

HDA 2018 Medical Emergencies in the Dental Office



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We've all had an Emergency in our office.....

- ⦿ Prevalence
- ⦿ Most Common
- ⦿ Expectations
- ⦿ Preparation
- ⦿ Management



What Do We Know? (Statistically Speaking)

It is estimated that the average dentist will have to deal with one or two life-threatening medical emergencies in their office during their career.



Theisen, F.C., Feil, P.H., and Schultz, R. Self perceptions of skill in office medical emergencies. Journal of Dental Educ. 54:10 (1990):623-5



**Over a Ten Year Period 4,309
U.S. Dentists Responded to
Surveys Regarding Office
Emergencies, With 96%
Reporting They Had Experienced
In Office Emergencies.**



Fest:1986, Malmed:1993



Standard of Care During Emergencies

A practitioner must act as a corresponding qualified health professional would in the same circumstances.



Standard of Care During Emergencies

Each year 7% - 8% of Dentists sued >15,000.

Minority arise as result of medical emergency.



Legal Considerations - What if any obligation does a dentist have to provide care in the presence of a medical emergency?

Keep the victim alive by treating the victim until recovery or until someone more qualified to treat them assumes responsibility of the emergency care.



Medical-Legal Aspects

\$2.5 Million Where Hospital Sedated Patient Then Allowed Him to Drive Home

\$2.5 Million suit against a hospital that gave patient conscious sedation during an out patient procedure and then allowed him to drive home. The patient fell asleep on the drive home and rolled his car.



Medical-Legal Aspects of Sedation



Sarah Coleman sued Dr. Guilan Norouzi and the dental office where her husband went in March 2007 to have some teeth extracted and get dental implants. She claims the dentist's careless or negligent care caused her husband's death. She didn't sue DOCS.

Medical-Legal Aspects of Sedation

Dental Sedation Responsible For At Least 31 Child Deaths Over 15 Years

The Huffington Post | By Harry Bradford
Posted: 07/13/2012 3:43 pm Updated: 07/13/2012 3:43 pm



Family: Man who died during dental surgery had 6 sedatives, went 10 mins. without air

New Jersey Dentist, Investigated After Second Child Dies In Care

Highlands Ranch, Denver dentist may have contaminated patients for 12 years.

SEPTEMBER 19, 2014

NC dentist's license suspended following patient's sedation death

Prevention / Preparation

- Medical/Dialogue History
- Physical Examination
- Modifications in Dental Care to Minimize Medical Risk



How can we categorize a patients physical status for our dental appointment?



The ASA physical status classification system is a system for assessing the fitness of patients before surgery. In 1963 the American Society of Anesthesiologists (ASA) adopted the five-category physical status classification system; a sixth category was later added.

While anesthesia providers use this scale to indicate the patient's overall physical health or "sickness" preoperatively, it is regarded by hospitals, law firms, accrediting boards and other health care groups as a scale to predict risk, and thus decide if a patient should have - or should not have had - an operation.

William D. Owens, M.D. American Society of Anesthesiologists Physical Status Classification System Is Not a Risk Classification System. Anesthesiology. 94(2):378, February 2001.

Lema, Mark J (September 2002). "Using the ASA Physical Status Classification May Be Risky Business". ASA Newsletter (American Society of Anesthesiologists) 66 (9) [archived from the original on 10 July 2007. Retrieved 2007-07-09.

American Society of Anesthesiologists: ASA Status

ASA Classification	Examples
ASA I	A normal healthy patient Healthy, no smoking, 10 or less alcohol drinking
ASA II	A patient with mild systemic disease Smoker, more than minimal drinking, pregnancy, obesity, well controlled diabetes, well controlled hypertension, mild lung disease
ASA III	A patient with severe systemic disease, not incapacitating Diabetes, poorly controlled hypertension, distant history of MI, CVA, TIA, cardiac arrest, COPD, EKG, always active hepatitis, implanted pacemaker, ejection fraction below 40%, congenital valvular abnormalities
ASA IV	A patient with severe systemic disease that is a constant threat to life Recent history of MI, CVA, TIA, cardiac arrest, ongoing cardiac ischemia or severe valve dysfunction, impaired GFR, ejection fraction below 20%
ASA V	A moribund patient who is not expected to survive without the operation Prolonged abnormal or unstable vital signs, myocardial infarct with mild effect, systemic lower in the face of significant cardiac pathology
ASA VI	A patient who has already been declared brain-dead and whose organs are being prepared for transplant

