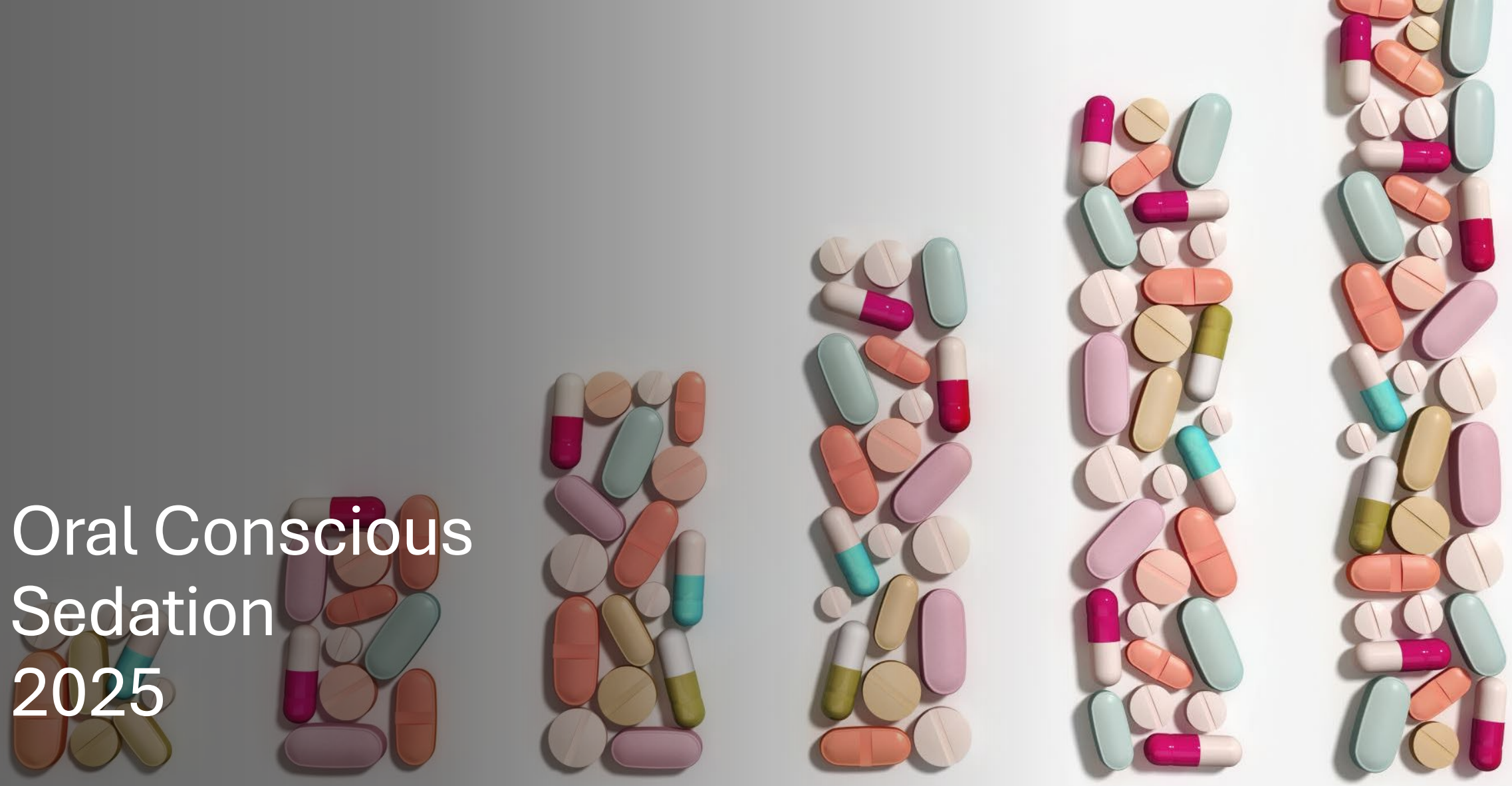
Oral Conscious Sedation 2025



Mark R. Mcilwain, DMD, MD

Oral and Facial Surgery of the Shoals, LLC

Oral Conscious Sedation 270-x-2-.21

- Amended Board Rule
- Under 14 years old:
- Allows PALS – as substitute for ACLS for Pediatric Dentists
- Allows pre-cordial stethoscope as substitute for end tidal CO2
- Allows excepting EKG
- Allows vital sign recording every 10 minutes

270-X-2-.21 Oral Conscious Sedation.

