



The
Delaware State Dental Society
presents

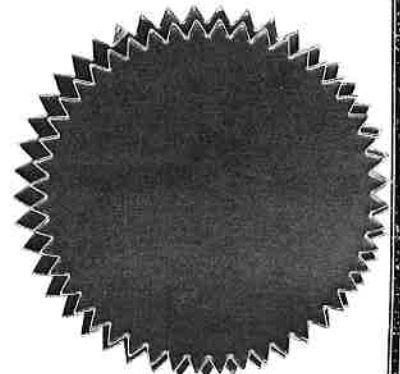
**MEDICAL
EMERGENCIES
IN THE
DENTAL OFFICE**



WHY CPR IS NOT ENOUGH



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-- Instructor --
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MEDICAL EMERGENCIES IN THE DENTAL OFFICE

WHY CPR IS NOT ENOUGH

☞ TABLE OF CONTENTS ☞

SECTION 1: BEFORE THE COURSE

- ✓ This is a self-assessment tool to evaluate your office's current state of readiness to address a medical emergency. It is designed to identify areas needing improvement. If several people from your office are attending, compare your answers. If you are a staff person attending without your dentist/employer, complete the assessment and give it to him/her.



SECTION 2: DURING THE COURSE

- ✓ These are the lecture notes that correspond to the program.



SECTION 3: AFTER THE COURSE

- ✓ These are the supplemental pages you will need to complete your medical emergency response manual described during the course.

Section

1

⌘ MEDICAL EMERGENCY CHECKLIST ⌘

This self-assessment tool will measure your dental office's competency to manage a medical emergency in six key areas. Each section is of equal value and worth 50 points. To take this self-assessment, you will need all your medical emergency supplies (medications and equipment) and your office's last four years of CE records. The exercise takes about 10 minutes to complete and 5 minutes to score and interpret the results.

I. Dentist Training

Dentists should periodically re-train for medical emergencies. In this section there are two questions, each worth 25 points.

1) The American Heart Association recommends Basic Life Support for Healthcare Providers (BLS/HC) be retaken every two years. *Which statement best describes your office?*

Question 1 Points

- All* dentists in the office have current BLS/HC cards (25 pts)
- Some, *but not all*, dentists in the office have current BLS/HC cards (15 pts)
- Although no dentist has a current BLS/HC card, *all dentists* have taken the course in the last 4 years. (5 pts)
- At least one* dentist in the office has not taken BLS/HC within the last 4 years (0 pts)

2) Dentists also need to take a medical emergency preparedness courses that covers medical events other than cardiac arrest. *Which statement best describes your office?*

Question 2 Points

- All* dentists in the office have taken a medical emergency course within the last two years (25 pts)
- Some, *but not all*, dentists in the office have taken a medical emergency course within the last two years (15 pts)
- Although no dentist has taken a medical emergency course within the last two years, *all dentists* have taken a medical emergency course within the last 4 years (5 pts)
- At least one* dentist in the office has not taken a medical emergency course within the last 4 years (0 pts)

Tally your score for Section I:

_____/50

II. Staff Training

All staff (*hygienists, clinical assistants and business personnel*) should receive periodic training to assist the dentist in the management of a medical emergency. There are six questions in this section.

Answer these questions 1 and 2 based exclusively on your dental hygiene staff

1) Which statement best describes your office's hygiene staff?

Question 1 Points

- All hygienists have a current BLS/HC card (9 pts)
- Some, but not all hygienists, have a current BLS/HC card (4 pts)
- Although all hygienists are not current in BLS/HC, all hygienists have taken BLS/HC within the last 4 years (2 pts)
- At least one hygienist has not taken BLS/HC within the last 4 years (0 pts)

2) Which statement best describes your office's hygiene staff?

Question 2 Points

- All hygienists in the office have taken a medical emergency course within the last two years. (9 pts)
- Some, but not all, hygienists in the office have taken a medical emergency course within the last two years. (4 pts)
- Although no hygienist has taken a medical emergency course within the last two years, all hygienists have taken a medical emergency course within the last 4 years. (2 pts)
- At least one hygienist in the office has not taken a medical emergency course within the last 4 years. (0 pts)

Answer these questions 3 and 4 based exclusively on your clinical (chairside) assistants.

3) Which statement best describes your office's clinical dental assistants?

Question 3 Points

- All clinical dental assistants have a current BLS/HC card (8 pts)
- Some, but not all, clinical dental assistants, have a current BLS/HC card (4 pts)
- Although all clinical dental assistants are not current in BLS/HC, all clinical dental assistants have taken BLS/HC within the last 4 years (2 pts)
- At least one clinical dental assistants has not taken BLS/HC within the last 4 years (0 pts)

4) Which statement best describes your office's clinical dental assistants?

Question 4 Points

- All clinical dental assistants in the office have taken a medical emergency course within the last two years. (8 pts)
- Some, but not all, clinical dental assistants in the office have taken a medical emergency course within the last two years. (4 pts)
- Although no clinical dental assistants have taken a medical emergency course within the last two years, all clinical dental assistants have taken a medical emergency course within the last 4 years. (2 pts)
- At least one clinical dental assistant in the office has not taken a medical emergency course within the last 4 years. (0 pts)

Answer these questions 5 and 6 based exclusively on your business (front office) staff.

5) Which statement best describes your office's business staff?

Question 5 Points

- All business staff have a current BLS/HC card (8 pts)
- Some, but not all, business staff, have a current BLS/HC card (4 pts)
- Although all business staff are not current in BLS/HC, all business staff have taken BLS/HC within the last 4 years (2 pts)
- At least one member of the business staff has not taken BLS/HC within the last 4 years (0 pts)

6) Which statement best describes your office's business staff?

Question 6 Points

- All business staff in the office have taken a medical emergency course within the last two years. (8 pts)
- Some, but not all, business staff in the office have taken a medical emergency course within the last two years. (4 pts)
- Although no business staff has taken a medical emergency course within the last two years, all business staff have taken a medical emergency course within the last 4 years. (2 pts)
- At least one member of the business staff in the office has not taken a medical emergency course within the last 4 years. (0 pts)

Tally your score for Section II:

_____/50

III. Mock Drills

Periodically dental offices should hold brief, mock drills to practice their responses to a variety of medical events. There is one question in this section.

1) How often does your office hold mock medical emergency drills?

Question 1 Points

- Monthly (50 pts)
- 6 times a year (45 pts)
- 4 times a year (40 pts)
- 3 times a year (30 pts)
- 2 times a year (15 pts)
- Our office does not routinely hold medical emergency drills (0 pts)

Tally your score for Section III:

_____/50

IV. Written Medical Emergency Plan

A dental office should maintain a written medical emergency plan to guide the team through a crisis. There are four questions in this section.

Section IV Points
Question 1 _____
Question 2 _____
Question 3 _____
Question 4 _____

- 1) Does your office have a written medical emergency plan with treatment algorithms to guide your team in the identification and response to a medical emergency? (25 pts for yes, 0 pts for no)
- 2) Have you personalized your written medical emergency plans for the unique needs of your office? [*You may answer "yes" if you developed your own emergency manual or if you purchased a commercial version and then personalized it. Answer "no" if you do not have an emergency manual.*] (5 pts for yes, 0 pts for no)
- 3) Does each member of your dental team have specific, pre-assigned tasks to accomplish during a medical emergency [e.g. retrieve oxygen tank, call 911, ect.]? (15 pts for yes, 0 pts for no)
- 4) Are these assignments posted in areas where they can be easily retrieved by the staff during a medical emergency? [Answer "no" if you answered "no" to question 3.] (5 pts for yes, 0 pts for no)

Tally your score for Section IV:

_____ /50

Section V: Medications

Dental offices should maintain a basic list of emergency medications. There are four questions in this section.

Section IV Points
Question 1 _____
Question 2 _____
Question 3 _____

1) Does your office have 3cc or 5cc medical syringes with needles for intramuscular injections? (4 pts for yes, 0 pts for no)

2) Does your office have 1cc tuberculin syringes with needles for sublingual injections? (4 pts for yes, 0 pts for no)

3) Use the following scoring system for the following six medications.

6 pts if the medication is in stock and within the expiration date

2 pts if the medication is in stock. Although the medication is expired, it is within three years of the expiration date *and* is not discolored (if liquid)

0 pts if the medication is out of stock, outdated by over 3 years or discolored.

- Genuine aspirin (not acetaminophen or ibuprofen)
- Albuterol inhaler
- Nitroglycerine tablets or inhaler
- Diphenhydramine (for injection, not tablets)
- Ammonia inhalants
- Glucose tablets and/or gel

4) Epinephrine is available in ampules or auto-injectors (Epi-Pens®). Choose one (A or B) of the following. *Do not take credit for both.*

A) If you stock epinephrine in **1:1000 ampules** use the following scoring system

- 6 pts if the medication is in stock and within the expiration date
- 2 pts if the medication is in stock. Although the medication is expired, it is within three years of the expiration date *and* is not discolored (if liquid)
- 0 pts if the medication is out of stock, outdated by over 3 years or discolored.

Question 4 Points

B) If you stock epinephrine in **Epi-Pens®** use the following scoring system

- 6 pts if you have 2 adult and 2 pediatric injectors and they are within the expiration date
- 2 pts if you have only 2 injectors (any combination) and they are within the expiration date
- 0 pts if you stock auto-injectors but they are out of date (*Read about importance of fresh Epi-pens in scoring section.*)

Tally score for Section V:

_____ /50

VI. Equipment

Offices need to maintain basic emergency equipment to respond to a medical emergency. This section is divided into three sub-sections.

Monitors and Diagnostic Aids (10 pts total)

Monitor Subtotal

- Stethoscope (2 pts)
- Manual sphygmomanometers in at least three size cuffs (5 pts if you have all 3 sizes of cuffs, 2 pts if you only have only one size of cuff, 0 pts if your only means of taking a BP is with an automatic BP cuff designed for lay use [*they are not reliable at low BPs*])
- Glucose monitor with test strips (3 pts)

Oxygen and Respiratory Aids (3 pts each / 30 pts total)

Oxygen Subtotal

- Portable oxygen tank with regulator and oxygen
- A reserve source of oxygen (either a second tank or and N₂O unit)
- Nasal cannulae
- Rebreathing masks
- Oral pharyngeal airways in 7 sizes (award 1 pt if you only have 1 size)
- Pocket mask
- Bag-Valve-Mask (e.g. Ambu-bag[®])
- Oxygen Tubing
- Double-ended male adapters for oxygen tubing
- Equipment to perform a cricothyroidotomy

Cardiac Devices (10 pts total)

AED Subtotal

- AED (8 pts)
- AED battery is within its fully charged date (2 pts)

Tally for Section VI:

_____/50

Scoring

Section I	_____
Section II	_____
Section III	_____
Section IV	_____
Section V	_____
Section VI	_____

Grand Total	_____

Interpretation

General

285 or greater: Good job! Your office has high likelihood of successfully managing a medical emergency arising during dental treatment with confidence.

255-284: Pretty good. You have generally made a significant effort to prepare for a medical emergency but probably have a score of less than 40 in one or more section. Review each section and make improvements in the area(s) needed.

254 or lower: Significant deficiencies exist and your office has an increased likelihood of not providing optimal care during a medical emergency. Review each section and make improvements in the area(s) needed.

Specific Details (a minimum score of 40 pts is suggested in each section)

Section I: A score of less than 40 means at least one doctor in the office has not had BLS/HC and/or medical emergency training within the last 4 years. Because memory diminishes over time, this individual may not remember details to lead other members of the team during a medical emergency. Some dentists in the office would benefit from BLS/HC and/or a dental CE course on general medical emergencies.

Section II: A score of less than 40 means the entire team is not capable of assisting the doctor during a medical emergency. Some members would benefit from BLS/HC and/or a dental CE course on general medical emergencies.

Section III: There are 12 medical emergencies other than cardiac arrest for which dentists should prepare. If you are holding mock emergency drills less than every three months, it will take longer than 3 years to practice for all twelve. Consequently, the likelihood of a competent response is compromised.

Section IV: Two reach a minimal score of 40 points; two requirements need to be met: ① having a written medical emergency manual with algorithms and ② having pre-assigned tasks for each member of the dental team. Ideally, the manual should be personalized for the unique needs of the office and the staff assignments should be readily available to staff for use during an emergency.

Section V: A score of less than 40 means you either lack basic medications and/or have seriously outdated medications. In reality, most emergency medications are still potent for a *modest* time after their expiration date if they are not discolored. There are two exceptions to this generalization. ① The first is Epi-pens. Epi-pens rely on a small volume of compressed gas to propel the epinephrine through the needle. Because of the potential for leakage of the gas around the gasket over long periods of time, Epi-pens cannot be trusted to activate beyond their declared date. ② The expiration date issue is nitroglycerine tablets. Nitroglycerine tablets are packaged in airtight containers. Once opened and exposed to oxygen, nitroglycerine tablets degrade in 6 months, regardless of the expiration date on the container.

Section VI: The most common reason for having a score of less than 40 is failure to have adequate supplemental oxygen for both breathing and non-breathing patients. Curiously, many offices maintain supplemental oxygen for non-breathing patients but have no method to assist a breathing patient that would benefit from extra oxygen. In reality, a breathing patient needing supplemental oxygen is the most common situation a dentist may encounter.

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Section

2

The Five P's of Preparation

☺☺☺ **No. 1 IS PREVENTION** ☺☺☺

Overview

- The best means of preventing medical emergencies in the dental office is by thoroughly knowing the health of the patient.
- Since dentists do not routinely order medical tests performed on patients, the best means of learning about patients' health is through a medical history.

Three characteristics of a Good Medical History

- It is well _____
- It is comprehensive and covers items not obvious associated with dentistry.
- The clinician can recover information _____.

⌘ MEDICAL HISTORY ⌘
All information will be held in strict confidence.

Patient's Name _____ Birthdate _____

Primary Care Physician _____ City _____ Physician's Phone (____) _____

List the **MEDICAL SPECIALISTS** you have seen

Physician's Name	Specialty	Physician's Name	Specialty
_____	_____	_____	_____
_____	_____	_____	_____

DESCRIBE YOUR OVERALL HEALTH: Outstanding (better than most people my age) Good (I don't know of any medical problem)
 Fair (I have some health problems but they're under control) Guarded (I have some current health problems) Poor (I have some major health problems)

WHEN WAS THE LAST TIME YOU SAW YOUR PHYSICIAN? _____ (year) **What was the purpose?** _____
HAVE YOU EVER BEEN HOSPITALIZED OR HAD A SERIOUS ILLNESS? No Yes, describe _____

HABITS

Cigarettes Never smoked Smoked but quit. When? _____ Currently smoking. Amount? _____ Start date _____
 Cigars or Pipe: Never smoked Smoked but quit. When? _____ Currently smoking. Amount? _____ Start date _____
Smokeless tobacco: Never smoked Used, but quit. When? _____ Currently using. Amount? _____ Start date _____
Have you tried to quit? N/A No Yes How many times? _____ What technique did you use? Abstain Nicotine patches Nicotine gum Hypnosis

Alcohol Consumption: Total abstinence Other, describe frequency & amount _____

Do you use any recreational drugs? No Yes

WOMEN

Are you pregnant? No Yes, estimated due date _____ Are you nursing? No Yes
Are you taking oral contraceptives? No Yes Are you undergoing hormone replacement therapy? No Yes
Are you under treatment for osteoporosis and taking a class of medications call BIPHOSPHONATES? No Yes, which one _____
(Some [BUT NOT ALL] common names include Actone®, Boniva®, Fosamax®, Fosamax Plus D®, Skelid® & Didrone®)

ALLERGIES: Are you allergic to any of the following? Check here, if no known allergies

Latex Penicillin Sulfa Other antibiotics Codeine Local anesthetic Aspirin NSAIDs like Motrin® Metals Other _____
Name the specific medication and describe your reaction:

Do you have or have you had any of the following?

