Dental office emergency drugs

Part 2: Understand critical office resuscitative emergency (CORE) drugs before you need them

By John Roberson, DMD

JOHN B. ROBERSON, DMD, is a full-time practicing oral and maxillofacial surgeon. He is board certified by the American Board of Oral & Maxillofacial Surgery and the National Dental Board of Anesthesiology. He is a co-founder and former CEO of the Institute of Medical Emergency Preparedness (IMEP), and he co-developed the curriculum for Advanced Life Support for Dentistry (ALSD), which covers medical emergencies, airway emergencies, emergency drug kits and medical emergency planning. He co-developed the Emergency Response System (ERS), a comprehensive medical emergency program for the dental profession. Roberson performed his residency in oral and maxillofacial surgery at University Hospital at the University of Cincinnati. He is a founding member of the American Association of Oral & Maxillofacial Surgeons Residents Organization (AOAROMS) and served as chairman. Roberson lectures extensively on emergency drugs and medical emergencies. Interested organizations can contact him at (860) 262-2611 or info@johnroberson.com.

Dental practice staffs must be prepared to address medical emergencies that can, do and will happen during the course of practice. These emergencies could be related to dental treatment, patient risk factors, or they could occur unexpectedly. A medical emergency could evolve into a life-threatening emergency without proper treatment. It is for these reasons emergency medications should be present in dental offices.

Part 2 looks in detail at the CORE (Critical Office Resuscitative Emergency) eight emergency drugs needed for dental offices and suggested emergency medications for practices doing advanced anesthesiology.

The CORE 8

Allbuterol

Definition: Bronchodilator — stimulates beta-2 adrenergic receptors causing bronchodilation.

Dosage: 1–2 vaporules.

Use: Syncope/fainting/loss of consciousness.

Caution: No contraindications to giving albuterol in acute episodes of bronchospasm.

Suggested stock: One albuterol MDI inhaler.

Ammonia inhalants

Definition: A respiratory stimulant.

Use: Syncope/fainting/loss of consciousness.

Dosage: 1–2 vials.

Suggested stock: One box of ammonia vials.

Aspirin

Definition: Anti-platelet — inhibits prostaglandin synthesis and inhibits platelet aggregation irreversibly.

Use: Suspected myocardial infarction.

Dosage: One 325-mg non-enteric, coated aspirin tablet, chewed and swallowed or four 81-mg chewable tablets.

Caution: Aspirin should not be given to persons who are allergic to it or have active gastrointestinal bleeding.

Suggested stock: One or two packets of chewable 325-mg non-enteric, coated aspirin or four 81-mg chewable tablets.

Diphenhydramine

Definition: Antihistamine — antagonizes histamine at the H-1 receptor, causes sedation and has an anti-cholinergic effect.

Use: Allergic reaction/anaphylaxis.

Dose: 50 mg IM or IV.

Caution: No contraindications to giving diphenhydramine during an allergic reaction unless noted allergy or hypersensitivity to diphenhydramine.

Suggested stock: 1) Two 1 ml ampules or vials of diphenhydramine 50 mg/ml and/or 2) Diphenhydramine HCl capsules 25 mg.

Epinephrine 1:1,000

Definition: Cardiac stimulant/ana-phylaxis — activates alpha and beta-adrenergic receptors increasing heart rate, myocardial contractility, bronchial dilation and decreases peripheral vascular resistance.

Use: Anaphylaxis/bronchospasm.

Dosage: 0.3 mg IM q5 minutes.

Caution: No contraindications to giving epinephrine during anaphylaxis.

Suggested stock: 1) Two auto-injectors of epinephrine in adult form and pediatric form (EpiPen and EpiPen Jr) and 2) Two 1 ml ampules or vials of epinephrine 1:1,000.

Glucose source

Definition: Anti-hypoglycemic — increases glucose level for treatment of hypoglycemia.

Use: Hypoglycemia.

Dosage: One tube of glucose gel.

Caution: Unconsciousness. Never administer anything orally to an unconscious person.

Suggested stock: 1) Three tubes of glucose gel (InstaGlucose™) and 2) Three tubes of glucose tablets.

Nitroglycerin

Definition: Anti-anginal — stimulates cGMP production, which relaxes vascular smooth muscle specifically in the coronary arteries in the presence of an anginal attack.

Use: Chest pain (angina).

Dosage: The usual dose of nitroglycerin is one sublingual (0.4mg) tablet or one spray (0.4mg) from nitroglycerin spray atomizer administered q5min.