The following requirements shall apply to the administration in the office of oral conscious sedation by dentists:

(1) Dentists must have completed an in-person Advanced Cardiac Life Support (ACLS) Course and maintain a current certification in same while providing Oral Conscious Sedation. Dentists with a declared pediatric specialty may substitute Pediatric Advanced Life Support (PALS) in place of the ACLS requirement.

(2) Dentists must have successfully completed a minimum of sixteen (16) hours of training in Oral Conscious Sedation or completed an American Dental Association accredited postgraduate general dentistry or specialty residency which included specific training in oral conscious sedation. In order for the training to be approved by the Board, the course shall contain a minimum of the following topics:

(a) The definition of oral conscious sedation and anxiety reduction (anxiolysis);

(b) A list of oral sedative agents commonly used, their basic pharmacology and past documentation or records of use;

(c) Coverage of medical conditions which can adversely affect the administration of oral conscious sedation and the basics of physical diagnosis to appropriately classify your patient medically;

(d) Coverage of proper monitoring techniques for the sedated patient;

(e) An overview of the most common sedation protocols from start to finish;

(f) Proper documentation required by the dentist and dental staff to be maintained in the patient record, to include a sedation record; consent forms; monitoring ~~strips~~record; documentation of pre-operative, intra-operative, and post operative vital signs; and patient information ~~packets~~(e.g., medical record, chronic medications, allergies, review of systems, past medical and surgical history);

(h) Types of medical emergencies and appropriate responses.

(3) In order for an entity or organization to be approved by the Board for purposes of training in oral conscious sedation, training offered must at a minimum include the topics referenced in subsection (2) above.

(4) The dentist shall maintain a medical emergency kit containing at a minimum include the following medications and equipment:

(a) Medications

1. Epinephrine;
2. Atropine;
3. Narcotic antagonist (e.g., Naloxone HCL) and benzodiazepine antagonist (e.g., Flumazenil);
4. An antihistamine (e.g., Diphenhydramine HCL);
5. Nitroglycerine;

6. A bronchodilator (e.g., Albuterol inhaler); and
7. An anti-hypoglycemic (e.g., 50% glucose).

(b) Equipment

1. Stethoscope and blood pressure cuff.
2. Oropharyngeal Airways.
3. Automatic External Defibrillator (AED) and appropriate pads.
4. Oxygen gas-delivery system or portable oxygen tank capable of delivering metered oxygen with appropriate size masks and positive pressure Ambu-type bag.
5. Central or portable suction unit with appropriate suction tips.
6. Equipment capable of mechanically monitoring blood pressure, respirations (end tidal C02 and/or pre-cordial stethoscope), heart rate, oxygen saturation, ~~, cardiac rate, oxygen saturation, end tidal C02 (capnography)~~ and electrocardiogram (EKG).

(5) The operatory where oral conscious sedation is administered must be of adequate size and design to permit physical access of emergency equipment and personnel and to permit effective management of medical emergencies.

(6) Inhalation equipment used in conjunction with oral conscious sedation must be capable of providing adequate oxygen supply. This equipment shall be evaluated prior to use on each patient.

(7) The dentist shall have a minimum of one (1) allied personnel present at all times to assist. All allied personnel who may be involved in the monitoring of a patient who is administered oral conscious sedation shall be trained to assist the dentist in the recognition and management of the following clinical emergencies:

(a) Laryngospasm;
(b) Bronchospasm;
(c) Emesis and aspiration of vomitus;
(d) Management of foreign bodies in the airway;
(e) Angina pectoris;
(f) Myocardial infarction;
(g) Cardiopulmonary resuscitation;
(h) Hypotension;
(i) Hypertensive crisis;
(j) Acute allergic reaction;
(k) Hyperventilation syndrome;
(l) Convulsions; and
(m) Syncope.

(8) Appropriate continuous monitoring and documentation of the patient's vital signs during oral conscious sedation shall include blood pressure, respirations from end-tidal C02-capnography (patients 14 years of age and older) and/or pre-cordial stethoscope (patients younger than 14 years of age), heart rate, oxygen saturation, end tidal CO2 (capnography), and

electrocardiogram (EKG) (patients 14 years of age or older). The EKG may be excepted in patients below 14 years of age due to nature of the patient, procedure, or utility of equipment. This monitoring shall be documented in the pre-operative, intra-operative, and post-operative sedation intervals. Intra-operative monitoring of vital signs shall be recorded ~~no less frequently than every five~~every 10 minutes for patients below 14 years of age and every 5 minutes for patients 14 years of age or older. Appropriate protocols should be established to ensure appropriate recovery of the patient prior to discharge from the clinic.