Y N	HEART/VASCULAR	Y N	RESPIRATORY	Y N	NERVOUS SYSTEM	Y N	HEAD/NECK/EYES
<input type="checkbox"/>	Heart attack (MI)	<input type="checkbox"/>	Tuberculosis	<input type="checkbox"/>	Stroke (CVA) or TIA	<input type="checkbox"/>	Glaucoma
<input type="checkbox"/>	Congenital heart defect	<input type="checkbox"/>	Emphysema	<input type="checkbox"/>	Severe headaches / Migraines	<input type="checkbox"/>	Macular Degeneration
<input type="checkbox"/>	Rheumatic Fever	<input type="checkbox"/>	Asthma	<input type="checkbox"/>	Fainting or dizzy spells	<input type="checkbox"/>	Loss of hearing
<input type="checkbox"/>	Irregular heartbeat (missed beats)	<input type="checkbox"/>	Persistent cough	<input type="checkbox"/>	Convulsions or epilepsy	<input type="checkbox"/>	Tonsillitis
<input type="checkbox"/>	Heart murmur	<input type="checkbox"/>	Coughing up blood/sputum	<input type="checkbox"/>	Numbness or tingling	<input type="checkbox"/>	Sinus problems
<input type="checkbox"/>	High blood pressure	<input type="checkbox"/>	Difficulty breathing while lying down	<input type="checkbox"/>	ENDOCRINE	<input type="checkbox"/>	DIGESTIVE SYSTEM
<input type="checkbox"/>	Low blood pressure	<input type="checkbox"/>	Winded going up 1 flight of stairs	<input type="checkbox"/>	Diabetes: <input type="checkbox"/> Type I <input type="checkbox"/> Type II	<input type="checkbox"/>	Hepatitis, Type _____
<input type="checkbox"/>	Angina / Chest pains	<input type="checkbox"/>	Lung cancer	<input type="checkbox"/>	Excessive thirst	<input type="checkbox"/>	Gastric reflux
<input type="checkbox"/>	Mitral Valve Prolapse	<input type="checkbox"/>	Other lung disease	<input type="checkbox"/>	Thyroid disease	<input type="checkbox"/>	Ulcers
<input type="checkbox"/>	Artificial heart valve(s)	<input type="checkbox"/>	BONE	<input type="checkbox"/>	Hypoglycemia	<input type="checkbox"/>	Frequent diarrhea
<input type="checkbox"/>	Pacemaker	<input type="checkbox"/>	Arthritis / Rheumatism	<input type="checkbox"/>	MENTAL HEALTH	<input type="checkbox"/>	Crohn's dis. or colitis
<input type="checkbox"/>	By-pass surgery	<input type="checkbox"/>	Osteoporosis	<input type="checkbox"/>	Depression	<input type="checkbox"/>	CANCER
<input type="checkbox"/>	Stent placement	<input type="checkbox"/>	Gout	<input type="checkbox"/>	Anxiety	<input type="checkbox"/>	Tumor _____
<input type="checkbox"/>	Congestive heart failure	<input type="checkbox"/>	Artificial joints or limbs	<input type="checkbox"/>	Panic attacks	<input type="checkbox"/>	Radiation treatment
<input type="checkbox"/>	Swelling of ankles	<input type="checkbox"/>	URINARY	<input type="checkbox"/>	Psychiatric treatment	<input type="checkbox"/>	Chemotherapy
<input type="checkbox"/>	Shortness of breath	<input type="checkbox"/>	Kidney disease	<input type="checkbox"/>	Bipolar (manic - depressive)	<input type="checkbox"/>	Organ removal
<input type="checkbox"/>	Other heart disease	<input type="checkbox"/>	Renal dialysis	<input type="checkbox"/>	Addiction disorders _____	<input type="checkbox"/>	ORGAN TRANSPLANT
<input type="checkbox"/>	BLOOD	<input type="checkbox"/>	Very frequent urination	<input type="checkbox"/>	Other _____		
<input type="checkbox"/>	Anemia	<input type="checkbox"/>	Burning on urination				
<input type="checkbox"/>	Sickle cell disease	<input type="checkbox"/>	Blood or discharge in urine				
<input type="checkbox"/>	Hemophilia	<input type="checkbox"/>	Venereal disease				
<input type="checkbox"/>	Bruise very easily	<input type="checkbox"/>	Genital herpes				
<input type="checkbox"/>	Prolonged bleeding						
<input type="checkbox"/>	HIV / AIDS						

DOCTOR'S NOTES

TO THE BEST OF MY KNOWLEDGE, ALL THE ABOVE INFORMATION IS CORRECT.

Signed _____ Date _____

Patient's Name _____

List any surgeries or major health events	
Year	Event

Medications INCLUDING over-the-counter medications and herbal supplements		
Name of medicine	Dosage	Purpose: Why are you taking it?

MEDICAL HISTORY UPDATES

① _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

④ _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

② _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

⑤ _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

③ _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

⑥ _____ / _____ / _____
 Month Day Year BP: R arm L arm

Y N Change in health? _____
 Y N Under MD's care? _____ Y N Rx change?
 Y N New allergies? Tobacco? N/A Same Started Quit _____
 Y N Pregnant? EDD _____ Y N Nursing?

Antibiotic prophylaxis? N/A Taken as directed _____

I ATTEST THAT I HAVE REVIEWED MY MEDICAL HISTORY & IT IS ACCURATE, AS AMENDED. _____

Reviewed by _____

Identify No. 2 IS PERSONNEL

Overview

- Always have at least 2 persons in the office (e.g when an RDH is practicing under general supervision.
 - ✓ Better equipped to deal with emergencies
 - ✓ Staff safety
 - ✓ Medical / legal protection

How to Assign Tasks



- Determine the *minimum* number of people always present in the office. Do not count part-time staff unless several staff members taken together fully cover all the time of a typical workweek.
- Assume the dentist should always stay with the patient
- Assign a *specific* staff person to cover the following areas:
 - ✓ Stay with the dentist and assist in treatment
 - ✓ Retrieve supplies
 - ✓ Set-up oxygen
 - ✓ Take the patient's vital signs
 - ✓ Document the event (*keep a written record including the time of: vital signs, medications given, procedures performed, oxygen administered*)
 - ✓ Call EMS
 - ✓ Control other patients in the office
 - ✓ Direct EMS to the scene
 - ✓ Call patient's family, if indicated

∞ MEDICAL EMERGENCY ASSIGNMENTS ∞

FULL ARREST		ALL OTHER EMERGENCIES
DENTIST <i>Diagnostician & Decision Maker</i>	① Start AED & attach leads ② Direct team members ③ Manage airway (BVM mask)	① Diagnose problem ② Direct team members ③ Address problem & administer medications
CLINICAL ASSISTANT <i>Primary Support</i>	① Start chest compressions (30:2 until adv. airway) ② Switch to ventilations, as necessary ③ Set-up IV	① Start O ₂ via cannula (except hyperventilation) ② Stay with patient / Assist dentist, as directed
HYGIENIST <i>Recordkeeper</i>	① Retrieve AED, <u>then</u> O ₂ adjuncts ② Assist with AED leads & ventilations ③ Be available for chest compressions	① Note time ② Start & maintain written record (meds, vitals & actions of team) ③ Take vital signs
OFFICE MANAGER <i>Rover</i>	① Call 911 immediately, Confirm completion ② Retrieve airways & medication kit ③ Control environment ④ Direct EMS to scene	① Retrieve oxygen, airways, medication kit & manual ② Retrieve AED ③ Stand-by to call 911, as directed ④ Control environment / direct EMS

- ① Base your permanent assignments on your minimal staff (e.g. no part-time staff).
- ② If additional staff is available (e.g. part-time), sub-divide duties, as appropriate.



No. 3 IS PRODUCTS

Products cover 4 areas

- A. Monitors
- B. Medications
- C. Oxygen & airway devices
- D. Therapeutic devices

A. Routine Monitors in a Dental Office

- Stethoscope
- Sphygmomanometers (BP Cuff)

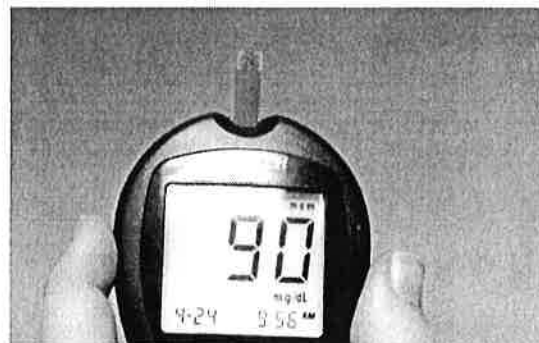
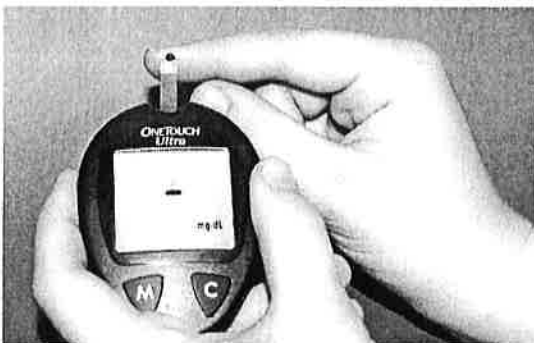
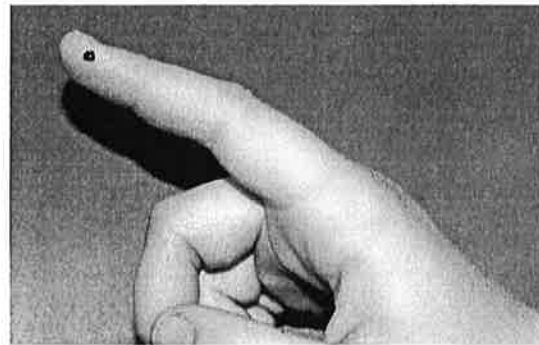
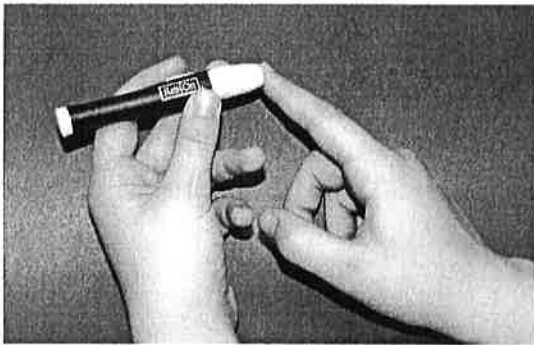
Sphygmomanometer Comparison			
TYPE	BENEFITS	DISADVANTAGES	NOTES
Aneroid <i>(spring driven)</i>	•Portable	•Limited ability to calibrate •Cuff permanently attached (?)	
Mercury	•Always accurate	•Must be kept level •Danger of Hg spill	
Automatic	•Eliminates	•Time consuming to set-up •Needs manual back-up •Operators prone to loose manual skills	

- Most GP offices need _____ cuffs (*Pediatric dental offices may need more.*)
 - ✓ _____ adult
 - ✓ _____ adult
 - ✓ _____ adult (or adolescent)

- Proper Fit of a Sphygmomanometer
 - ✓ Proper size: Bladder width = Diameter of patient’s arm + 20%
 - ✓ Proper Technique for Taking Blood Pressure
 - ✓ Position patient with upper arm at level of heart
 - ✓ Expose are _____ constriction
 - ✓ Fit cuff snugly with air completely emptied from bladder
 - ✓ Bladder should cover the anatomical front of arm
 - ✓ Rapidly inflate to 30 mm above estimated SBP or 220
 - ✓ Deflate at the rate of _____ mm/sec
 - ✓ Record reading, including are arm was used and patient’s position (*seated, reclined, standing*).
 - ✓ If reading needs to be repeated, wait at least _____ minutes of use other arm

A. Routine Monitors in a Dental Office, continued

- Glucose Monitor (measures blood glucose level)
 - ✓ Type II diabetes is now at an epidemic level
 - ✓ Even children are affected
 - ✓ Detected both high and low blood glucose levels
 - ✓ Is useful for both diabetics and non-diabetics



Glucose strips are brand-specific. Because manufacturers are interested in selling strips on an ongoing basis, the monitors are very inexpensive. They are an easy addition to your emergency kit.

B. Medications

- Purchase or develop a drug kit / Pre-made “black boxes:”
 - ✓ Tend to be higher priced
 - ✓ Often contain meds not desired
- Assign a staff member to check expirations twice a year
 - ✓ New Year Eve & Independence Day
 - ✓ Begin & end of daylight savings time
- Minimal Supply List
 - ✓ Paper bag, flashlight and non-latex gloves
 - ✓ 4 Disposable syringes with needles
 - ✓ A = Aspirin (325 mg, regular, non-enteric coated)
 - ✓ B = Bronchiole dilator (e.g. Ventolin inhaler)
 - ✓ C = Coronary artery dilator (*unopened*, nitroglycerin, 0.4 mg tabs)
 - ✓ D = Diphenhydramine (mild allergic reactions (two 50mg/ml vials)
 - ✓ E = Epinephrine (three 1:1000 1mg ampules)
 - ✓ G = Glucose (gel and tablets)
 - ✓ F = Fainting (ammonia inhalants)

Although various pre-made kits include these items, none are highly recommended by the ADA.

Supplemental Supply List

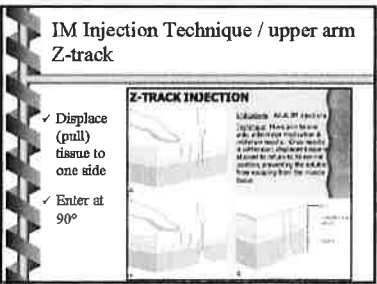
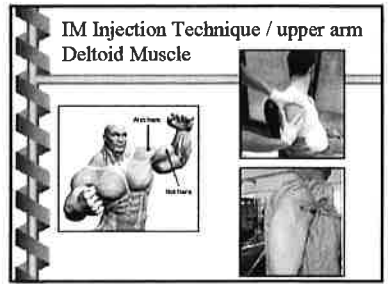
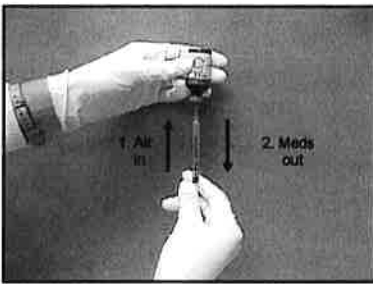
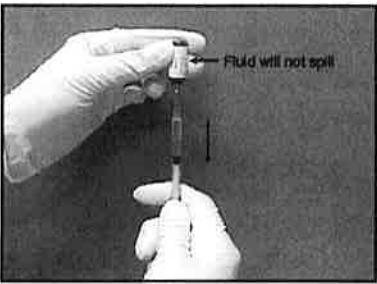
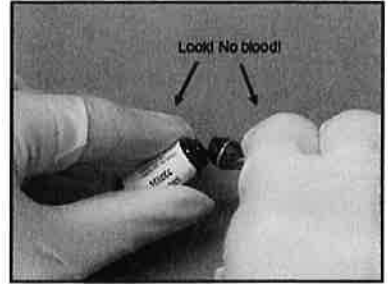
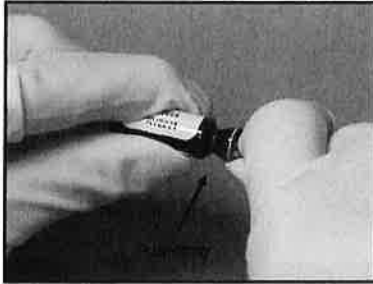
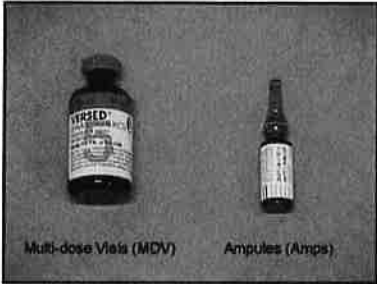
- ✓ 2 amps narcotic (Morphine, Demerol or Nubain)
- ✓ 2 amps Narcan (*required, if narcotics are in office*)
- ✓ 2 amps Ephedrine
- ✓ 1 vial Glucagon (*disadvantage: high _____*)
- ✓ 2 amps Valium (10mg/cc)
- ✓ Solu-cortef (1 Mix-o-vial)
- ✓ Syrup of Ipecac

Consider N₂O/O₂ as an alternative to narcotics during a MI

MEDICATION	ADVANTAGES	DISADVANTAGES
Morphine	MD/ER's choice	DEA Class II*
Demerol®	More familiar to DDS	Increased cardiac O ₂ consumption DEA Class II*
Nubain®	DEA Class III	Agonist/antagonist mechanism
* DEA Class II requires: <ul style="list-style-type: none"> • Form 222 to purchase • Double-lock protection (office door & locked cabinet) • Double-entry inventory (patient's record & inventory journal) 		

- Disposal of Outdated Medications
 - ✓ Practice loading syringes then dispose. Treat open ampules as sharps.

**Dentist should be familiar with both:
Intramuscular injection into the deltoid muscle (upper arm) and
Sublingual injection into the floor of the mouth**



C. Oxygen & Airway Devices

➤ Overview

- ✓ Assisting the breathing patient
- ✓ Ventilating the non-breathing patient
- ✓ Establishing an airway on the obstructed patient

➤ Oxygen Sources

- ✓ Dental offices should have a portable oxygen “E” tank & regulator
- ✓ Additional oxygen needs to be available. Consider:
 - Second tank with regulator
 - Spare “E” tank of O₂
 - Nitrous oxide unit

➤ Assisting the Breathing Patient

- ✓ Oxygen source
- ✓ Cannula
- ✓ Non-rebreathing patient
- ✓ Medical gas tubing
- ✓ Double male-ended adapters

➤ Cannula

- ✓ Most _____ accepted by patient
- ✓ Comfortable
- ✓ _____ concentration with ability to titrate to desired strength

Although 100% O₂ is delivered to the nosepiece, this formula allows you to know the O₂ delivered to the base of the lungs. This formula is **NOT** valid if you substitute a nasal hood from a N₂O/O₂ unit.

OXYGEN DELIVERED TO ALVEOLI
Percentage oxygen = (4 X liters/minute) + 20
For example, at 3 liters O₂: (3 X 4) + 20 = 32%

- ✓ Maximum deliver is _____ liters/minute (higher is painful)
- ✓ Humidifier not necessary for short-term use

➤ Non-Rebreathing Mask

- ✓ Use only on a *breathing* patient
- ✓ Better than a rebreathing mask
- ✓ Some patients feel _____.
- ✓ Set O₂ at 10 L/M or maximum flow
- ✓ Able to deliver nearly _____% oxygen
- ✓ Make sure reservoir bag is inflated prior to use
- ✓ Contraindicated in COPD patients
- ✓ No value to a non-breathing patient



- Ventilating the Non-Breathing Patient
 - ✓ Mouth-to-mouth
 - ✓ No longer considered acceptable technique in a healthcare environment
 - ✓ Must offer barrier protection (OSHA)
 - ✓ Delivers poor oxygenated (exhaled) air

- Supplies Needed
 - ✓ Assorted oral-pharyngeal airways (6 sizes)
 - ✓ Pocket mask
 - ✓ Bag-Valve-Mask (BVM), Ambu® is a common brand name
 - ✓ Supplemental tubing
 - ✓ Oxygen source

- Oral-Pharyngeal Airways
 - ✓ GOAL: Prevent tongue, which has lost motor tone in the unconscious patient, from obstructing the airway.
 - ✓ SIZE: Proper size is important. Too small will not reach sufficiently posterior to preserve airway. Too large will result in muscle tissue being pushed in front of airway as it is inserted and thereby blocking the airway.
 - ✓ SIZING TECHNIQUE: Measure from the corner of the mouth to the earlobe.
 - ✓ INSERTION: Insert upside down and rotate 180° at the soft palate. Slide into position.