American Society of Anesthesiologists: ASA Status

- Established in ALL patients undergoing surgery with either L.A. or general anesthesia
- It determines the patient's capacity to WALK up a flight of stairs OR WALK 2 blocks
- ASA I: No difficulty experienced – Normal or well controlled patient
- ASA II: The patient is short of breath on reaching the top and has to stop

ASA Class in our Office

What ASA Class do you want to treat in your office?

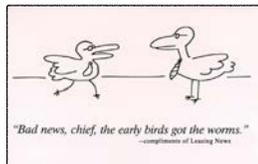
I & II



Bad News

A complete system of physical evaluation for all prospective dental patients can prevent approximately 90% of life-threatening situations. The remaining 10% occur in spite of all preventive efforts.

McCarthy



Primary Goal During an Emergency

Most important aspect of nearly all medical emergencies in the dental office is to prevent, or correct, insufficient oxygenation of the brain and heart!



Keys to successful office outcomes.....

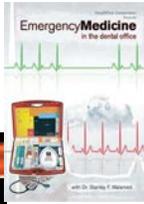
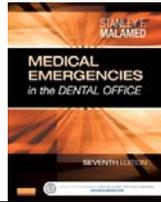
Office and Staff Preparation

BLS Whole Staff

Emergency Team

Know when to activate 911

Drugs & Equipment

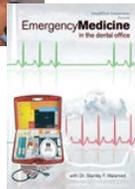
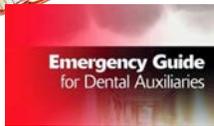




Office and Staff Preparation



Office preparation should include the posting of emergency assistance numbers and stocking of emergency drugs and equipment.



Basic Life Support & Defibrillation

Staff training should include BLS instruction and training in defibrillation for all members of the dental office staff, recognition and management of specific emergency situations, and emergency "fire" drills.



The importance of an AED in the office cannot be stressed enough; between 350,000 and 400,000 people will die in the United States this year from sudden cardiac arrests.



Team Management

Each staff member in your office should be able to maintain a life on their own, but more importantly be proficient in managing any emergency as part of a team!



Duties of Team Member 1

- ⦿ Usually the dentist, but all should know the role
- ⦿ Provide BLS as indicated
- ⦿ Stay with the victim
- ⦿ Alert office staff members
- ⦿ CROSS TRAIN EVERYONE!!!



Dr. McDreamy
(AKA Emergency Man)

Team Member 2

- ⦿ Bring emergency drug kit, oxygen (O2) and AED to emergency site
- ⦿ Check O2 daily
- ⦿ Check emergency kits weekly
- ⦿ Check AED weekly



Duties of Team Member 3

- Assist with BLS
- Monitor vital signs
- Assist as needed
- Prepare emergency drugs for administration
- Activate EMS system
- Maintain records
- Meet rescue team at building entrance and escort to the office





Information to be given to EMS (9-1-1) Operator



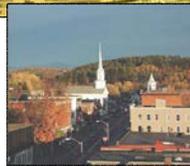
- ⦿ Location of the emergency (with names of the cross streets, roads, office, or room number, if possible.)
- ⦿ Telephone number from which the call is being made.
- ⦿ What happened - heart attack, motor vehicle crash, etc.
- ⦿ How many persons need help
- ⦿ Condition of the victims
- ⦿ What aid is being given to the victim(s) (e.g "CPR is being performed" or "We're using an AED")
- ⦿ Any other information requested.
- ⦿ Only hang up with EMS personnel when instructed to, insuring all questions are answered

It is always better to seek medical assistance "too soon" than "too late"



Geographic Requirements

Some practitioners will need to be better equipped and trained, simply due to the specific geographic area they practice in. (Urban v.s. Rural)



Emergency Practice Drills

Use a weekly / monthly staff meeting to discuss one potential medical emergency and your staff will be ready to handle the real thing when it happens, and it will!!!