(9) As to all patients who are administered oral conscious sedation, the type and amount shall be within accepted therapeutic guidelines and not dependent upon the period of duration of the procedure.

(10) A dentist utilizing oral conscious sedation in the dental office may sedate only one (1) patient at a time. Until such time a patient that has been sedated is awake, alert, conscious, spontaneously breathing, has stable vital signs, is ambulatory with assistance, is under the care of a responsible adult, and that portion of the procedure requiring the participation of the dentist is complete, a dentist may not sedate additional patients.

(11) Not withstanding any of the provisions set forth above, any oral conscious sedation administered to a pediatric patient, shall be pursuant to and follow the current guidelines and recommendations for sedation of the pediatric dental patients promulgated by the American Academy of Pediatric Dentistry. Pediatric patients shall be defined as infants and children ~~through adolescence~~below 14 years of age, including those with special health care needs.

(12) All individuals licensed to practice dentistry who intend on administering Oral Conscious Sedation shall submit an application and fee, as established by the Board, for an Oral Conscious Sedation permit. An oral conscious sedation permit shall be obtained prior to the administrating of such sedation. Thereafter the renewal requirements and expiration date shall be the same as those for a dental license.

(13) The Board may require an on-site inspection of the facility, personnel, and equipment to confirm the above requirements to utilize oral conscious sedation have been completed prior to issuing an oral conscious sedation permit.

Author: Board of Dental Examiners

Statutory Authority: Code of Ala. 1975, §§34-9-16, 34-9-43, 34-9-81, Act 2005-298.

History: **New Rule:** Filed January 17, 2006; effective February 21, 2006. **Amended:** Filed February 22, 2012; effective March 28, 2012. **Amended:** Published April 30, 2024; effective June 14, 2024. **Amended:** Published ; effective .

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Adverse Occurrences (270-x-2-.20)

(1) Any dentist practicing in the State of Alabama must notify the Board of Dental Examiners of Alabama (Board) of any mortality or significant injury occurring during or directly related to a dental procedure or treatment performed by a dentist or in which a dentist participated in any manner whether occurring in an office, hospital, or other outpatient treatment facility within seven (7) days of the referenced occurrence. A significant injury is defined as physical injury that results in hospital admission.

Adverse Occurrences (270-x-2-.20)

(2) In addition, the dentist shall submit a complete report to the Board within thirty (30) days of the referenced occurrence which must include, at a minimum, the following:

(a) Description of the dental procedure.

(b) Description of preoperative physical condition of the patient, including recorded vitals.

(c) List of drugs and dosages administered.

(d) Description, in detail, of techniques utilized in administering the drugs used.

Adverse Occurences (270-x-2-.20)

(e) Description of the adverse occurrence.

1. Describe, in detail, symptoms of any complications to include, but not be limited to, the onset and type of symptoms exhibited by the patient.

2. Treatment instituted on the patient.

3. Response of the patient to the treatment.


BELIEVER

Maintenance of Controlled Substance Records and Inventory (270-x-2-.12)

- Schedules II-IV
- Accurate SEPARATE Inventory
- SEPARATE Dispensing Record
- To be kept in office 5 years

Inventory Record

- Accounts for all controlled substances
- Date Obtained
- Source
- Name of substance
- Finished form (0.5 mg tablet or 1mg/ml)
- Number units (100-tablet bottle or 5 ml vial)
- Number of commercial containers (3 bottles or 20 vials)

Controlled Substances-**INVENTORY LOG**
US 21 CFR §1304.11

DRUG NAME:_____

DRUG CONCENTRATION:_____

DATE RECEIVED/REMOVED	PURCHASED FROM	TOTAL UNITS/VOLUME	TOTAL COMMERCIAL CONTAINERS	SIGNATURE FOR RECEIPT/REMOVAL
Ex. 01/01/2022	Ex. Henry Schein	Ex. 5-20mL vials	Ex. 1-Box (5 vials)	Ex. Jane Smith

Dispensing Log

- Date
- Dispensed in Office or released to patient
- Name of Controlled Substance
- Name of Patient or Waste (co-signed)
- Finished Form (ie concentration)
- The Quantity Dispensed

Oral & Facial Surgery of the Shoals, LLC
DRUG LOG

Date	Patient Name	Mg. Deposited	Mg. Given	Mg. Wasted	Pt. Total Mg.	Mg. Balance	Initials