- Pocket Mask
 - ✓ Always use with an oral-pharyngeal airway, when available
 - ✓ Technique is easy
 - ✓ Set oxygen to maximum
 - ✓ Oxygen is diluted with rescuer's exhaled air & no reservoir is available
 - ✓ Rate: 12 / minute (every 5 seconds)

- Bag-Valve-Mask (BVM)
 - ✓ "Gold Standard" of airway supplements
 - ✓ Always place an oral-pharyngeal airway
 - ✓ Always use a reservoir
 - ✓ Delivers 100% oxygen
 - ✓ Consideration: Technique is difficult, especially for rescuers with small hands
 - ✓ Recommendations: Do not make this the only option available. If is BVM is chosen to be kept available, also keep a pocket mask on hand.
 - ✓ Rate: 12 / minute (every 5 seconds)
 - ✓ Squeeze bag gently and do not try to completely empty the bag

CONSIDER

- ① Consider an I-Gel[®] Supraglottic Airway as an alternative to oral-pharyngeal airways.
- ② Buy sizes 3: Size 3 (<110 lbs.), Size 4 (110-200 lbs.) and Size 5 (>200 lbs.)
- ③ Buy an extra one and ask local EMS for insertion assistance on a manikin.

➤ Establishing an airway on the unobstructed patient

✓ Laryngospasm

- Spasm of voluntary muscle (larynx)
- May be caused by foreign body obstruction (e.g. dropped crown) or endogenous
- Medications and intubations used to treat this condition in the hospital are impractical in the dental office



This section deals with the equipment needed for laryngospasm.

**ALWAYS USE THE TECHNIQUES OF BLS
AS THE INITIAL INTERVENTION FOR LARYNGOSPASM**

✓ Equipment needed to address laryngospasm

- O₂ source
- Medical gas tubing
- Bag-Valve-Mask with facemask removed
- 10 Ga. Angiocatheter
- 5 cc Syringe
- 7.5 Endotracheal tube

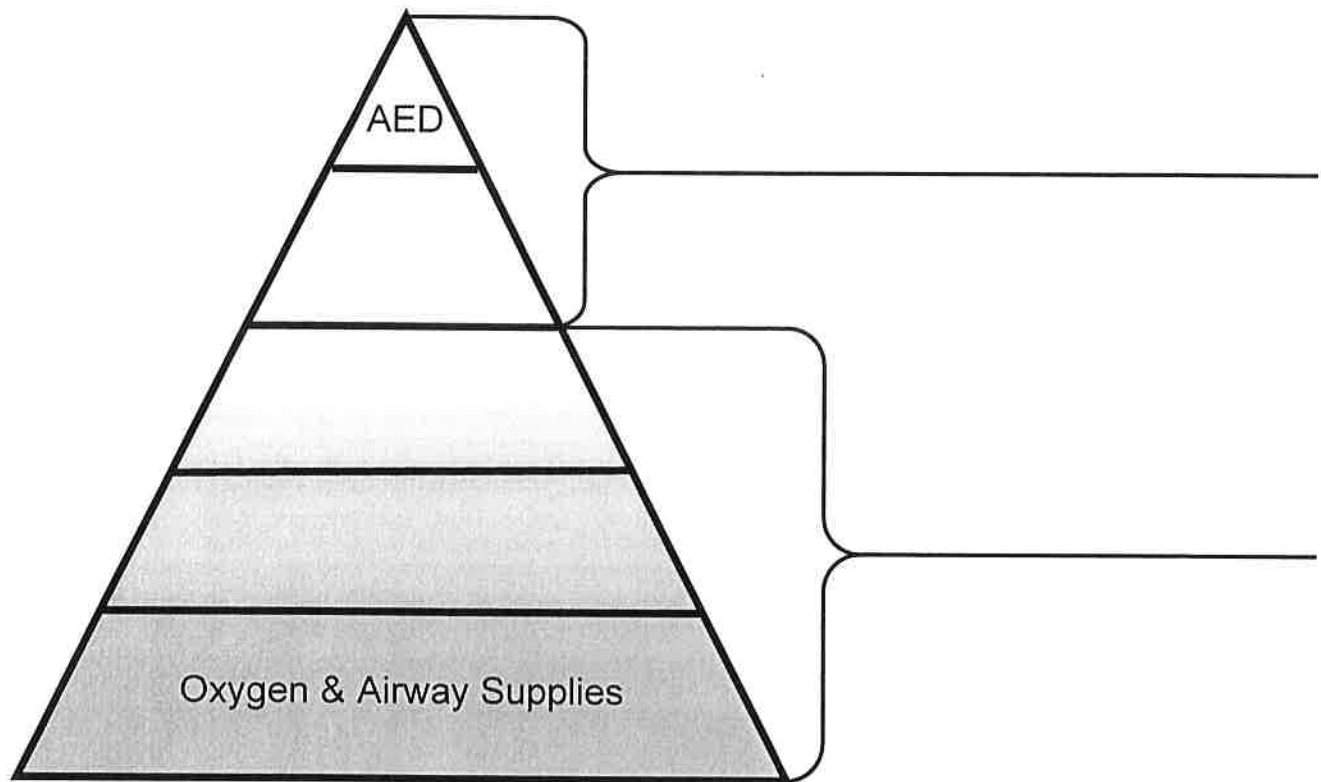
✓ Treatment of Laryngospasm

- 1) Insert angiocath at 45° angle just below the “Adam’s Apple”.
- 2) Withdraw the needle leaving the Teflon[®] catheter in place.
- 3) Remove needle for 5 cc syringe and attach to catheter.
- 4) Stuff the distal end of 7.5 endotracheal tube into syringe.
- 5) Attach endotracheal tube in bag-valve-mask supplied with maximum O₂ flow (rate: 12 /min.)

D. Therapeutic Devices

- Automatic External Defibrillator
 - ✓ Most effective for survival of MI
 - ✓ “*Highly recommended*” by ADA
 - ✓ Considered part of “*BLS for Healthcare Providers*” by AHA
 - ✓ Required in some states by dental boards
 - ✓ Cost is unlikely to decline further

- Financial Priorities



☺☺☺ No. 4 IS PROTOCOLS ☺☺☺

Develop an emergency manual to keep with your emergency supplies.

- Salesperson's presentation folder is ideal.
- Keep it simple.
- Use pictures.
- You have all the necessary pages in this handout.

Components of an emergency manual

- Staff designations
- Phone numbers to EMS
- Address and directions to office
- Special instructions to EMS crew
 - ✓ Is a paramedic available or only an EMT?
 - ✓ Siren: on or off?
 - ✓ How can the crew best get the cot to the patient?

Preparing an office emergency manual

- Purchase a salespersons presentation book & index tabs (*Office Max, Staples*)
- Disassemble this handout and sort out those pages with this symbol in the upper right-hand corner (*Note: some pages are contained in the appendix.*)



- Those pages with numbers only should be printed on white paper



- Those pages with a number and the letter P should be printed on pastel paper



- Page 1 (Table of Contents) should be on the right side of the page. (The inside of the cover is on the left.)
- Page 9 is deliberately blank to allow the pages to align properly.
- If assembled properly, when opened the manual will have a white page and a corresponding pastel page for each scenario. One is for the dentist; the other is for the hygienist practicing without the dentist on the premises.

🌀🌀🌀 NO. 5 IS PRACTICE 🌀🌀🌀

How to practice for a medical emergency

- Review every protocol twice a year
- Spend a few minutes at each staff meeting briefly reviewing one protocol rather than an entire meeting on all of them
- Have a staff member lead the discuss
- Review everyone's role twice a year
- Practice using equipment
- Use outdated drugs to practice loading syringes
- Practice using airway adjuncts

Mock drills are the best way to incorporate everyone

- There is no longer any company that sells pre-made mock drills
- Need to make your own

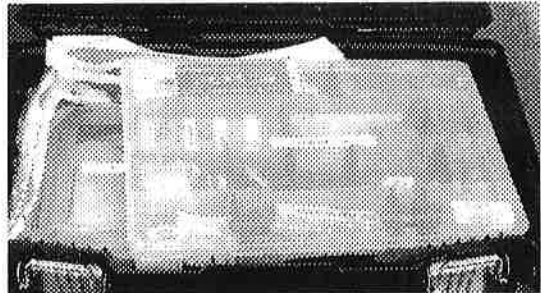
🌀🌀🌀 PUTTING IT ALL TOGETHER 🌀🌀🌀

- Stanley FatMax® wheeled toolbox

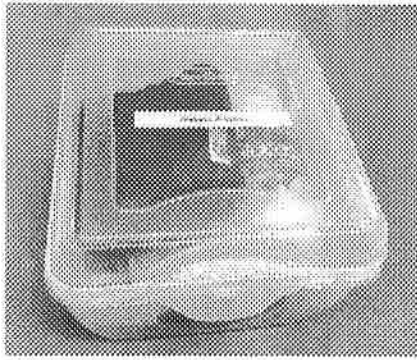


- Top Drawer

- ✓ Drug Kit
- ✓ Diabetes Kit
- ✓ Yankauer Suction
- ✓ Magill forceps
- ✓ Optional IV ready bag



Offices that routinely offer IV sedation and/or GA may wish to include a container with emergency IV supplies: bag of IV solution, administration set, catheters, and non-latex gloves.



- DIABETIC KIT**
- ✓ Glucose Meter
 - ✓ Lancets
 - ✓ Directions
 - ✓ Glucose Tablets
 - ✓ Glucose Gel
 - ✓ Large non-vinyl gloves

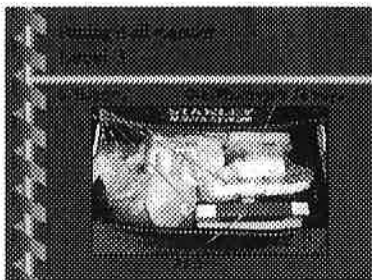
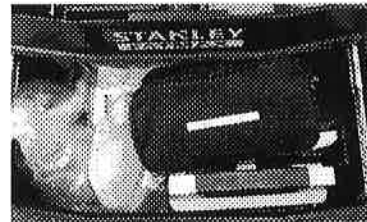


➤ Middle drawer

- ✓ 3 sizes of analog BP cuffs
- ✓ Stethoscope
- ✓ Syringes, 1 ml for sublingual and 3-5 ml with 1" needles for IM injections

➤ Bottom Bin

- ✓ Response Manual
- ✓ Paper, pen & clipboard
- ✓ AED
- ✓ Airways devices
 - ✓ Breathing Patient (shaving kit)
 - 2 nasal cannulae
 - 2 non-rebreathing masks
 - Tubing & connectors
 - ✓ Non-Breathing Patients
 - Oral/Pharyngeal Airway Kit
 - Five 2½ gallon Hefty plastic bags



- ... Adult BVM with tubing
- ... Child BVM with tubing
- ... Pocket mask with tubing
- ... Three i-Gels with lubricant
- ... Cricothyrotomy kit

Possible Emergency Situations

When to activate EMS

- Condition is _____
- Patient is _____
- Patient's response is _____ for the care being provided
- Caregiver is _____ to provide treatment and no other source appropriate treatment is available

When in Doubt

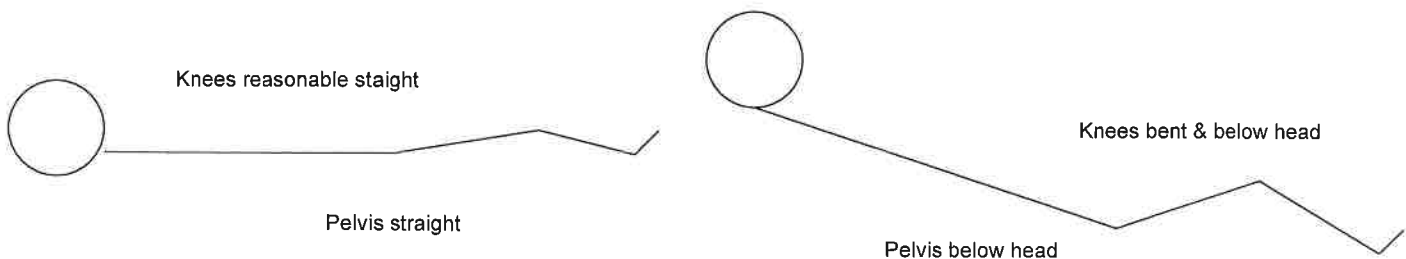
- Call EMS

Accepted Rescue Positions

NOTE
Trendelenberg is no longer recommended

Supine

Semi-Fowler's



Redefining the ABC's

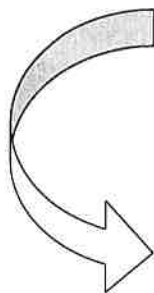
- In BLS, the ABC's are an _____.
- For our use, the ABC's are an assessment and an _____.

Assessment		Actions
A	Confirm airway patency	Check level of consciousness Position patient to maximize _____
B	Confirm _____	Start supplemental _____
C	Confirm presence of a pulse	Take _____ & _____ Start record of event

Syncope

- Temporary loss of consciousness due to _____.
- Common emergency in dental offices.

How serious is it?



Large-scale documentation / no mortality or morbidity
 versus
 Numerous documented cases of asystole

The underlying cause is a *severe* stimulation of the _____ component of the autonomic nervous system.

Recommendations



Treat _____ and _____
 But _____
 Expect _____ results

Predisposing Factors to Syncope

<i>Psychogenic</i>	<i>Non-psychogenic</i>
<ul style="list-style-type: none"> • Fright • Anxiety • Emotional stress • Unwelcome news • Pain • Sight of blood • Sight/sound of instruments 	<ul style="list-style-type: none"> • Upright or standing • Hunger • Exhaustion • Poor physical health • Heat and/pr humidity • Gender: _____ • Age: _____

Stressful Factors in Dentistry that Contribute to Syncope

- 1) Injections
- 2) "The Drill"
- 3) _____

Syncope

4 Person

Team, DDS Leader

10

Signs & Symptoms

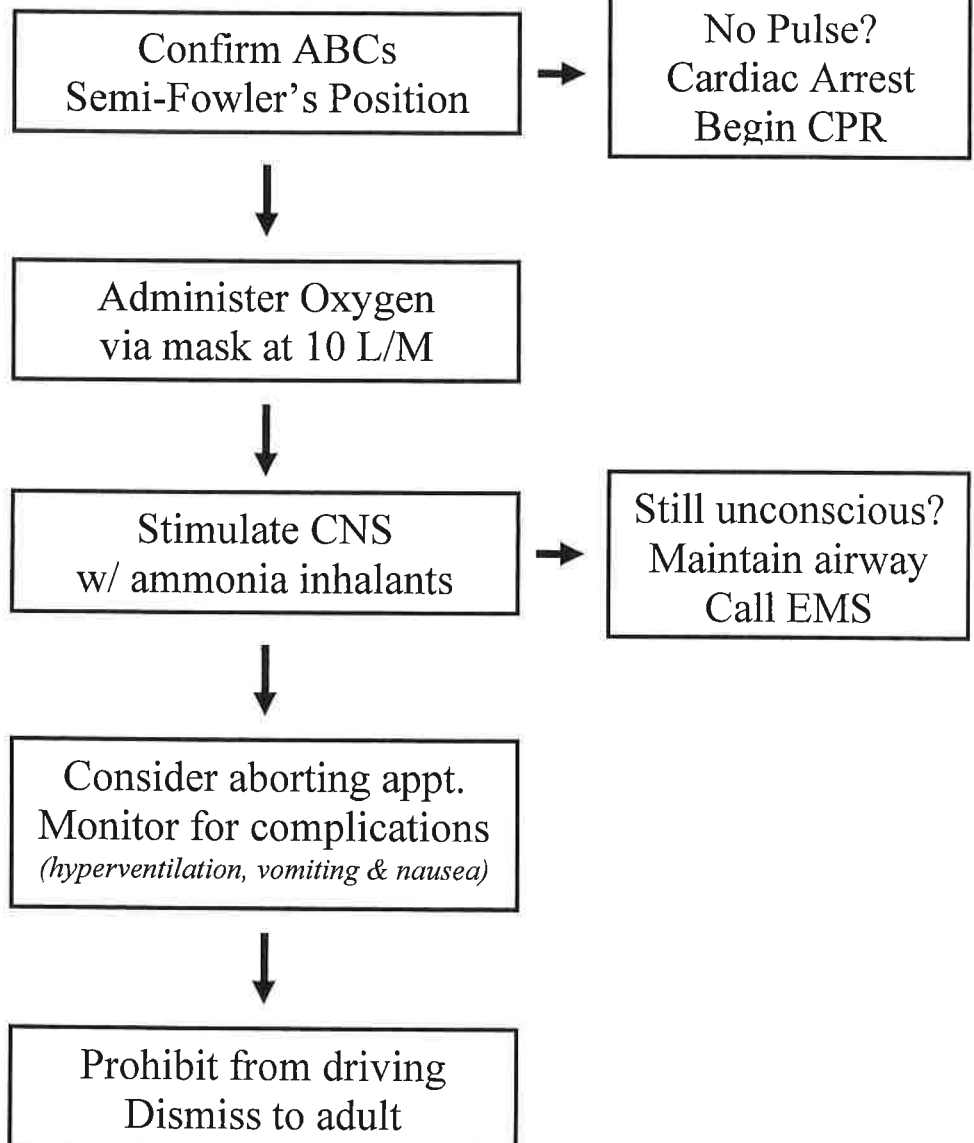
Pre-syncope

- Sweating
- Cold & clammy
- Nausea
- Rapid breathing
- Tunnel vision
- Disorientation
- Blurred vision
- Tachycardia
- Dilated pupils