Essential Emergency Drugs

- ◉ Oxygen
- ◉ Epinephrine
- ◉ Nitroglycerin
- ◉ Injectable Antihistamine
- ◉ Albuterol (Salbutamol)
- ◉ Aspirin
- ◉ Oral Carbohydrate
- ◉ Ammonia Inhalant



Emergency Drugs & Equipment



Emergency Drugs & Equipment

"Drug administration is always of secondary importance in emergency management."

"PABCD"



"PABCD"

P-Position

A-Airway

B-Breathing

C-Circulation

D-Definitive Care (Diagnosis, Drugs, Defibrillation)



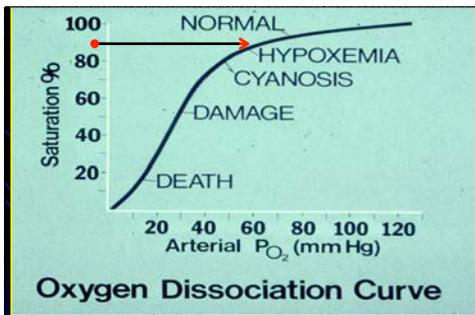
Oxygen

- Oxygen is indicated for every emergency except hyper-ventilation
- COPD?

For the management of a medical emergency it should not be withheld for the patient with chronic obstructive lung disease, even though they may be dependent on low oxygen levels to breathe if they are chronic carbon dioxide retainers. Short term administration of oxygen to get them through the emergency should not depress their drive to breathe.



When 90 % isn't enough..



Epinephrine



Why have multiple doses of Epi?

Protracted reaction

—where symptoms may persist even after a first dose of epinephrine is administered.



Biphasic reaction—

Another situation that may require a second dose of epinephrine is when symptoms may appear to go away but then come back, typically within 8 hours (sometimes up to 72 hours) after the initial allergic reaction.



Nitroglycerin

- Indicated for acute angina or myocardial infarction
- For emergency purposes it is available as sublingual tablets or a sublingual spray
- With signs of angina pectoris, one tablet or spray (0.4 mg) should be administered sublingually
- Relief of pain should occur within minutes. If necessary, this dose can be repeated twice more in 5-minute intervals



Injectable / Oral Antihistamine

- Antihistamine is indicated for the management of allergic reactions
- Mild non-life threatening allergic reactions may be managed by oral administration, life-threatening reactions necessitate parenteral administration
- Two injectable agents may be considered, either diphenhydramine or chlorpheniramine
- Recommended doses for adults are 25 to 50 mg of diphenhydramine or 10 to 20 mg of chlorpheniramine



Albuterol (Salbutamol)

- A selective beta-2 agonist such as albuterol (salbutamol) is the first choice for management of bronchospasm
- It has a peak effect in 30 to 60 minutes, with a duration of effect of 4 to 6 hours. Adult dose is 2 sprays, to be repeated as necessary. Pediatric dose is 1 spray, repeated as necessary



Aspirin

- Aspirin (acetylsalicylic acid) is one of the more newly recognized life-saving drugs, as it has been shown to reduce overall mortality from acute myocardial infarction
- Contraindicated if known hypersensitivity to aspirin, severe asthma or history of significant gastric bleeding ***



Oral Carbohydrate

An oral carbohydrate source, such as fruit juice or non-diet soft-drink, should be readily available

Its use is indicated in the management of hypoglycemia in conscious patients



*Glucagon

Glucagon works by telling your body to release sugar into the bloodstream to bring the blood sugar level back up.



Ammonia Inhalants

Ammonium carbonate, the active ingredient in ammonia inhalants (also known as smelling salts), is the treatment of choice for fainting prevention and treatment

It produces near-instantaneous relief for lightheadedness



Essential Equipment

Oxygen delivery system

AED

Syringes for drug administration

Suction and suction tips

Tourniquets

Magill intubation forceps

Drug Kit



Commercial Versus Homemade Emergency Drug Kits





Ronald Reagan said, "Failing to prepare is preparing to fail." That philosophy is nowhere more evident than during a medical crisis, when minutes can be the difference between life and death.