Drug _____ Page _____ of _____

DEA REGISTRATION NUMBER	THIS REGISTRATION EXPIRES	FEE PAID
AM1694315	01-31-2028	$888

SCHEDULES	BUSINESS ACTIVITY	ISSUE DATE
2,2N,3, 3N,4,5	PRACTITIONER	12-03-2024

MCILWAIN, MARK R
398 ASHE BLVD
SHEFFIELD, AL 35660

CONTROLLED SUBSTANCE REGISTRATION CERTIFICATE
UNITED STATES DEPARTMENT OF JUSTICE
DRUG ENFORCEMENT ADMINISTRATION
WASHINGTON D.C. 20537

Sections 304 and 1008 (21 USC 824 and 958) of the Controlled Substances Act of 1970, as amended, provide that the Attorney General may revoke or suspend a registration to manufacture, distribute, dispense, import or export a controlled substance.

THIS CERTIFICATE IS NOT TRANSFERABLE ON CHANGE OF OWNERSHIP, CONTROL, LOCATION, OR BUSINESS ACTIVITY, AND IT IS NOT VALID AFTER THE EXPIRATION DATE.

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Form DEA-223 (9/2016)

DEA REGISTRATION NUMBER	THIS REGISTRATION EXPIRES	FEE PAID
AM1694315	01-31-2028	$888

SCHEDULES	BUSINESS ACTIVITY	ISSUE DATE
2,2N,3, 3N,4,5	PRACTITIONER	12-03-2024

MCILWAIN, MARK R
398 ASHE BLVD
SHEFFIELD, AL 35660

CONTROLLED SUBSTANCE/REGULATED CHEMICAL REGISTRATION CERTIFICATE
UNITED STATES DEPARTMENT OF JUSTICE
DRUG ENFORCEMENT ADMINISTRATION
WASHINGTON D.C. 20537

Sections 304 and 1008 (21 USC 824 and 958) of the Controlled Substances Act of 1970, as amended, provide that the Attorney General may revoke or suspend a registration to manufacture, distribute, dispense, import or export a controlled substance.

THIS CERTIFICATE IS NOT TRANSFERABLE ON CHANGE OF OWNERSHIP, CONTROL, LOCATION, OR BUSINESS ACTIVITY, AND IT IS NOT VALID AFTER THE EXPIRATION DATE.

Form DEA-223/511 (9/2016)

REPORT

CHANGES

PROMPTLY

REQUESTING MODIFICATIONS TO YOUR REGISTRATION CERTIFICATE

To request a change to your registered name, address, the drug schedule or the drug codes you handle, please

1. visit our web site at **deadiversion.usdoj.gov** - or
2. call our customer Service Center at **1-(800) 882-9539** - or
3. submit your change(s) in writing to:
   Drug Enforcement Administration
   P.O. Box 2639
   Springfield, VA 22152-2639

See Title 21 Code of Federal Regulations, Section 1301.51 for complete instructions.

You have been registered to handle the following chemical/drug codes:

DEA License and Number

- This number is for a particular address
- To transfer controlled substances to another address requires a DEA form 222
- Also requires an adjustment and notation in the inventory log.

Patient Safety

- Medical History Questionnaire
- Past Medical History
- Past Surgical History
- Allergies
- Review of Systems
- Medications
- Adverse Occurences with Dentistry or Anesthesia
- Regular Medical Doctor Consultations

Medical History Questionnaire

- Is the print large enough to read?
- Is the form language appropriate?
- Www.dental.pacific.edu (Dental Professionals tab then the Health History Forms tab)

Medical History Questionnaire

- If you obtain the medical history forms from the University of the Pacific then the questions occur in the same order and form on the English language form and the other 36 languages

Medical History Questionnaire

- Is your general health good (what is your level of activity)?
- Has there been a change in your health in the last year?
- Have you been hospitalized in the last 3 years?
- Are you under the care of a Physician and when did they last see you?
- Did you have problems with previous dental care?
- Are you in pain now?

Past Medical History

- Have you experienced chest pain? (What causes and relieves)
- Swollen Ankles?(Heart Failure)
- Shortness of breath (what kind of exertion?)
- Recent weight loss, fever, night sweats? (TB, Lymphoma)
- Persistent cough, coughing up blood? (TB , Cancer)
- Bleeding problems, bruising easily? (Quantify, Medications)
- Sinus problems?
- Difficulty swallowing?