Syncope

- Temporary loss of consciousness due to generalized cerebral ischemia
- Slow or weak pulse that may be difficult to find
- Episode will be brief

Protocols



Syncope

2 Person Team, RDH Leader

11P

Signs & Symptoms

Pre-syncope

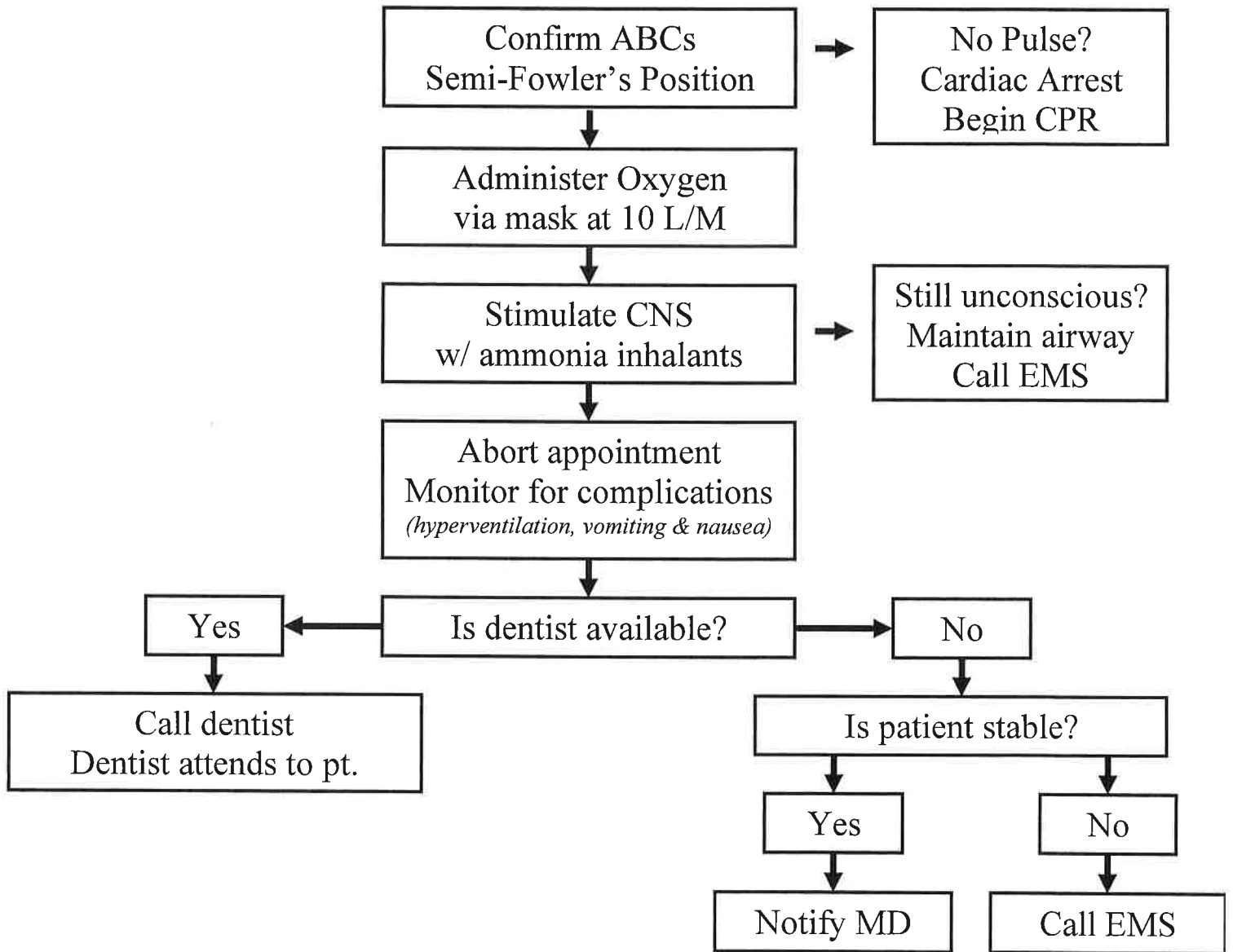
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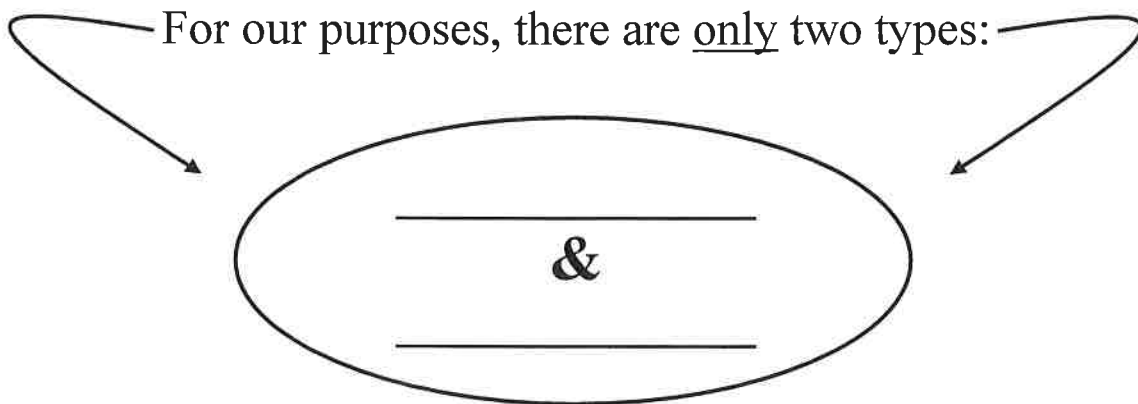


Allergic Reactions

The Bad News

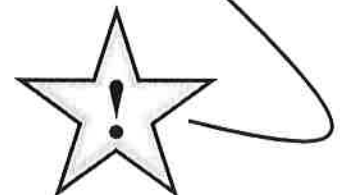
- 4 classic types (Gell & Coombs)
- Not all are _____ mediated
- Pseudo-allergies represent a fifth class and behave like allergies although they technically are not.
- Patients mistakenly refer to adverse reactions as allergies and report them as such on medical forms.

The Good News



Etiology & Response

Type	Cause	Treatment
Minor	_____ mediated	Antihistamine <u>Treatment</u>
Major	Histamine and/or non-histamine mediated	_____ care only



Allergic Reactions

4 Person Team, DDS Leader

14

Signs & Symptoms

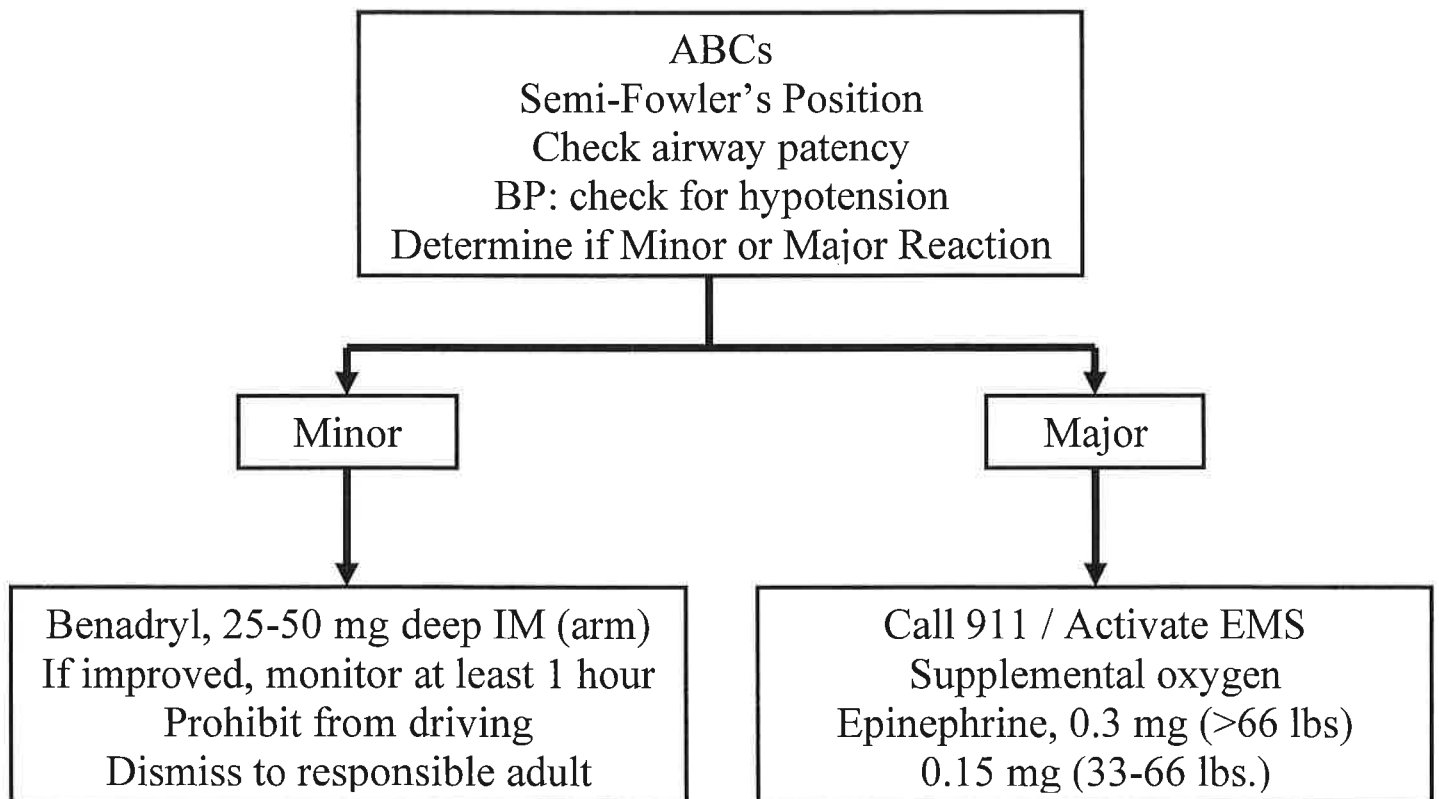
Minor Attack / Think "Skin"

- Urticaria (wheal & flare)
- Pruritis (Itching)
- Angioedema (swelling)
- Erythema (redness)
- Rhinitis (runny nose)

Major Attack / Think "Airway"

- Dyspnea (labored breathing)
- Wheezing, possibly coughing
- Cyanosis
- Tachycardia
- Hypotension
- Tightening in chest
- Incontinence

Protocol



Allergic Reactions

2 Person Team, RDH Leader

Signs & Symptoms

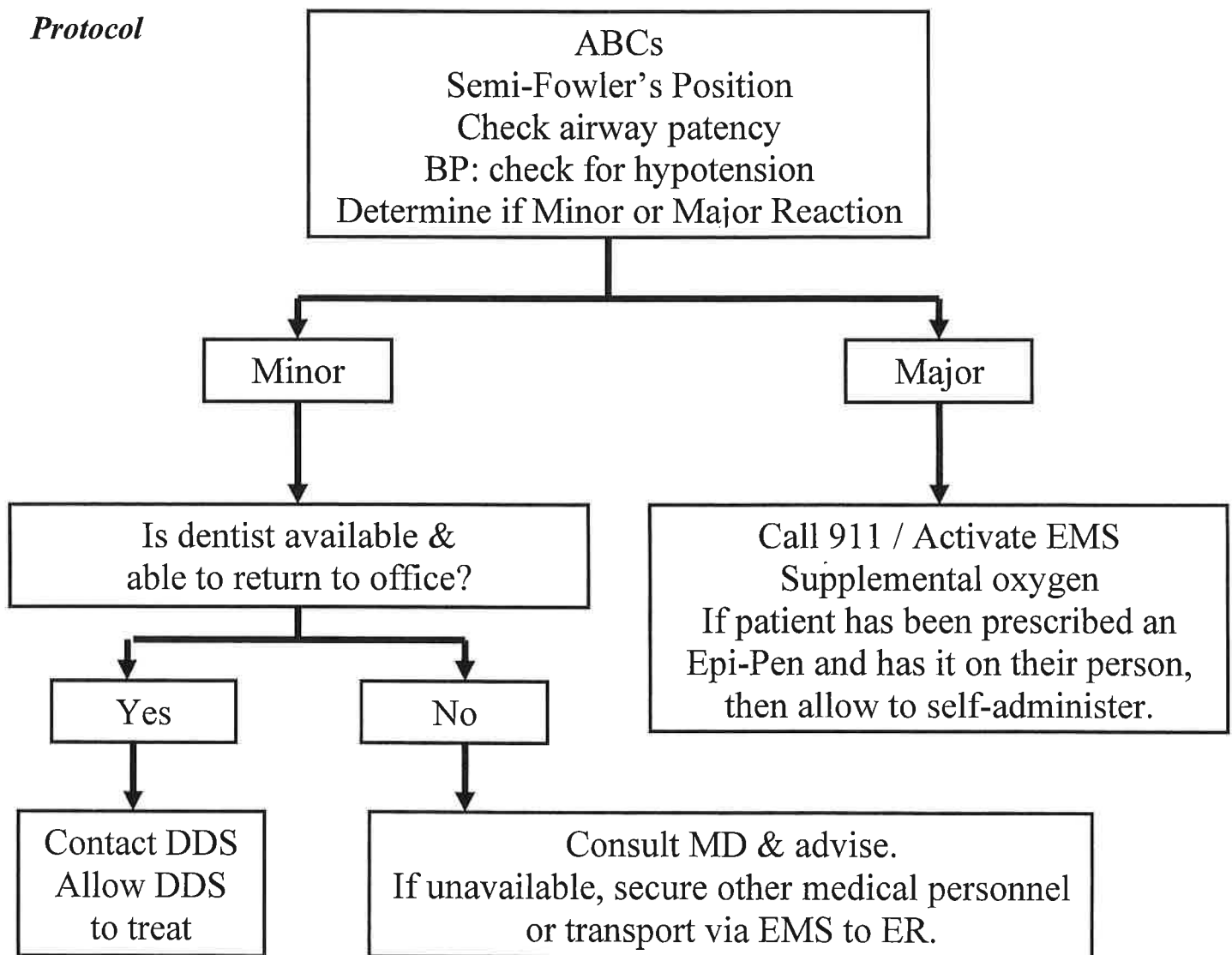
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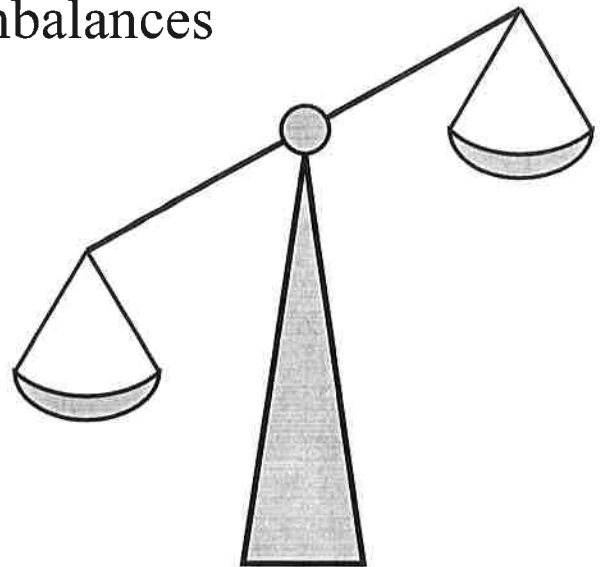
Protocol



Diabetes Mellitus & Glucose Imbalances

Basic Principles

- 1) The body, especially the brain, need _____ to operate.
- 2) _____ is needed to metabolize glucose.
- 3) A _____ is necessary between glucose and insulin.



Definition of Diabetes

“Diabetes mellitus represents a syndrome of disordered metabolism and inappropriate hyperglycemia, resulting from an absolute deficiency of insulin secretion, a reduction of its biological effectiveness, or both.” (Malamed)

Q	If diabetes is technically an undersupply of insulin and resulting excess of glucose in the blood, why do diabetics often need sugar during a diabetic emergency?
A	Diabetic <i>treatment</i> (insulin injections, other medications, diet modification) can result in over-treatment of the insulin deficiency and a resulting shortage of glucose in proportion to the available amount of insulin. Consequently, diabetics, which technically have too much sugar in their blood, often need glucose during an emergency. <i>In effect, it is the incorrect over-treatment of the diabetic's condition that causes the emergency, not the disease itself.</i>

Insulin / Glucose Imbalances

- Hyperglycemia: excess glucose in the blood
 - ✓ Gradual increase in mental confusion leading to loss of consciousness (diabetic coma)
 - ✓ Hospitalization is often required to adjust truly excessive levels.
 - ✓ No adverse effect if additional glucose is given (making a bad situation worse).
- Hypoglycemia: insufficient glucose in the blood
 - ✓ Rapidly diminishing cerebral function
 - ✓ Leads quickly to death
 - ✓ Immediate glucose replacement necessary

Summary



- Hypo- versus hyper- glycemia can be difficult to distinguish
- Both conditions can occur in non-diabetics
- Treat all diabetic-like conditions as hypoglycemia and increase patient's glucose level at once.