Caution: Patients with low blood pressure.

Suggested stock: One bottle of 25 tablets or one spray atomizer.

Oxygen

Use: Almost any type of medical emergency.

Dosage: At least 2 liters/minute.

Caution: Do not use with hyperventilation.

Suggested stock: One portable “E” cylinder of oxygen with regulator and the equipment necessary to deliver O2 to the victim (nasal cannula and ambu-bag).

Additional emergency drugs for consideration

These additional emergency drugs are suggested for practices that do any type of advanced anesthesiology, such as PO sedation, IV sedation, or general anesthesia. Practitioners may have their own choices of emergency drugs due to their type of practice as well as training background.

Reversal agent — benzodiazepine

Flumazenil (Romazicon) — benzodiazepine antagonist: reverses effect of benzodiazepines by competitively inhibiting the GABA receptors.

Reversal agent — narcotics

Naloxone (Narcan) — narcotic antagonist: reverses the effect of narcotics by competitively inhibiting narcotic receptor sites.

Injectable anti-convulsant

Midazolam or diazepam a benzodiazepine that acts on the inhibitory neurotransmitter gamma amino butyric acid (GABA), limbic system, hypothalamus and thalamus to produce sedation, anti-anxiety effect and skeletal muscle relaxation.

Injectable anti-hypoglycemics

Dextrose (50 percent dextrose) — anti-hypoglycemic: a source of calories and fluid for patients that are not able to take oral fluids in the event of a hypoglycemic reaction.

Glucagon (Glucogen) — anti-hypoglycemic: causes a rise in blood glucose levels by promoting hepatic glycogenolysis and gluconeogenesis.

Injectable anti-cholinergic

Atropine — anti-cholinergic: antagonizes acetylcholine at the muscarinic receptors, increasing the heart rate as well as having an anti-sialogogue effect.

Injectable corticosteroid

Hydrocortisone (Solu-Cortef) — anti-inflammatory: a corticosteroid secreted by the adrenal cortex which has anti-inflammatory, anti-allergic, mineralocorticoid activity and stimulates gluconeogenesis.

Dexamethasone — anti-inflammatory: a corticosteroid secreted by the adrenal cortex; it has anti-inflammatory, anti-ergic, glucocorticoid activity and stimulates gluconeogenesis.

Injectable anti-hypertensive

Esmolol — beta-antagonist: is a cardioselective beta receptor blocker with rapid onset and a very short duration of action, with no significant intrinsic sympathomimetic or membrane stabilizing activity at therapeutic dosages. It decreases the force and rate of heart beat.

• See EMERGENCY page A8

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Conclusion

In conclusion, the emergency drug kit is essential for the practice of dentistry. No practitioner is able to determine when he or she will be faced with a medical emergency that will require the use of emergency drugs. It is for this reason alone, dental healthcare practitioners should stay up-to-date on medical emergencies as well as the drugs used to treat them. Develop a regular protocol to where you and your staff are able to rehearse various emergencies using your emergency drugs. Know their actions along with the drug of administration. You and your staff should always know the location of your emergency drugs. Assign a staff member the role of reviewing your emergency drugs each month to prevent expiration of these drugs. Check out the emergency drug tracker from Emergency Drug Resource (www.buildyourowndrugkit.com) as another way to assist you in developing an expiration prevention program. None of us know when our patient’s life may depend on our readiness — and having the proper emergency drugs.

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Intravenous: used for treatment of paroxysmal supraventricular tachycardia by slowing conduction time through the AV node as well as interrupting the re-entry pathways through the AV node. Adenosine (Adenocard) — anti-arhythmic: used for treatment of paroxysmal supraventricular tachycardia by slowing conduction time through the AV node. Amiodarone (Cordarone) — anti-arhythmic: a class III agent that inhibits adrenergic stimulation, which prolongs AV conduction and sinus node function. It is used for life-threatening recurrent ventricular fibrillation or hemodynamically unstable ventricular tachycardia. Lidocaine — anti-arhythmic: is a class IB anti-arhythmic drug that is used intravenously for the treatment of ventricular arrhythmias. Verapamil (Isoptin/Calan) — anti-arhythmic: used for the treatment of paroxysmal supraventricular tachycardia, atrial flutter and atrial fibrillation. Vasopressin (Pitressin) – an anti-diuretic hormone: adjunctive treatment used in pulseless ventricular tachycardia/ventricular fibrillation.