

Medical Emergencies in Dental Practice

The most critical aspect in dealing with potential medical emergencies in your practice is- PREPARATION.

The Dental Office Emergency Team

1. Team Leader- Runs office intervention and briefs EMS upon arrival
2. Phone Operator/Guide- Contacts EMS and directs them upon arrival
3. Assistant #1- Direct assistant to team leader
4. Assistant #2- Brings emergency cart/AED to site of emergency
5. Scribe- Records all interventions including the time of the event

Include all members of the office staff on the team. The above pertains only to a five-member team and can be modified to meet your needs.

All team members should know the location of the emergency cart, AED, and supplemental oxygen.

Run regular practice drills to develop a cohesive response to an emergency. (office meetings?) You can even have your staff members make up the scenario. Consider use of checklists.

Emergency Cart

Contains bag-valve-mask, airway adjuncts, IV lines, IV catheters, emergency drugs, AED, and oxygen tank (with any necessary attachments).

Designate a team member to monitor the emergency cart supplies for expiration dates and completeness. (have an up-to-date inventory list to assist with this task.

Train all staff members on the four-handed use of the bag-valve-mask. (this can free you to perform other tasks)

How would you respond to an emergency in your parking lot? ...the foyer of your building? ...the office bathroom? Can you bring the necessary equipment and supplies to where you need them?

Clinical Management of Specific Emergencies

The following algorithms are not meant to be the only way of treating a particular emergency but rather an acceptable way of treating the emergency.

1. Foreign body

While trying in a crown, it is dislodged by the patient's tongue. It disappears from your view.

- a. Advise the patient not to swallow and quickly look to the posterior oral cavity for the crown. If a pharyngeal screen was used quickly look around its edges.
- b. If the patient starts to cough or choke immediately sit them up and ask them
- c. If the crown has disappeared and the patient is in no distress, obtain a panorex or lateral skull to see if it is still in the head or neck region.
 - i. If it is visible determine if you can retrieve it; if you cannot immediately take the patient to a nearby emergency room.
 - ii. If it is not visible take or send the patient to the emergency room. Obtain a KUB (kidneys, ureters, bladder) film and PA and Lateral Chest films. These films will determine whether the object is in the lungs or the gut.

If the object causes an obstruction proceed with the American Heart Association's foreign body airway obstruction algorithm (Heimlich Maneuver) AND activate EMS.

2. Laryngospasm

Another potential emergency caused by a foreign body is a laryngospasm. A laryngospasm occurs when the vocal chords are stimulated to close in an attempt to prevent a foreign body from entering the lungs.

Signs/symptoms: Inspiratory crowing (partial spasm) or no sounds (complete spasm), increased respiratory effort (use of accessory muscles)

For a large foreign object such as a crown proceed with the American Heart Association's foreign body airway obstruction algorithm and activate EMS.

3. Dyspnea

Dyspnea is uncomfortable or difficult breathing. It may be caused by COPD, heart disease, anxiety, pneumonia or pulmonary embolism.

Signs/symptoms: Chest tightness, shallow breathing, difficulty speaking due to shortness of breath, anxiety, fear, agitation, and extreme drowsiness

Treatment:

- a. Establish a good airway
- b. Administer 100% oxygen
- c. Assist with ventilation (bag-valve-mask) if necessary
- d. Activate EMS
- e. Monitor vital signs

4. Bronchospasm/Acute Asthma Attack

Due to constriction of the smooth muscle of bronchi and bronchioles which restricts airflow. Typically, patient exhalation is prolonged in these cases.

Signs/symptoms: Labored breathing with prolonged exhalation, decreased SaO₂, wheezing, chest tightness, anxiety, fear, agitation, and cyanosis (late).

Treatment:

- a. Terminate dental procedure
- b. Administer 100% oxygen
- c. Allow patient to use their own inhaler if available
- d. Activate EMS
- e. Albuterol 2 puff immediately (if patient inhaler unavailable), may repeat every 10-20 minutes
- f. Epinephrine .3-.5mg 1:1000 SC may repeat every 20 minutes to a maximum of 1 mg
- g. Airway management if the patient loses consciousness (airway adjuncts, bag-valve-mask)
- h. CPR if cardiac arrest (apply AED)

5. Hyperventilation

Due to breathing more rapidly or more deeply than is required by the body. This in turn leads to a drop in CO₂ levels resulting in feelings of anxiety leading to further hyperventilation.