Diabetes

4 Person Team, DDS Leader

12

Read This First!



- Hypoglycemia can quickly deteriorate and lead to death.
- Giving a hyperglycemic patient more glucose will have no lasting damage and can be corrected later.
- **TREAT ALL DIABETIC-LIKE PROBLEMS WITH GLUCOSE.**
- **NEVER ADMINISTER INSULIN.** Only the patient or a physician should administer insulin.
- Glucose tablets are 4 grams each. Four tablets equal 1 slice of bread.
- Normal glucose: 100-120 adult, 100-180 children. Hypoglycemia ≤ 70 or symptoms present.

Signs & Symptoms

Diabetic Shock: Hypoglycemia

- Diminished cerebral function
- Lethargy
- Decreased conversation
- Agitation
- Hunger
- Nausea
- Gastric motility
- Sweating
- Tachycardia
- Piloerection
- Anxiety
- Cold, clammy skin

Diabetic Coma: Hyperglycemia

- Fatigue
- Headache
- Blurred vision
- Stomach pain
- Nausea & vomiting
- Tachycardia
- Hypotension
- Dyspnea
- Mental stupor
- Flushed color to face
- Hot, dry skin
- Deep, rapid respiration

Protocols

Abort dental treatment. Check glucose level, if possible.

CONSCIOUS PATIENT

Glucose level unknown
Administer 4 glucose tablets
Repeat 4 tablets at 5 minutes

If monitor confirms normal blood glucose level *before* any glucose has been given, consider CVA. Activate EMS.

SEMI-CONSCIOUS PATIENT

ABCs. Assure airway patency.
Administer instant glucose gel
(in buccal vestibule).
Repeat, if needed (via more instant gel or tablets)

OK to dismiss if symptoms subside. Supplement with protein (ie $\frac{1}{2}$ can Ensure®). Consider no driving. Dismiss to adult.

UNCONSCIOUS PATIENT

ABCs of BLS
Glucagon, 1 mg, IM (arm)
EMS transport

Consider consulting patient's MD before dismissal. No driving. Dismiss to adult.

Diabetes

2 Person Team, RDH Leader

13P

Read This First!



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- Giving a hyperglycemic patient more glucose will have no lasting damage and can be corrected later.
- **TREAT ALL DIABETIC-LIKE PROBLEMS WITH GLUCOSE.**
- **NEVER ADMINISTER INSULIN.** Only the patient or a physician should administer insulin.
- Glucose tablets are 4 grams each. Four tablets equal 1 slice of bread.
- Normal glucose: 100-120 adult, 100-180 children. Hypoglycemia ≤ 70 or symptoms present.
- **ANY STAFF MAY ADMINISTER GLUCOSE.** Legally, glucose is a food not a medication.

Signs & Symptoms

Diabetic Shock: Hypoglycemia

- Diminished cerebral function
- Lethargy
- Decreased conversation
- Agitation
- Hunger
- Nausea
- Gastric motility
- Sweating
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UNCONSCIOUS PATIENT

ABCs of BLS
Glucagon, 1 mg, IM (arm)
EMS transport

Consider consulting patient's MD before dismissal. No driving. Dismiss to adult.

Cerebrovascular Accident / Stroke

4 Person Team, DDS Leader

28

Signs & Symptoms

- Impaired speech
- Headache
- Sweating or chills
- Convulsions
- Disoriented
- Dizziness / vertigo
- Nausea or vomiting
- Weakness
- Impaired sensory or motor function
- Drowsiness
- Loss of consciousness
- Paralysis

Cincinnati Stroke Scale

Diagnostic Procedure

- Stand directly in front of patient & study patient's face
- Have patient fully extend fully arms forward with palms facing down
- Have patient say, "You can't teach an old dog new tricks."

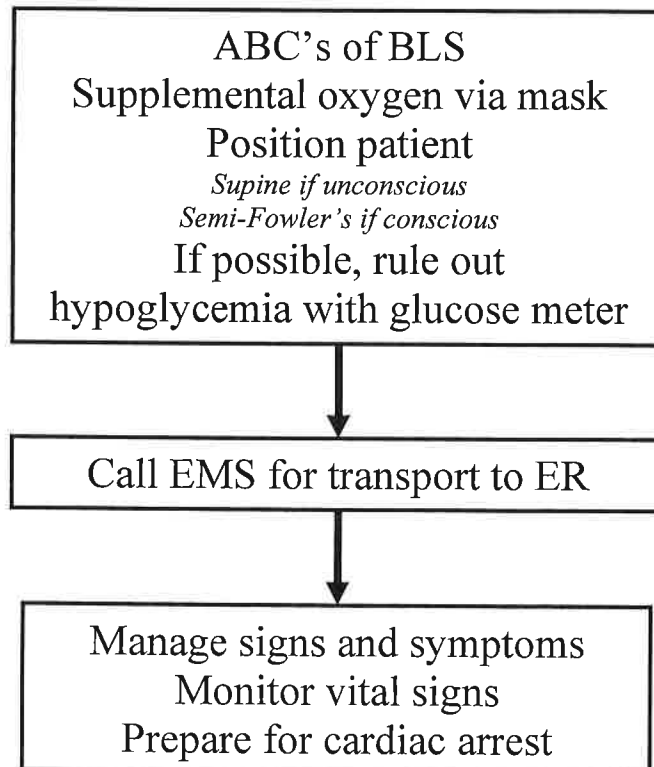
Look for:

Facial distortion
Watch for 1 arm drifting down
Slurred speech

Points to Remember

- **NEVER ADMINISTER ASPIRIN TO A SUSPECTED CVA VICTIM.** Although most CVAs are an infarction, 12% are hemorrhagic in origin.
- **CVAs CAN MIMIC HYPOGLYCEMIA.** If a glucose monitor is available, test glucose level. Glucose is contraindicated in a CVA because it increases intra-cerebral pressure.

Protocols



Cerebrovascular Accident / Stroke

2 Person Team, RDH Leader

29P

Signs & Symptoms

- Impaired speech
- Headache
- Sweating or chills
- Convulsions
- Disoriented
- Dizziness / vertigo
- Nausea or vomiting
- Weakness
- Impaired sensory or motor function
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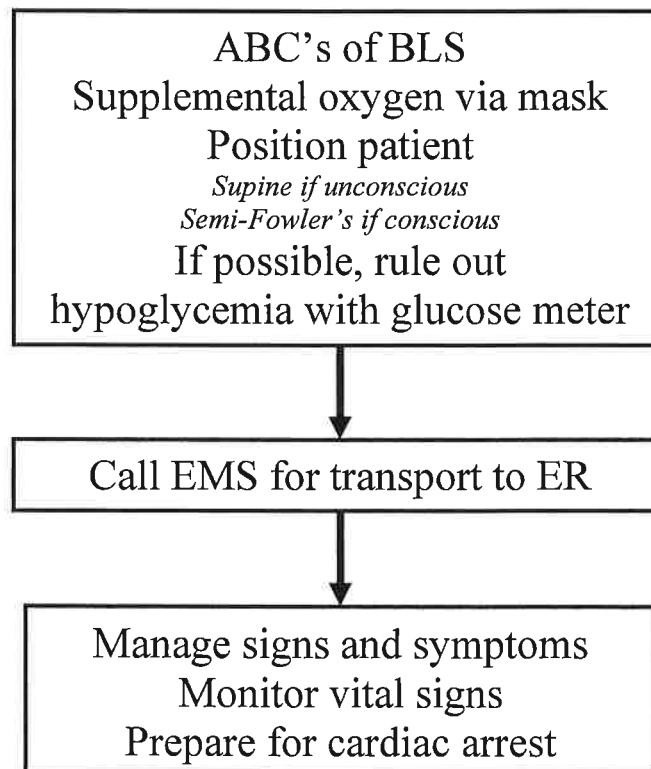
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Slurred speech

Points to Remember

- **NEVER ADMINISTER ASPIRIN TO A SUSPECTED CVA VICTIM.** Although most CVAs are an infarction, 12% are hemorrhagic in origin.
- **CVAs CAN MIMIC HYPOGLYCEMIA.** If a glucose monitor is available, test glucose level. Glucose is contraindicated in a CVA because it increases intra-cerebral pressure but is critical for hypoglycemia.

Protocols



Epilepsy & Seizure Disorders

Working Definition (Malamed)

- SEIZURE: "...paroxysmal excessive neuronal activity in the brain (that) span a wide range of sensory and motor activities..."
- EPILEPSY: "recurrent seizures"

Incidence in United States

- 10 million people have had a seizure
- 2 million people have had 2 or more (epileptic)
- 0.5 to 1.0 formally diagnosed as epileptic
- 200,000 people have more than 1 occurrence a month
- However, although frequent and frightful in appearance, most seizures are not serious or life-threatening.

Predisposing Factors

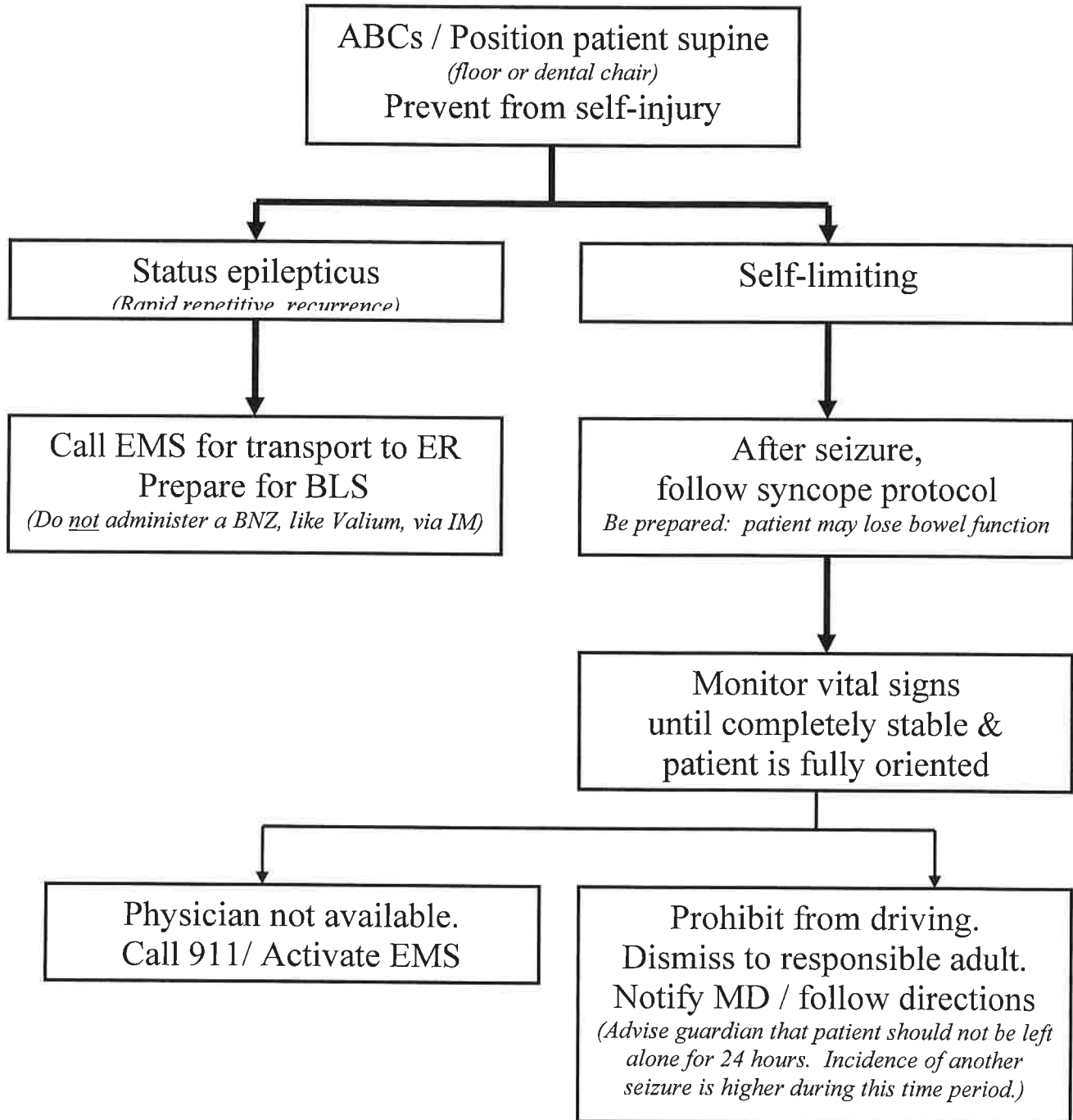
- Hypoglycemia
- Hypocalcemia
- Hypercapnia
- Anoxia
- Excess local anesthetic
- Cerebrovascular insufficiency (TIA)
- Change, reduction or termination of medication
- Sleep deprivation
- Fatigue
- Menstrual cycle
- Flickering lights (esp. strobe lights)
- Physical or psychological stress

Epilepsy & Seizures

4 Person Team, DDS Leader

30

Protocols

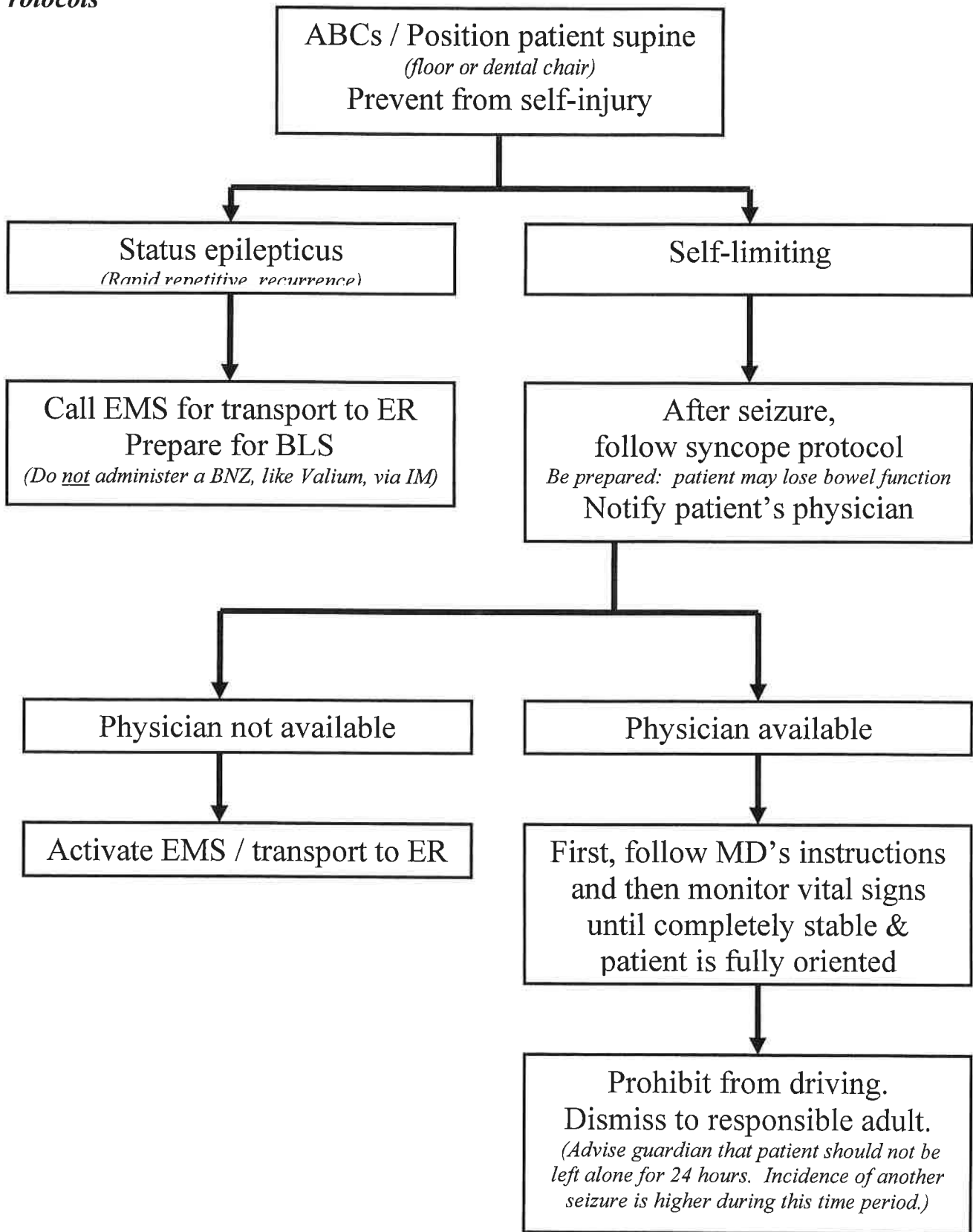


Epilepsy & Seizures

2 Person Team, RDH Leader

31P

Protocols



The Cardiovascular System

Goal of the System

- To provide adequate tissue perfusion

Methods of Assessment (easily achieved in a dental office)

- Heart rate
- Blood pressure
- Rhythm (*highly limited*)

What do these few tools (BP & rate) tell us about the efficacy of the heart?
The key lies in understanding the pressures within the heart.
and
The Cardiac Cycle

Important Concepts

- Blood moves from areas of high pressure to areas of low pressure
- _____ contraction causes varying pressure gradients
- Valves are merely a gateway to control _____ and prevent backflow

The Cardiac Cycle

Event	Heart Mechanism	Blood Movement	Miscellaneous
Systole begins	<ul style="list-style-type: none"> • AV valve closes. • Vent. pressure _____ 		<ul style="list-style-type: none"> • 1st heart sound
Momentarily later	<ul style="list-style-type: none"> • Aortic valve _____ 	<ul style="list-style-type: none"> • Vent. begins to empty 	<ul style="list-style-type: none"> • 1st heart sound continues
Mid-systole	<ul style="list-style-type: none"> • Vent. Pressure begins to decrease due to blood movement 	<ul style="list-style-type: none"> • _____ • fraction has left 	
Diastole begins	<ul style="list-style-type: none"> • _____ valve closes • Vent. relaxes 	<ul style="list-style-type: none"> • Residual blood in vent. • Peripheral pressure pushes blood back into coronary arteries 	<ul style="list-style-type: none"> • 2nd heart sound
Momentarily later	<ul style="list-style-type: none"> • Low vent pressure • AV valve opens 	<ul style="list-style-type: none"> • _____% of atrial blood moves to vent. 	
Mid-diastole	<ul style="list-style-type: none"> • Atria _____ 	<ul style="list-style-type: none"> • 30% atrial kick 	

Significance to Dentistry

PROBLEM	RESULTS
High Diastolic Pressure → →	Overworks _____ muscle
Low Diastolic Pressure → →	Inadequate _____ for cardiac muscle
High Rate → → → → → → → →	Inadequate _____ filling
Low Rate → → → → → → → →	Low _____ volume

Blood Pressure Considerations in Dentistry / Hypertension

- The last dental guidelines for dentists are from 2004.
- Guidelines for physicians were last updated in 2017.
- Guidelines for physicians are when to treat HBP.
- BPs during dental treatment are routinely elevated.



