovagal attack, which might respond to atropine. If the pulse is absent this represents cardiac arrest.

(Table 26)

Medical condition	Causes	Signs & Symptoms	Management
Local anesthetic over dose	Iatrogenic	<ol style="list-style-type: none"> 1- Tachycardia 2- Anxiety 3- Tremors 4- Palpitations 5- Seizures 	<ol style="list-style-type: none"> 1- Stop further anesthetic administration. 2- Call for help. 3- Give 100% oxygen and maintain airway.
Orthostatic hypotension	Low blood pressure that occurs in change in position.	<ol style="list-style-type: none"> 1- Dizziness 2- Light headedness 3- Dimming lights 4- Pallor 5- Palpitations 6- Diaphoresis* 7- Loss of consciousness 	<ol style="list-style-type: none"> 1- Place patient in supine position. 2- Maintain airway. 3- Give oxygen. 4- Call for help if patient does not regain consciousness within seconds.

***Diaphoresis:** The process of sweating, especially excessive sweating.

Cardio Pulmonary Resuscitation (CPR) Guidelines*
American Basic Life Support
(Table 27)

	Adult (>8 years)	Child (1-8) years	Infant (<1 year)
Airway	Head – tilt – chin lift	Head – tilt – chin lift	Head – tilt – chin lift
Breath	Initial : 2 breaths @2 sec / breath, then 10 -12 breaths / min	Initial : 2 breaths @ 1-1.5 sec / breath, then 20 breaths / min	Initial : 2 breaths @ 1-1.5 sec / breath, then 20 breaths / min
Obstructed airway	Heimlich maneuver	Heimlich maneuver	Back blows / chest thrusts
Pulse	Carotid	Carotid	Brachial / femoral
Compression / Ventilation ratio	30:2**	5:1	5:1
Compression Landmark	Lower half of sternum	Lower half of sternum	One finger's width below intermammary line
Method of Compression	Heel of hand with other hand on top	Heel of one hand	2 or 3 fingers; or thumbs with hands encircling infant
Compression Depth	1.5" to 2" inch	1" to 1.5" inch	0.5" to 1" inch
Compression Rate	Approx 100/min	Approx 100/min	At least 100/min

* Hazinski MF, ed, *Handbook of emergency cardiovascular care for healthcare providers. The American heart association, 2002.*
 ** Changes for the compression/ventilation ratio according to the current recommendations. *American Heart Association Journal (Circulation)* at <http://circ.ahajournals.org/cgi/reprint/circulationaha.106.183095>