Management of Most Common Emergencies

- ◁ Respiratory Depression and Arrest
- ◁ Laryngospasm
- ◁ Syncope
- ◁ Hypoglycemia
- ◁ Hyperventilation
- ◁ Airway Obstruction
- ◁ Dyspnea
- ◁ Acute Asthmatic Attack / Bronchospasm
- ◁ Angina
- ◁ Acute Myocardial Infarction
- ◁ Cardiac Arrest
- ◁ Allergy / Anaphylaxis
- ◁ Drug Overdose
- ◁ Seizure



Respiratory Distress

Can present in a variety of forms:

- Asthma
- Allergic reaction
- Hyperventilation
- Pulmonary embolus
- Acute congestive heart failure
- Diabetic Ketoacidosis
- unconsciousness



Respiratory Depression and Arrest

- Can develop secondary to CNS depressant drugs
- Remember that Pulse Ox has a 10–20 second lag time
- When managed properly rarely represents a major problem.



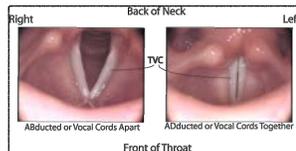
Respiratory Depression and Arrest

- Recognize and Terminate Procedure
- Position Patient in Supine Position
- Positive Pressure Oxygen when Indicated
- BP and HR Monitored every 5 minutes
- Start IV infusion
- Consider Reversal Agents (Naloxone 0.1mg/min, Flumazenil 0.2 mg/min)
- Allow Patient to Recover Following Ventilatory Adequacy
- Consider Administration of IM dose of Antidotal Drug
- Discharge



Laryngospasm

- Protective Reflex to Maintain Airway Integrity
- Occurs most often in Deep Sedation and G.A.
- Partial Laryngospasm can cause Stridor (A High Pitched Crowing Sound)
- Complete Laryngospasm is associated with Absence of Sound and Exaggerated Respiratory Efforts!!



Laryngospasm

- Place Patient in Supine Position
- Administer 100% Oxygen at 5–7 L/Min
- Displace Tongue and Evaluate Airway
- Suction Any Liquid or Debris From Airway
- Reevaluate Airway With Sternal Rub
- Suction then Positive Pressure Oxygen
- Administer Succinylcholine (10mg IV for Partial and 20–40mg IV for Complete, may result in Apnea for up to 4 min.)
- Supplemental Airways and controlled ventilations
- Monitor Throughout Recovery



Angina Pectoris

- ⦿ Terminate Procedure
- ⦿ Oxygen
- ⦿ Nitroglycerin Sublingually
- ⦿ If New Onset Contact EMS
- ⦿ Monitor EKG



Myocardial Infarction

- ⦿ Upright / Semi-reclined Position
- ⦿ Activate EMS
- ⦿ Establish & Maintain Airway
- ⦿ Chew 325 mg Aspirin if not Allergic
- ⦿ Nitroglycerin Sublingually
- ⦿ Prepare for Defibrillation with AED



Blood Pressure

Blood Pressure Chart

Systolic pressure (mm Hg)	Diastolic pressure (mm Hg)	Stages of High Blood Pressure
210	120	Stage 4
180	110	Stage 3
160	100	Stage 2
140	90	Stage 1

Normal Blood Pressure Range

Systolic pressure (mm Hg)	Diastolic pressure (mm Hg)	Pressure Range
130	85	High Normal Blood Pressure
120	80	Normal Blood Pressure
110	75	Low Normal Blood Pressure

Low Blood Pressure Range

Systolic pressure (mm Hg)	Diastolic pressure (mm Hg)	Pressure Range
90	60	Borderline Low blood Pressure
60	40	Too Low Blood Pressure
50	33	Dangerously Low Blood Pressure

Hypotension

- ⦿ Determine Etiology (Stress, Overdose, Postural, Coexisting Disease, Hypovolemia, Anesthetic Overdose)
- ⦿ Stop Treatment
- ⦿ Administer Oxygen and place in supine position, Monitor Vitals
- ⦿ Determine the Level Of Consciousness
- ⦿ Administer IV Fluids
- ⦿ IF persistent Hypotension, administer 10-25 mg Ephedrine IV for first dose then 30sec-1min admin second dose
- ⦿ Activate BLS /ACLS if condition deteriorates and Transport per EMS