- Know the patient's routine blood pressure
- Establish the patient's routine BP at a "low stress" appointment
 - ✓ New patient exam
 - ✓ Periodic exam
- Compare reading to appointments with significant dental treatment
- Is there a dental factor to account for the elevation? Pain? Anxiet

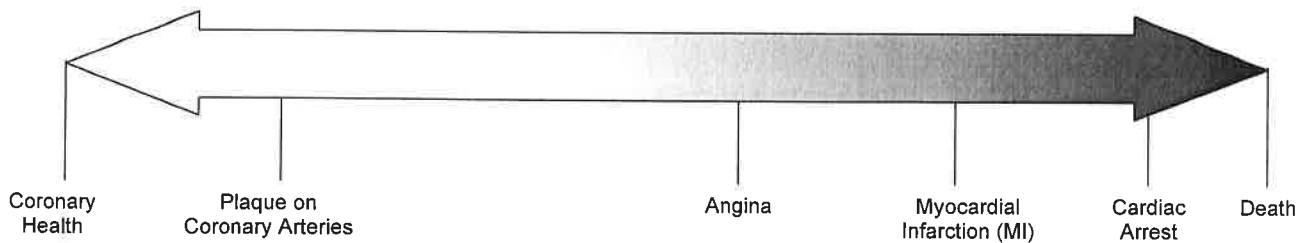
CATEGORY	SBP		DBP	ACTION
Normal	<120	and	<80	Check BP every 24 months
Elevated	120-129	and	<80	Annual BP. Encourage lifestyle changes.
Stage 1	130-139	or	80-89	Limit epi to 54 mcg.
Stage 2	140-179	or	90-119	Limit epi to 54 mcg. Consider medical consult before elective dental treatment.
Hypertensive Crisis	≥180	or	≥120	Refer for <i>immediate</i> medical assessment. (Physician, Urgent care or ER)

Blood Pressure Considerations in Dentistry / Hypotension

- Techniques to assess inadequate tissue perfusion
 - ✓ Pinch nail beds
 - ✓ Light into pupils
- Causes of Hypotension
 - ✓ Inadequate rate
 - ✓ Inadequate contractility
- Response
 - ✓ EMS

Cardiovascular Disorders

Spectrum of Cardiovascular Diseases



Definitions

Angina	_____ deficiency of blood to an area of the heart.
Myocardial Infarction	Absence of _____ to a region of the heart resulting in ischemia.
Cardiac Arrest	Any _____ that is observed by the absence of a pulse. Often caused by an MI.

Three Type of Angina

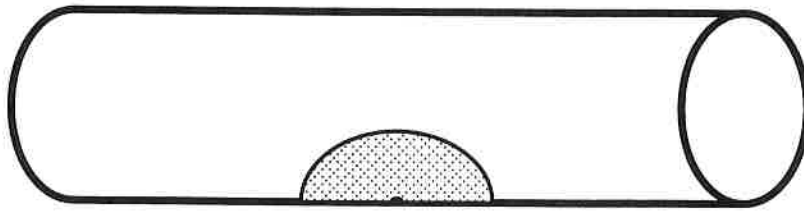
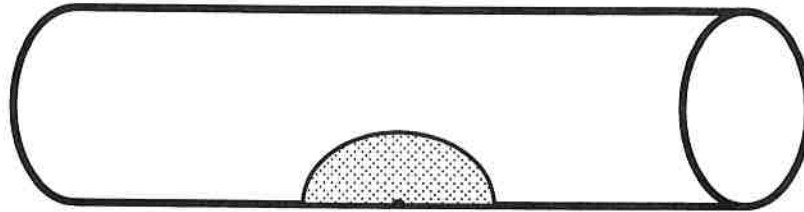
Chronic Stable Angina	Fixed atherosclerotic disease
Unstable	New onset Worsening Automatically considered to be a pre-infarction
Variant	Secondary to coronary vasospasm Chest pain at rest Difficult to identify / Consider pre-infarction

Chronic Stable Angina

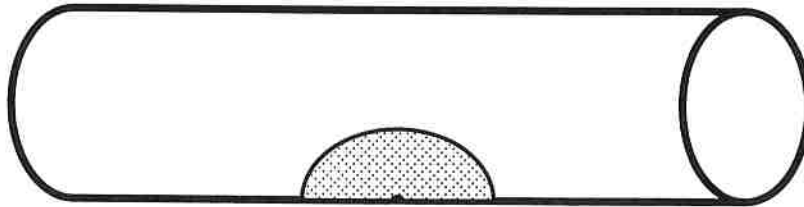
- Describes the _____ of the attack.
- Does not describe the _____ of the attack
- Does not automatically require transport if _____ is successful.

ILLUSTRATIONS

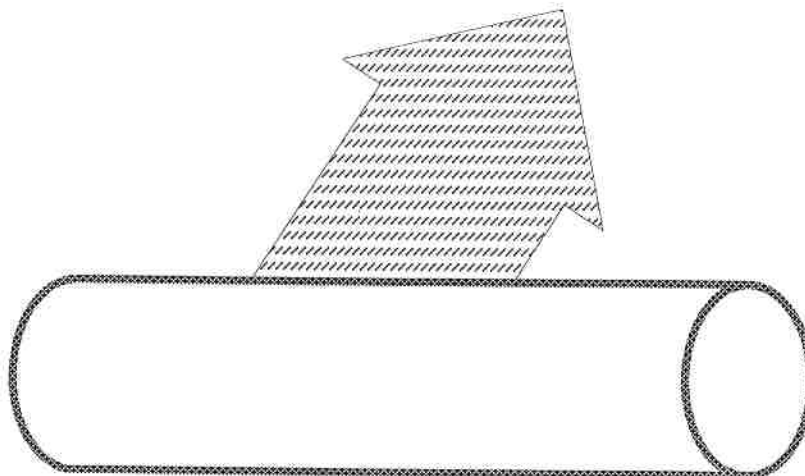
Chronic Stable Angina



Unstable Angina



Variant



Angina / Myocardial Infarction

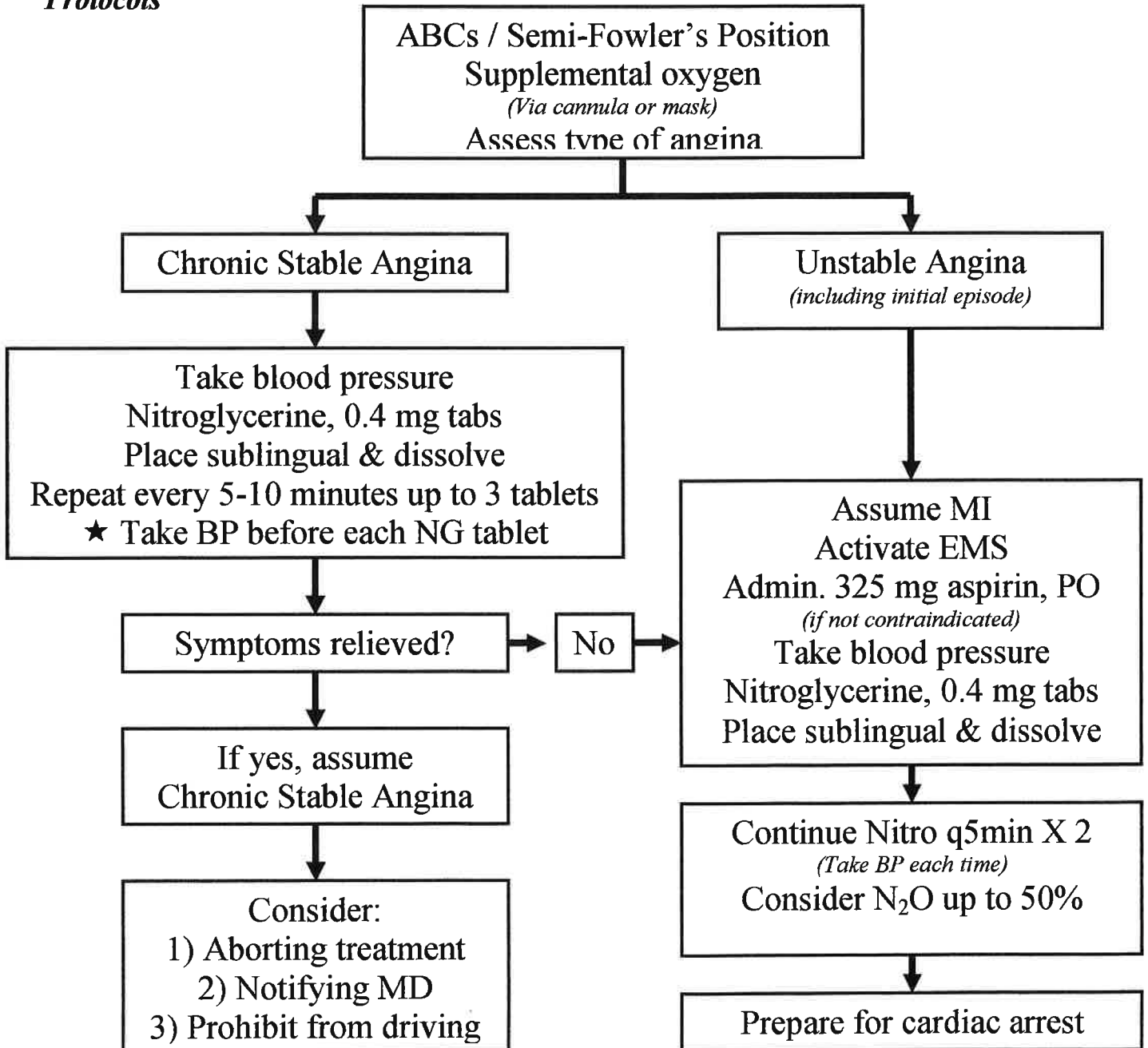
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4 Person Team, DDS Leader

Signs & Symptoms

- Chest pain and/or pressure
- Pain radiating to the right arm, back or jaw
- Shortness of breath
- Sweating
- Indigestion
- Chronic, stable angina always displays a similar pattern
- An initial angina attack is considered unstable
- Sense of doom

Protocols



Angina / Myocardial Infarction

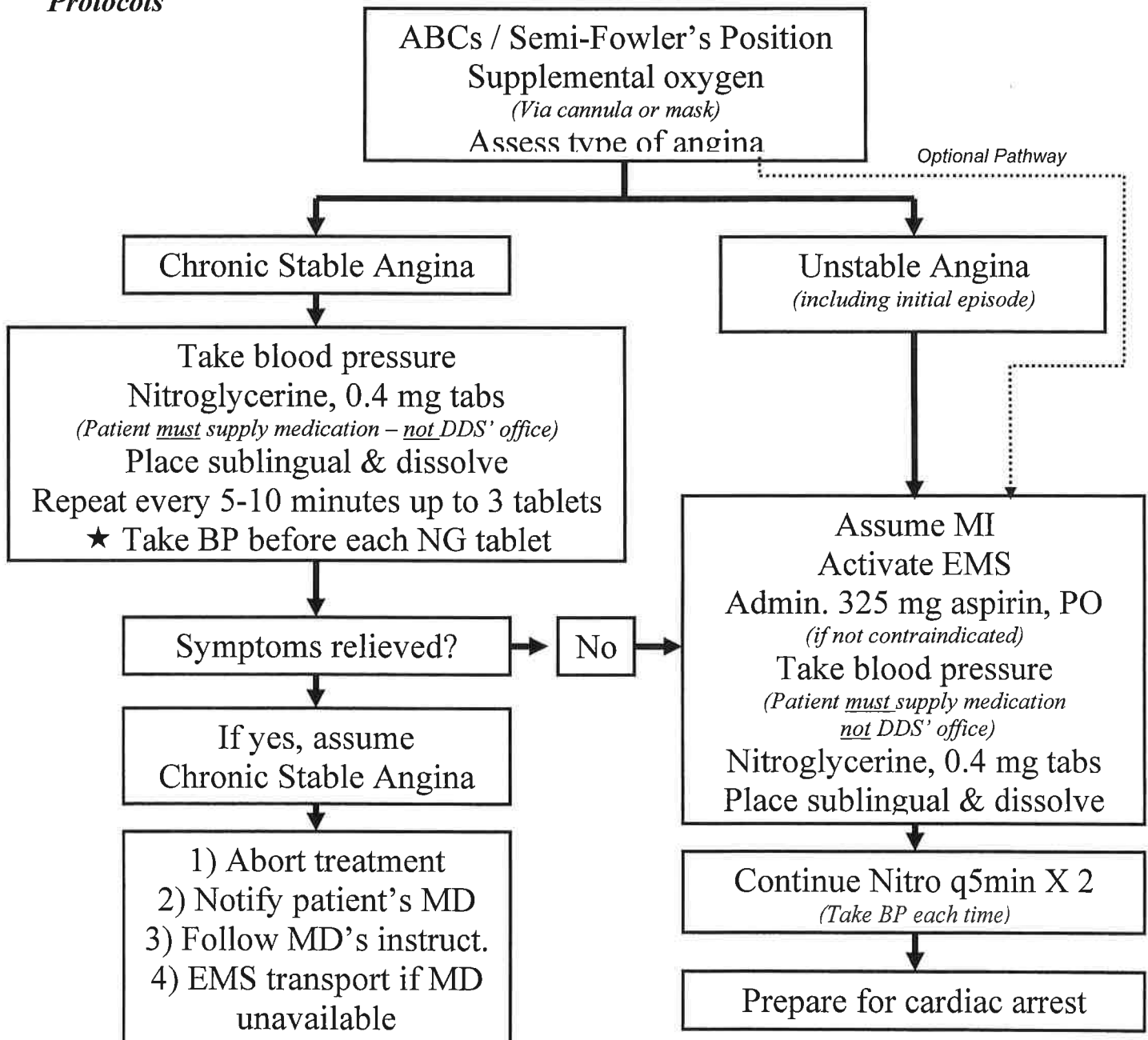
2 Person Team, RDH Leader

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Signs & Symptoms

- Chest pain and/or pressure
- Pain radiating to the right arm, back or jaw
- Shortness of breath
- Sweating
- Indigestion
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- Sense of doom

Protocols



Cardiac Arrest

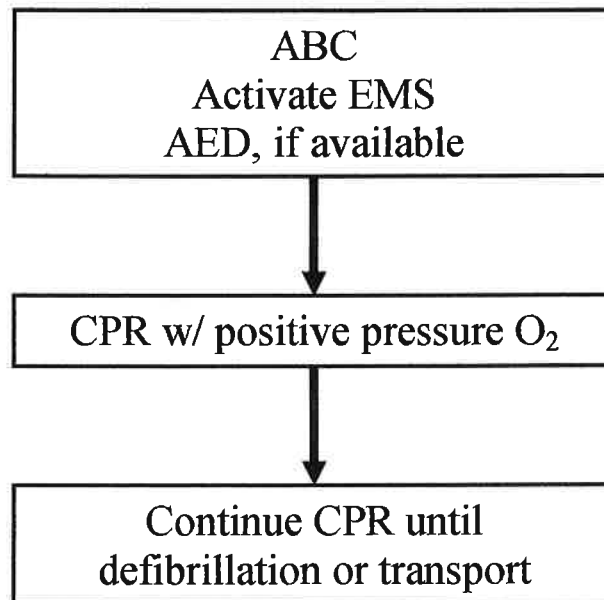
4 Person Team, DDS Leader

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Signs & Symptoms

- No pulse

Protocol



CPR Review

1 or 2 Rescuer	Adult	Child 1-8	Infant <1
Rhythm	30 beats/2 breaths	30 beats/2 breaths	15 beats/2 breaths (2 rescuers)
Rate	100/min	100/min	≥100/min
Compressions	1½ -2 inches	⅓-½ depth of chest	