Past Medical History

- Diarrhea, constipation, blood in stools? (Anemia?)
- Frequent nausea, vomiting? (With meds or anesthesia?)
- Difficulty urinating, blood in urine?
- Dizziness? (TIA, Postural hypotension)
- Ringing in ears?
- Headaches?
- Fainting spells? (What precipitates?)
- Blurred vision?

Past Medical History

- Seizures? (Epilepsy, Medications)
- Excessive thirst, frequent urination, persistent hunger? (DM)
- Dry Mouth? (Chronic Pain Meds)
- Jaundice? (Liver Disease? Quantify)
- Joint Pain and stiffness? (Steroids)
- Heart disease? (Cardiologist, Stents, Bypass)
- Heart murmur? (pre-med)
- Heart attack, or disease? (No elective Dentistry 6 months post MI)

Past Medical History

- Rheumatic fever? (Prophylaxis)
- High blood pressure? (Meds)
- Stroke, hardening of the arteries? (Disability)
- Asthma, TB, emphysema, lung disease?(Nitrous Circuit)
- Hepatitis or Liver disease?
- Stomach problems, ulcers?
- Allergies?
- Family history of diseases?

Past Medical History

- AIDS?
- Tumors, cancer? (Zometa, Xygeva)
- Eye Disease? (Glaucoma)
- Skin Disease?
- Anemia?
- Herpes, VD (syphilis or gonorrhea)
- Kidney or bladder disease
- Thyroid or adrenal disease (Steroids)

Past Medical History

- Diabetes
- Radiation or chemotherapy?
- Prosthetic heart valve? (Anti-coagulants, Pre-med)
- Artificial joint? (Pre-meds depends on Orthopedic Surgeon)
- Blood transfusions ?
- Surgeries?
- Pacemaker? (caution with electrosurgery)
- Contact lens?