Signs/symptoms: Feelings of anxiety or tension, feeling of air hunger, lightheadedness, heart racing, headache, sweating, and visual changes.

Treatment:

- a. Terminate dental procedure
- b. Calm the patient
- c. Oxygen is NOT indicated
- d. Have patient breathe into a paper bag to capture exhaled CO₂
- e. Take 6-12 easy breaths into bag followed by 6-12 breaths normally, repeat

6. Syncope

A sudden brief loss of consciousness caused by a decrease in blood flow to the brain. May be caused by hypoglycemia, panic attack, vasovagal reaction, or seizures.

Signs/symptoms:

Presyncope- nausea, warmth, lightheadedness, pallor, and diaphoresis

Syncope- hypotension, bradycardia, dilated pupils, cold/clammy extremities, loss of consciousness

Treatment:

- a. Position patient head down feet up (except for pregnant females)
- b. ABCs
- c. Administer 100% oxygen
- d. Monitor vital signs
- e. Crushed ammonia ampule
- f. Apply cold compress to forehead
- g. Recovery generally within 20 minutes

7. Hypoglycemia

Decrease in blood sugar deprives glucose to the brain potentially resulting in a loss of consciousness

Signs/symptoms: Nausea, hunger, cold, clammy skin, trembling, irritability, restlessness, anger, headache, blurred vision, and slurred speech

Treatment:

- a. Cease dental treatment
- b. Check blood glucose level
- c. Monitor vital signs
- d. Treat FSBS <50 even if no symptoms
- e. Provide oral glucose
- f. If severe symptoms activate EMS
- g. Start IV
- h. Give 50ml of D50W

8. Cardiac Arrest

Patient loses consciousness and is unresponsive. May have reported chest pain or tightness prior to loss of consciousness.

Treatment:

- a. Determine responsiveness
- b. Activate EMS
- c. ABCs of CPR
- d. Apply AED and follow prompts
- e. Use airway adjuncts and bag-valve-mask with 2 provider CPR until EMS arrives.
- f. May provide ACLS if qualified

9. Angina Pectoris/MI

Sudden chest pain is a symptom of myocardial ischemia occurs due to an oxygen supply vs. demand mismatch.

Signs/symptoms: May be confused with indigestion, chest pain or tightness, shows a crescendo/decrecendo pattern

Treatment:

- a. Terminate dental procedure
- b. Administer 100% oxygen
- c. Activate EMS
- d. Give Nitroglycerin SL Q5 minutes to maximum dose of 3 in 15 minutes
- e. Place patient in a comfortable position and have them loosen their clothing
- f. Monitor vital signs
- g. Monitor ECG if available
- h. Assume MI if no relief after 3 NTG doses
- i. Give aspirin
- j. Apply AED as a precaution
- k. Maintain airway

10. Allergy (Mild)- Delayed Hypersensitivity

Inappropriate immune response to an antigen

Signs/symptoms: Urticaria (hives), pruritis (mild to severe itching), angioedema (swelling of face, lips, or perioral tissues), and erythema either local or diffuse

Treatment:

- a. Terminate procedure
- b. Administer 100% oxygen
- c. Monitor vital signs
- d. Administer Benadryl 25-50mg PO Q4-6 hours to maximum 300mg/day
- e. Activate EMS if uncertain

11. Allergy (Severe) – Immediate Hypersensitivity

Sudden and severe allergic reaction characterized by cardiovascular collapse

Signs/symptoms: Urticaria, angioedema, dyspnea, dysphagia, wheezing, diaphoresis, altered/loss of consciousness

Treatment:

- a. Activate EMS immediately
- b. Administer 100% oxygen

- c. BLS
- d. .3-.5mg epinephrine 1:1000 SL, SC, or IM
- e. Establish IV access
- f. Consider IV administration of epinephrine 5ml 1:10,000, may repeat in 10-20 minutes
- g. For bronchospasm administer Albuterol 2-4 puffs, may repeat in 10-20 minutes
- h. For pruritis administer Benadryl 25-50mg IM or IV
- i. Maintain airway, use airway adjuncts

12. Stroke

A decrease or loss of blood flow to an area of the brain which develops over minutes to hours.

Signs/symptoms: Think FAST (Face, Arms, Speech, Time)

Treatment:

- a. Terminate procedure
- b. Activate EMS
- c. Administer 100% oxygen
- d. Do not give aspirin (may be hemorrhagic stroke)
- e. Keep patient's head slightly elevated
- f. Monitor vital signs