Cardiac Arrest

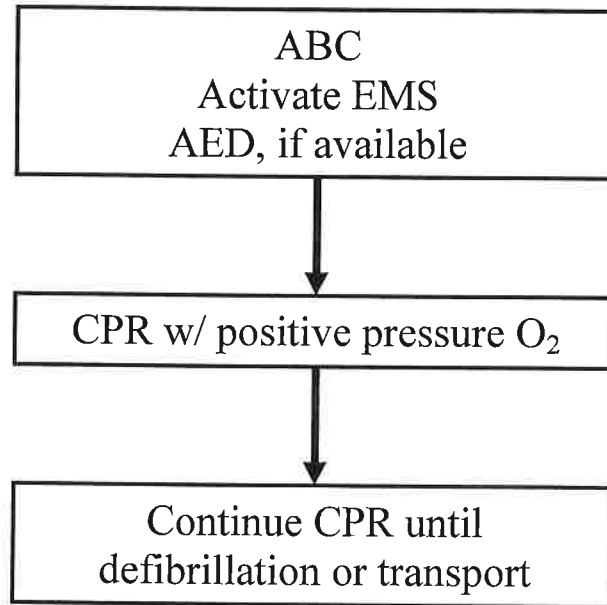
2 Person Team, RDH Leader

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Signs & Symptoms

- No pulse

Protocol



CPR Review

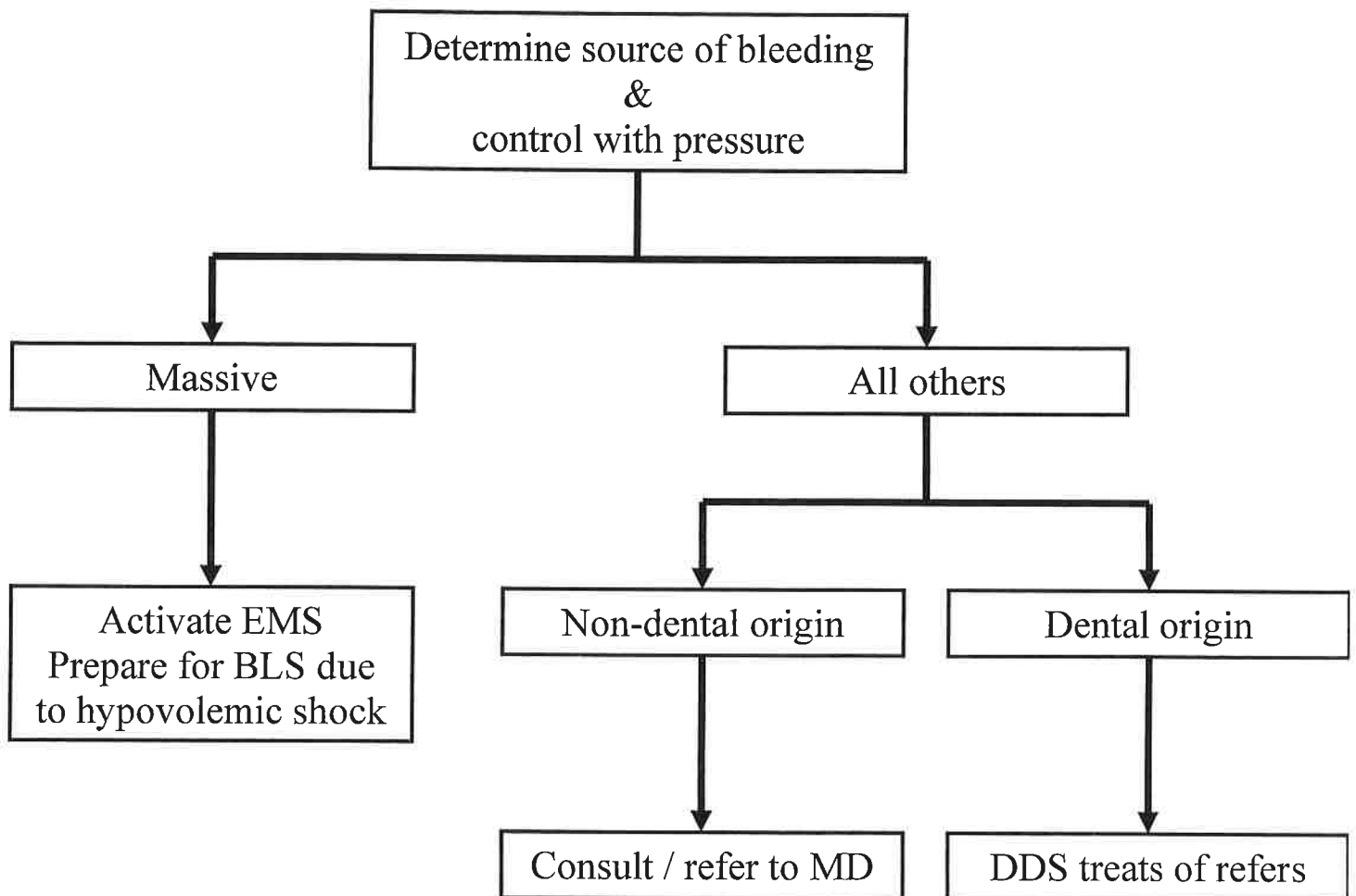
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External Bleeding

4 Person Team, DDS Leader

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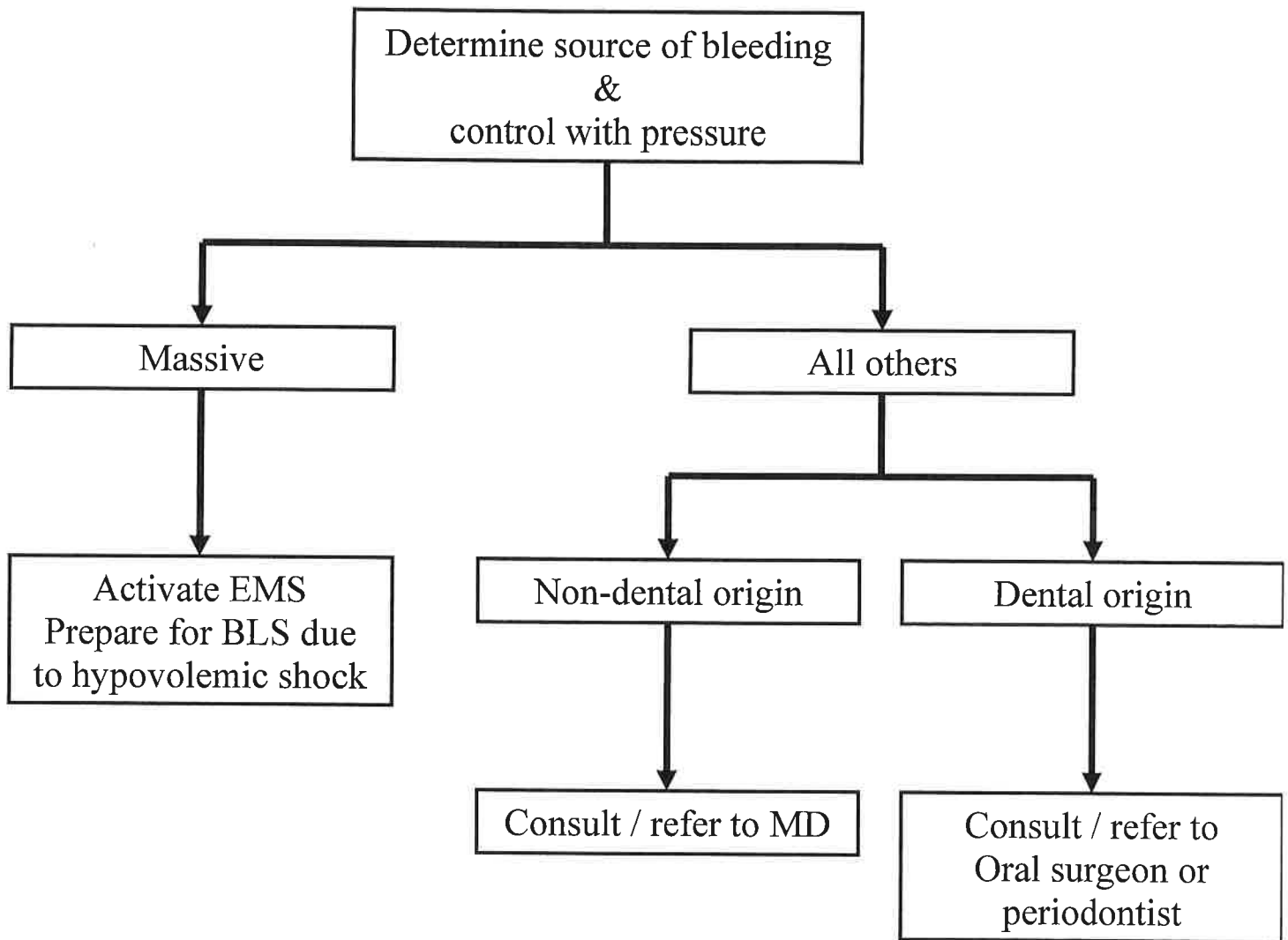
Protocols



External Bleeding

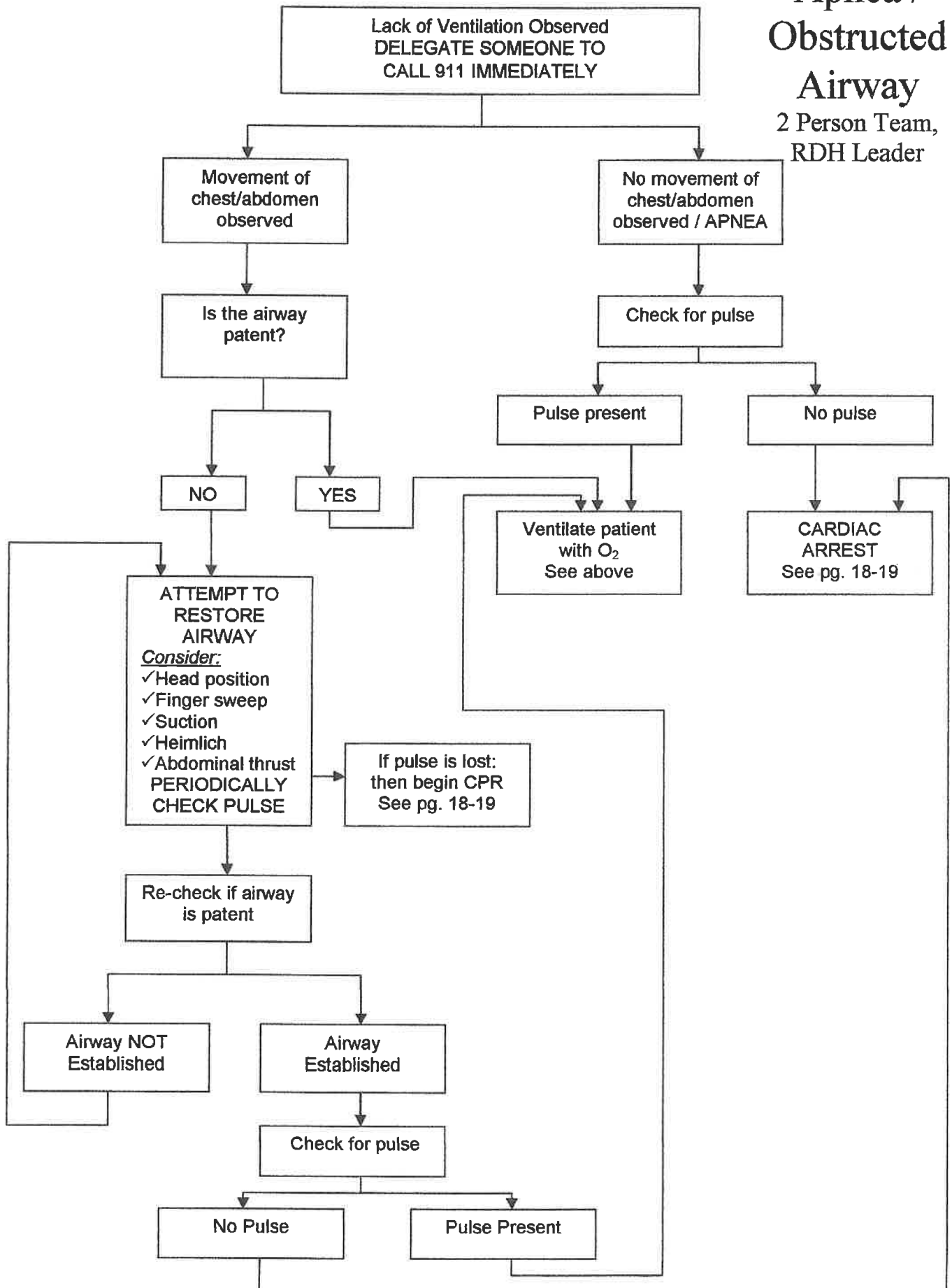
2 Person Team, RDH Leader

Protocols



Apnea / Obstructed Airway

2 Person Team,
RDH Leader



Asthma

4 Person Team, DDS Leader

Signs & Symptoms

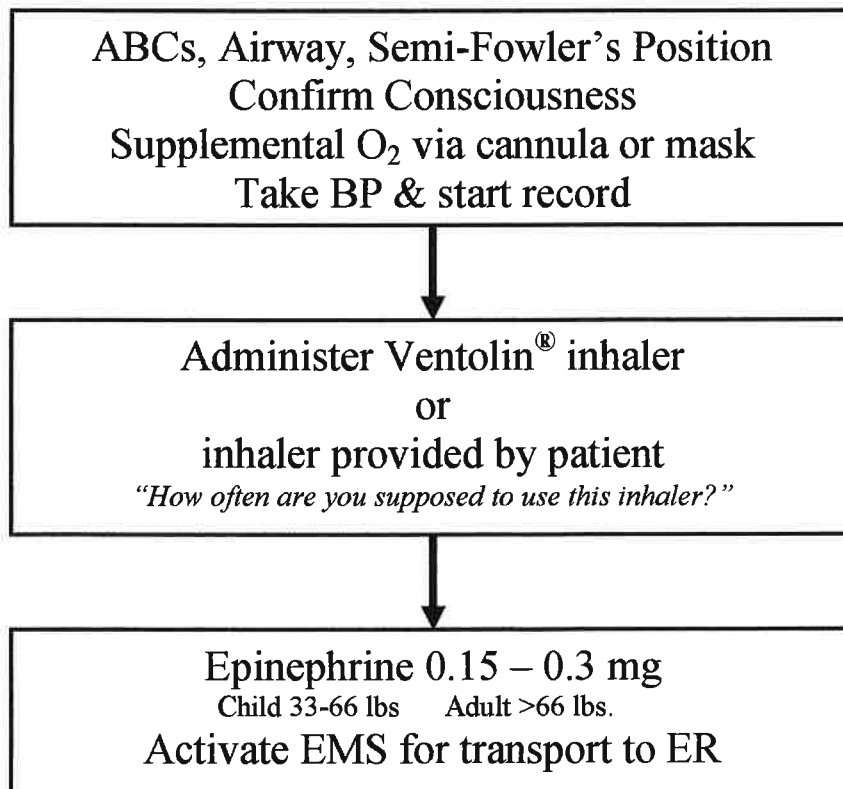
Mild/Common Attack

- Congestion/thickness in chest
- Coughing
- Dyspnea (labored breathing)
- Anxiety
- Tachycardia
- BP normal to elevated

Severe Attack

- Intensely labored breathing
- Cyanosis
- Flushing of face & torso
- Perspiration
- Fatigue
- Mental confusion
- Use of accessory muscle of respiration

Prognosis



Respiratory Disorders

Definitions

- Hyperventilation
_____ exceeds respiratory demands (e.g. $\downarrow PaCO_2$)

Hyperventilation

- Predisposing Factors
 - ✓ Almost always caused by _____ anxiety. (*Patient attempts to “grin and bear it” without expressing feelings of anxiety.*)
 - ✓ Typical age: _____
 - ✓ No gender bias
- Typical Behavior
 - ✓ Patient complains of _____ and tightness in the chest.
 - ✓ Patient increases respiratory _____.
 - ✓ CO_2 is excessively exhaled.
 - ✓ Blood chemistry compensates leading to respiratory _____.
 - ✓ The feeling from the above leads to further anxiety and continuance of the problem.