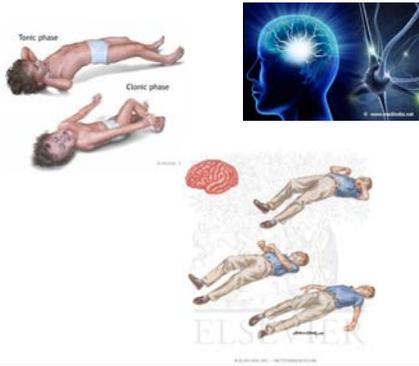
Anaphylaxis

- ⌚ Basic Life Support
- ⌚ Oxygen
- ⌚ Monitor Vital Signs
- ⌚ Activate EMS
- ⌚ Epinephrine
- ⌚ ACLS if Able



Seizures

- ⌚ Terminate the Procedure
- ⌚ Supine Position
- ⌚ Ensure Patient Safety
- ⌚ Establish Airway
- ⌚ Monitor Vital Signs
- ⌚ 100% Oxygen



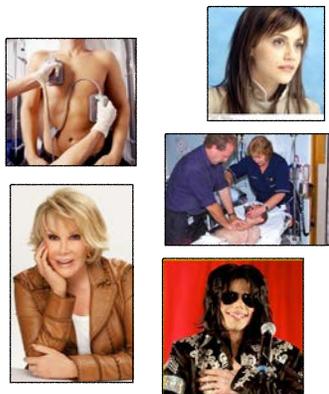
Hypoglycemia

- ⌚ Stop Treatment
- ⌚ Supine Position
- ⌚ Maintain Airway
- ⌚ Monitor Vital Signs
- ⌚ Check Blood Glucose Levels
- ⌚ Oral Glucose



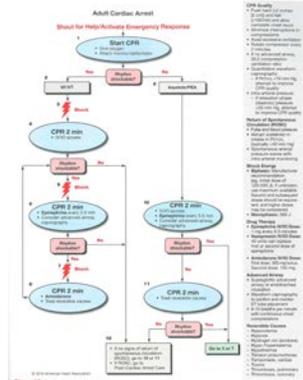
Cardiac Arrest

- ⌚ Determine Rhythm
- ⌚ Secure Airway
- ⌚ Initiate Basic CPR
- ⌚ Connect to AED / Shock if Advised
- ⌚ Establish I.V.



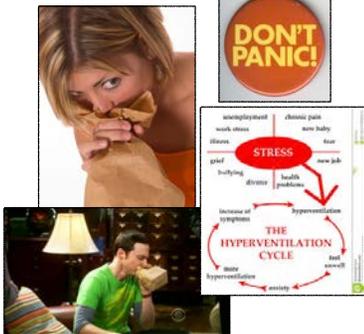
Cardiac Arrest

ACLS Algorithm's



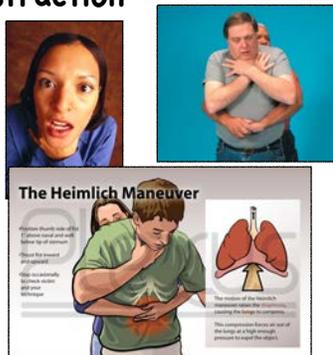
Hyperventilation

- Upright Position
- Verbally Calm the Patient
- Rebreathing bag / Hands, to Reduce Carbon Dioxide Elimination

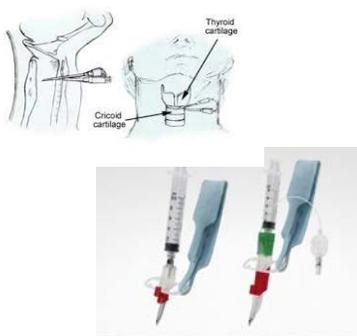


Airway Obstruction

- Upright Position
- Pack off Surgical Site
- Suction Oropharynx
- Determine if Airway is Obstructed
- Heimlich Maneuver, if Indicated
- McGyver.....



Airway Obstruction



The LifeStat® is an emergency airway device for use in respiratory obstruction or failure. This innovative device facilitates a lifesaving method (cricothyroid notch) in emergencies when other efforts have failed. LifeStat® is small and light enough to fit on your key ring, in your pocket, or in your emergency kit.



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Thank You