Asthma

2 Person Team, RDH Leader

Signs & Symptoms

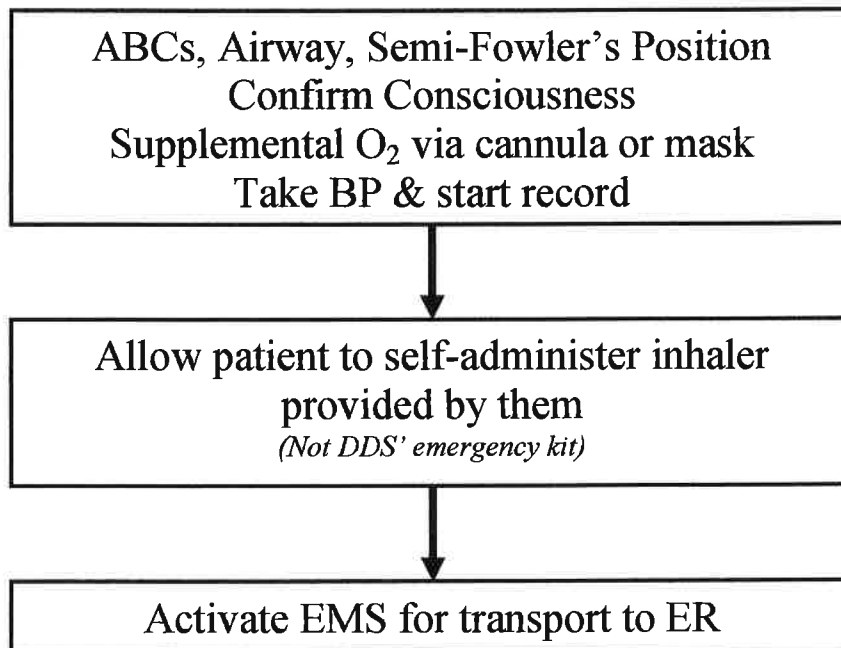
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Prognosis



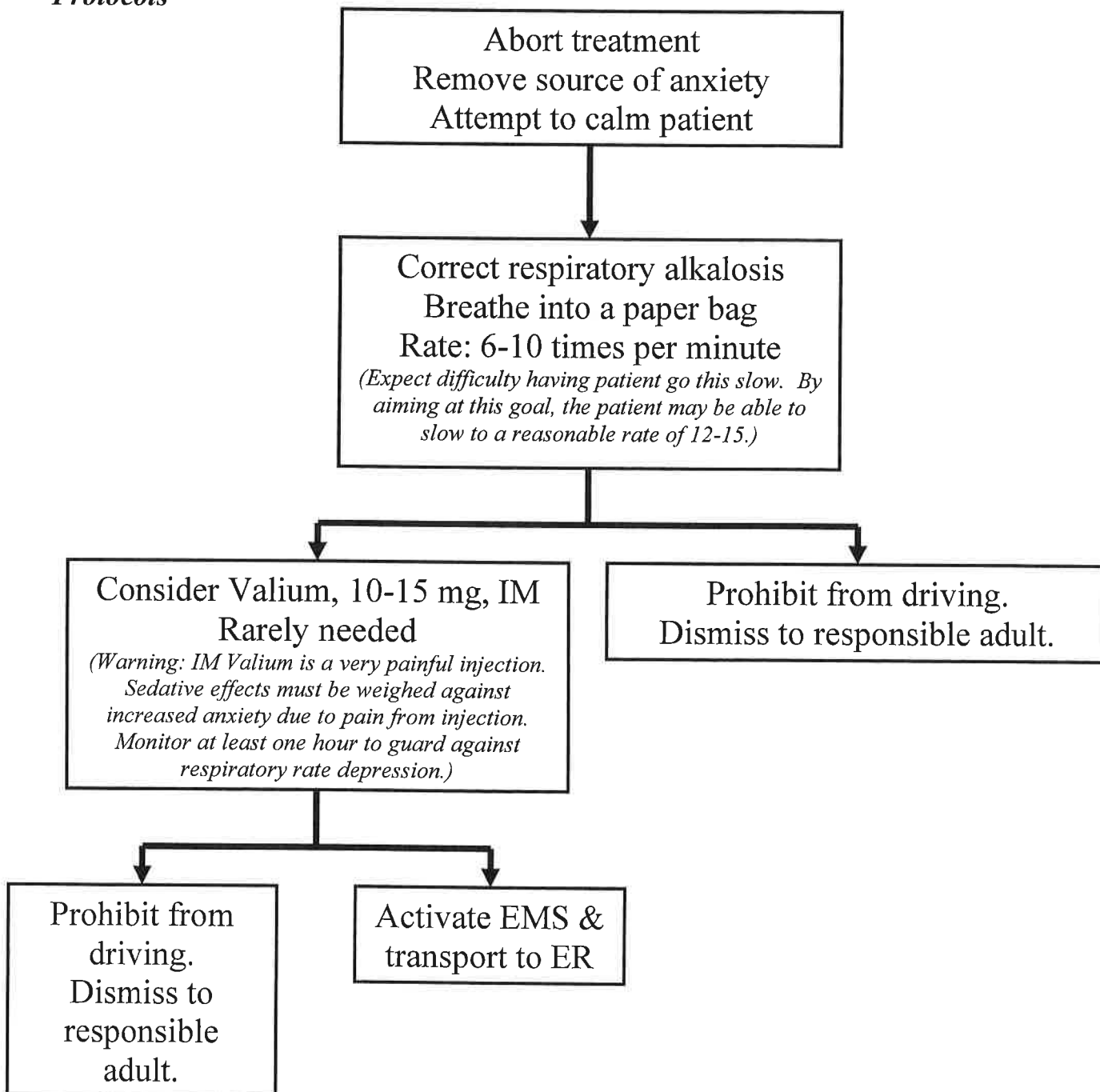
Hyperventilation

4 Person Team, DDS Leader

Signs & Symptoms

- Cardiovascular: palpitations, tachycardia, precordial discomfort
- Neurologic: dizziness, lightheaded, altered consciousness, altered vision, numbness in extremities
- GI/GU: Lump in throat, epigastric pain
- Musculoskeletal: muscular pain, cramps, tremors, stiffness
- Psychologic: tension, anxiety, nightmares

Protocols



Hyperventilation

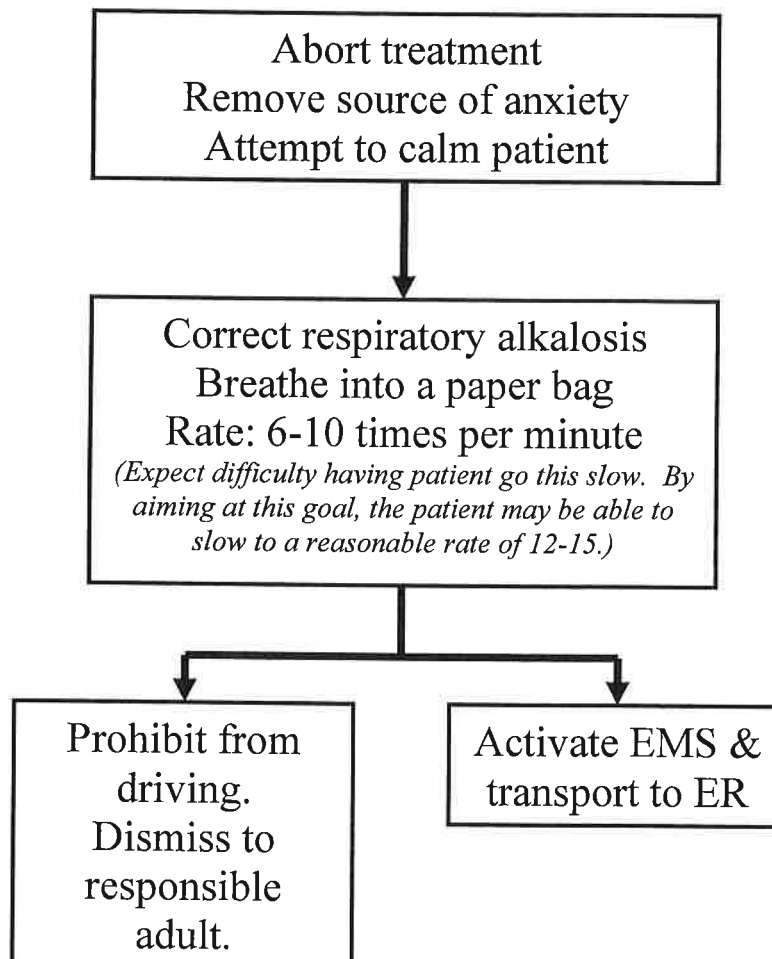
2 Person Team, RDH Leader

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Signs & Symptoms

- Cardiovascular: palpitations, tachycardia, precordial discomfort
- Neurologic: dizziness, lightheaded, altered consciousness, altered vision, numbness in extremities
- GI/GU: Lump in throat, epigastric pain
- Musculoskeletal: muscular pain, cramps, tremors, stiffness
- Psychologic: tension, anxiety, nightmares

Protocols



Section

3

Medical Emergency Response Guide

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To properly align pages, the Table of Contents (Page 1) should be on the RIGHT side & the inside cover on the LEFT when the booklet is open.

Our EMS Is...

Name: _____

Phone: _____

Our Office Address is...

Complete Address _____

Phone: _____

Special Instructions to the EMS crew...

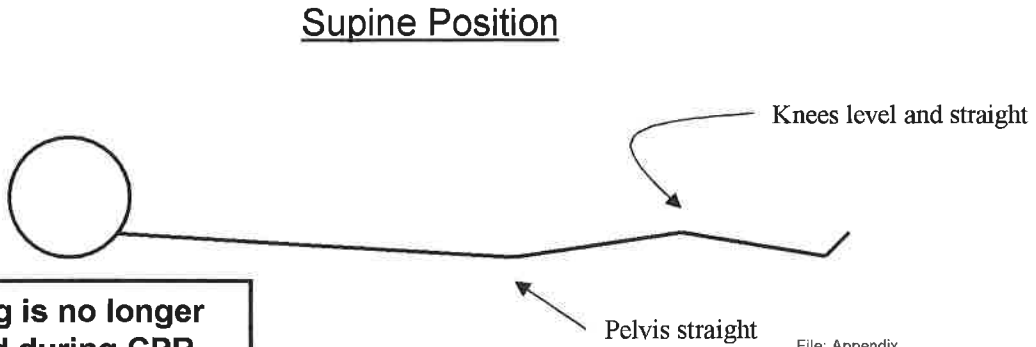
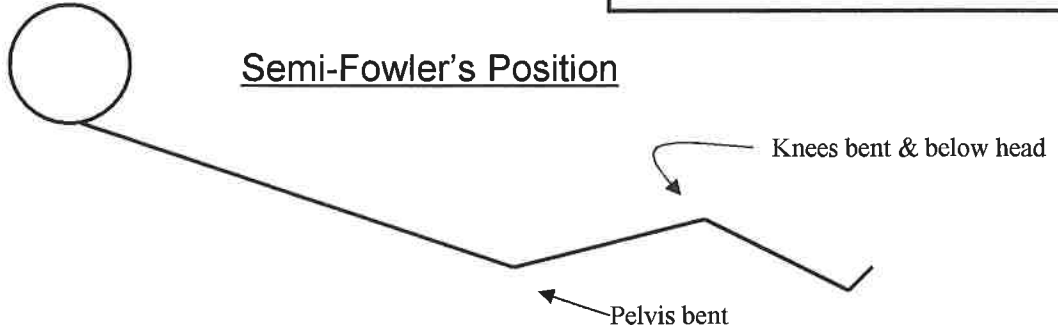
Nearest Hospital is: _____

Nearest Certified Chest Pain Center is: _____

Nearest Certified Stroke Center is: _____

Accepted Rescue Positions

This position approximates the 1st “click” on a Lazy-Boy® chair



Trendelenberg is no longer recommended during CPR

Hypoxia

Supplemental Oxygenation for the Breathing Patient

- Nasal Cannula
 - Least feared / Best tolerated by patient
 - Set at 2-6 liters/minute
 - Percent O₂ delivered = (4 X liters/minute) + 20

- Non-Rebreathing Mask
 - Delivers 60-80% O₂
 - Set O₂ flow at maximum

- COPD (Chronic Obstructive Pulmonary Disease)
 - These patients have an oxygen demand respiratory drive.
 - Cannula preferred.
 - Start with 2 liters/minute and titrate up.
 - Avoid exceeding 4 liters/minute.

Apnea

Oxygenation of the Non-Breathing Patients

- Determine the approximate size of oropharyngeal airway
 - Measure from the midline of the upper incisors to the angle of the mandible

- Insert oropharyngeal airway
 - Measure size from midline to angle of the mandible
 - Inside down to uvula and rotate 180° into place

- Connect Bag-Valve-Mask (BVM)
 - Connect extension tube to O₂ tank and BVM
 - Breathe for the patient
 - Rate: every 5 seconds (12 times/minute)
 - Technique: Gently squeeze and watch for chest rising

- If difficulty achieving a sealed airway with BVM, consider pocket mask as alternative.

Cricothyrotomy

★★★★★ This is an alternative technique to be used to establish patency on an upper obstruction patient when the conventional techniques of BLS have failed. Always attempt conventional techniques first.

- 1) Attach a 10 Ga. Angiocath needle to a 5 cc syringe
- 2) Establish a “Head tilt / chin lift” position on the patient
- 3) Find the “Adam’s Apple.” Identify depression below it.
- 4) Insert the Angiocath at a 45° angle toward the lungs.
- 5) Aspirate to insure needle is in trachea.
- 6) Remove syringe from angiocath.
- 7) Carefully remove needle leaving plastic sleeve (catheter) in place.
- 8) Advance catheter about 1 inch further into trachea.
- 9) Remove plunger from syringe.
- 10) Re-attach empty syringe barrel to catheter.
- 11) “Stuff” the distal end of a 7.5 endotracheal tube into the empty syringe barrel.
- 12) Remove the facemask from a BVM
- 13) Attach the BVM to the endotracheal tube.
- 14) Add supplemental oxygen at maximum output
- 15) Ventilate every 5 seconds. Watch for chest rising. Confirm bilateral breath sounds with stethoscope.

Basic Life Support

CPR Review

<i>1 or 2 Rescuer</i>	<i>Adult</i>	<i>Child 1-8</i>	<i>Infant <1</i>
Rhythm	30 beats/2 breaths	30 beats/2 breaths	15 beats/2 breaths (2 rescuers)
Rate	100/min	100/min	≥ 100 /min
Compressions	2+ inches	$\frac{1}{3}$ - $\frac{1}{2}$ depth of chest	

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When aligned properly, the dentist's algorithm (white) should be on the left side of each page and the corresponding general supervision algorithm for staff (pastel) will be on the right side.

SUPPLY LIST

DISCLAIMER: This supply list is provided strictly for the convenience of the course participants. Neither Dr. Sangrik nor the course sponsor are affiliated with or receive compensation of any kind from the suppliers. Comparable products may be available from other vendors with better service or lower prices. In some instances the specific model or brand listed differs from those illustrated during the lecture.

☞ ☞ ☞ SOUTHERN ANESTHESIA & SURGICAL, INC. (800) 624-5926 ☞ ☞ ☞

Syringes with Needles				
Qty. Needed	Sold	Item	Product No.	Purpose
10	Box of 100	1cc / 25 Ga x 5/8 in.	01T2516	Sublingual injection
10	Box of 100	3cc / 25 Ga x 5/8 in.	032516	IM injection
5	Box of 100	5 cc / 22 GA x 1 in.	052225	Deep IM & Crico kit
1	Individually	10 Ga Angiocath		Crico kit

Airway Supplies				
Qty. Needed	Sold	Item	Product No.	Purpose
10	Individually	Nasal cannula	1104	Supplemental oxygen
3	Individually	Non-rebreathing mask	1059	Supplemental oxygen
1 of each size	Individually	Oral/pharyngeal airways	1165-1171	Airway patency
1	Individually	Pocket mask with oxygen port	820003	Apnea
1	Individually	Disposable Bag-Valve-Mask	157100300	Apnea
3	Individually	Oxygen extension tubes		General use
3	Individually	Double-ended male adapters		General use
1	Individually	7½ mm ET tube		Crico kit

Blood Pressure Monitoring				
Qty. Needed	Sold	Item	Product No.	Purpose
1	Individually	Medium Adult Analog BP Cuff	PS2037	Blood pressure
1	Individually	Large Adult Analog BP Cuff	PS2038	Blood pressure
1	Individually	Small Adult Analog BP Cuff	PS2039	Blood pressure
1	Individually	Stethoscope	PS360	Blood pressure

Required Medications				
Qty. Needed	Sold	Item	Product No.	Purpose
2	10 tabs/tube	Glucose tablets		Hypoglycemia
1	Tube	Instant glucose		Hypoglycemia
1	12/box	Ammonia inhalants		Syncope
2 (min)	1 ml Ampule	Epinephrine		Mult. Uses
2	1 ml Ampule	Benedryl, 50 mg/cc		Allergic rxn.
1	10 tabs / btl.	Nitroglycerine tablets, 0.4 mg		Angina
1	Kit	Ventolin inhaler with dispenser		Asthma

Optional Medications

Qty. Needed	Sold	Item	Product No.	Purpose
2	1 ml Ampule	Nubain, 10 mg/cc		Pain during MI
1	10 ml Vial	Naloxone (Narcan), 0.4 mg/ml (REQUIRED IF USING NARCOTICS)		Narcotic reversal
1	1 ml Ampule	Ephedrine, 50 mg/ml		Hypotension
1	Vial	Glucagon		Hypoglycemia
1	10 ml Vial	Valium, 5 mg/cc		Anxiety
2	Actovials	Solu-Cortef		Acute adren. insuff.

Pre-packaged Drug Kit

(For those desiring a pre-assembled kit instead of purchasing the above items)

Mark System	230SK100
Annual Update	230SKR99

☞ ☞ ☞ OTHER VENDORS ☞ ☞ ☞

Oxygen Sources

- 1) The major dental suppliers (*Patterson, Schein, Bentko*) have various nitrous oxide systems and emergency oxygen sources.
- 2) Contact a local welding supply company for medical oxygen.

Medical Manufacturers Marketing, LLC (800) 999-7996

- 1) Source of new and refurbished medical equipment including AEDs, pulse oximeters and automatic blood pressure monitors.
- 2) I purchased a new PowerHeart by Cardiac Science with a 5 year battery.

Institute of Emergency Preparedness (601) 261-2611

www.emergencyactionguide.com

- 1) Training for staff
- 2) Emergency response manuals
- 3) Carbonless, 2-copy documentation forms for emergencies

Emergency Response Manual

(A guide to be kept chairside for quick reference during an emergency)

- 1) Construct your own using this handout and a salesman's presentation folder
- 2) Contact Institute of Emergency Preparedness (*see above*)
- 3) Lexicom's *Dental Office Emergencies: A Manual of Office Response Protocols*, (330) 650-6506

Miscellaneous Items

(Obtain locally at pharmacies, office supply or discount stores)

Lunch size paper bags (<i>hyperventilation</i>)	Flashlight	Penlight
Salesman's Presentation Folder	Adhesive labels	Syrup of Ipecac
81 mg Aspirin	Glucose Monitor	Glucose Test Strips