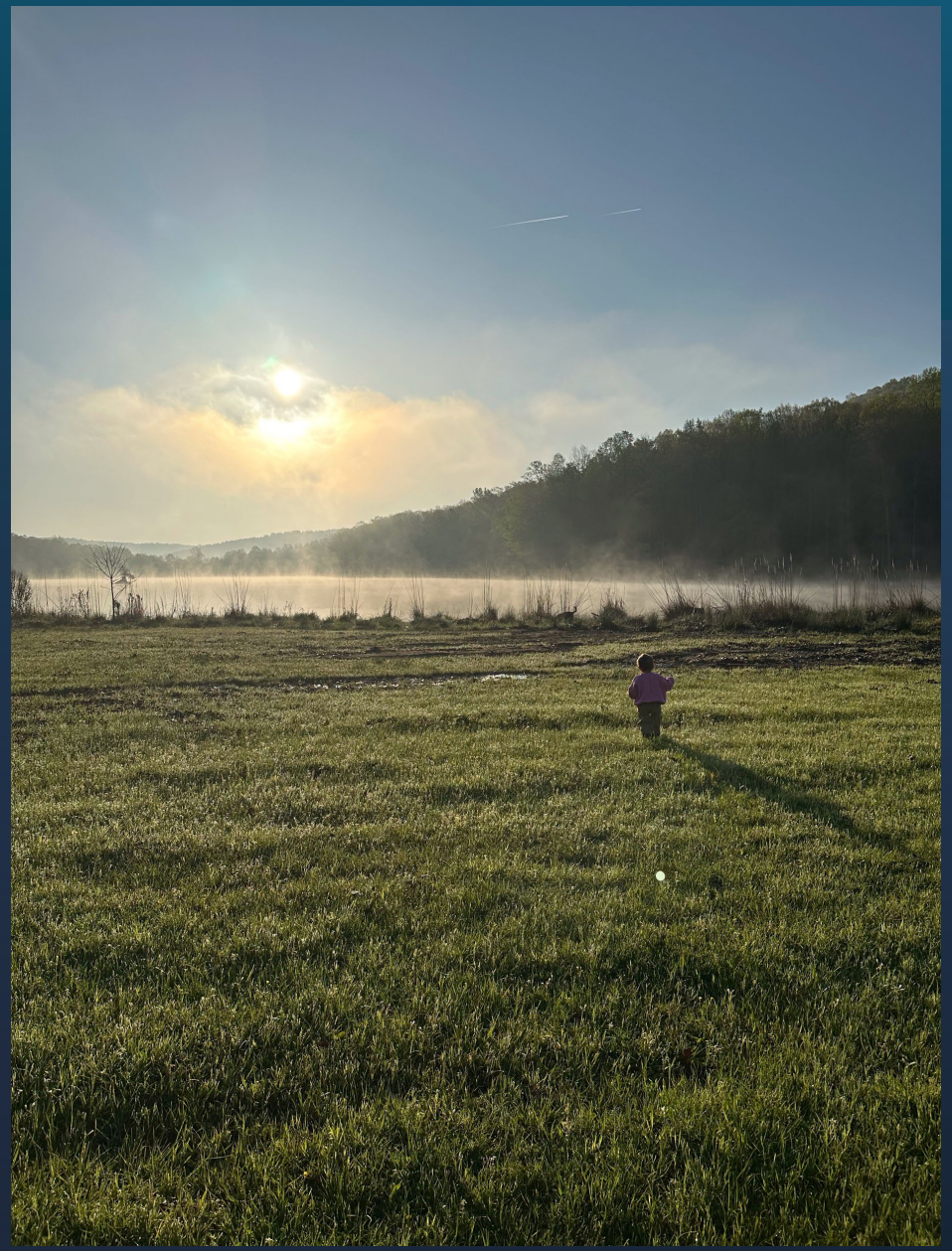
Past Medical History

- Recreational Drugs (marijuana, THC vape)
- Chronic pain or anxiety drugs, Pain Contract? (Opioids or Xanax)
- Other OTC medicines (ASA) or Herbal Remedies (Garlic)
- Tobacco any form?
- Alcohol?
- Women-BCPs, pregnant, nursing? (Antibiotics and BCPs)

Past Medical History

- Do you have or have you had any other Disease or Medical problem not listed on this form?

- The patient must be aware of the medical problem and willing to share the information.



Physical Evaluation

- Blood pressure
- Heart Rhythm and Rate
- Respiratory Rate
- Temperature (have a thermometer)
- Height and Weight
- Body Mass Index
- Visual Inspection of the patient

Blood Pressure (backup manual)

- Accurate Reading requires proper sized cuff
- 160-199/ 95-114 (after repeat BP -5 min apart) delay treatment and seek medical consult
- +200/ +115 (medical emergency – immediate MD consult)

Heart Rate and Rhythm

- Beats per minute
- Regular or irregular
- Quality- (thready , week, bounding, full)

- If you cannot palpate pre-op how will you palpate in an emergency

Heart Rhythm

- PVC (skipped beat)
- Pulsus Alterans (alternating strong and weak beats)ventricular dz
- Atrial Fibrillation (irregular irregular)
- Sinus dysrhythmia of adolescents (varies with breath)

Body Mass Index

- Weight (Lb)/ (Height (in)x(in)) x703= (or on phone calculator)
- BMI 30-39 obese
- BMI greater 40 morbid obese
- Utilize Smart Phone APP

Table 4.10 Interpretation of BMI for Adults (Age 20 Years and Above)

BMI	Weight Status
18.5–25	Normal range
26–30	Overweight
31–35	Class 1 obesity
36–40	Class 2 obesity
40–49	Morbid obesity
50 and above	Super morbid obesity

Anxiety

- Causes 20 million patients not seek dental care
- Moderate anxiety- patients often avoid care and need help coping
- Severe anxiety- increase BP and HR, tremble, sweat, dilated pupils these patients are often difficult to manage

Determination of Medical Risk

- Can patient tolerate stress of procedure?
- Is patient at greater risk (morbidity/mortality)?
- If increased patient risk, then what modifications are needed?
- Does the risk exceed safe management in the office?

ASA Classification

- Class 1- healthy patient
- Class 2- mild systemic disease that does not limit activity
- Class 3- severe systemic disease that limits but does not incapacitate
- Class 4- Incapacitating disease constant life threat

ASA 1

- Normal Healthy Patient
- Normal activity without stress (2 flights of stairs)
- Low anxiety

ASA 2

- Less stress tolerant (pregnant, anxiety, smoker, multiple allergies)
- BP (159/94 max)
- Controlled type 2 diabetes, thyroid, asthma, epilepsy
- Current Upper Respiratory Infection
- BMI 30-39.9

ASA 3

- No sign or symptoms at rest, easily stressed
- Type 1 diabetes
- MI or Stoke more than 6 months ago
- Heart failure
- Renal dialysis
- Less well controlled asthma, angina, seizures
- BMI greater 40

ASA 4

- Exhibit signs and symptoms of medical problems at rest
- MI or Stroke less 6 months ago. (unstable angina)
- BP 200/115 or higher or uncontrolled dysrhythmia
- Severe COPD,Heart failure, systemic disease (diabetes)

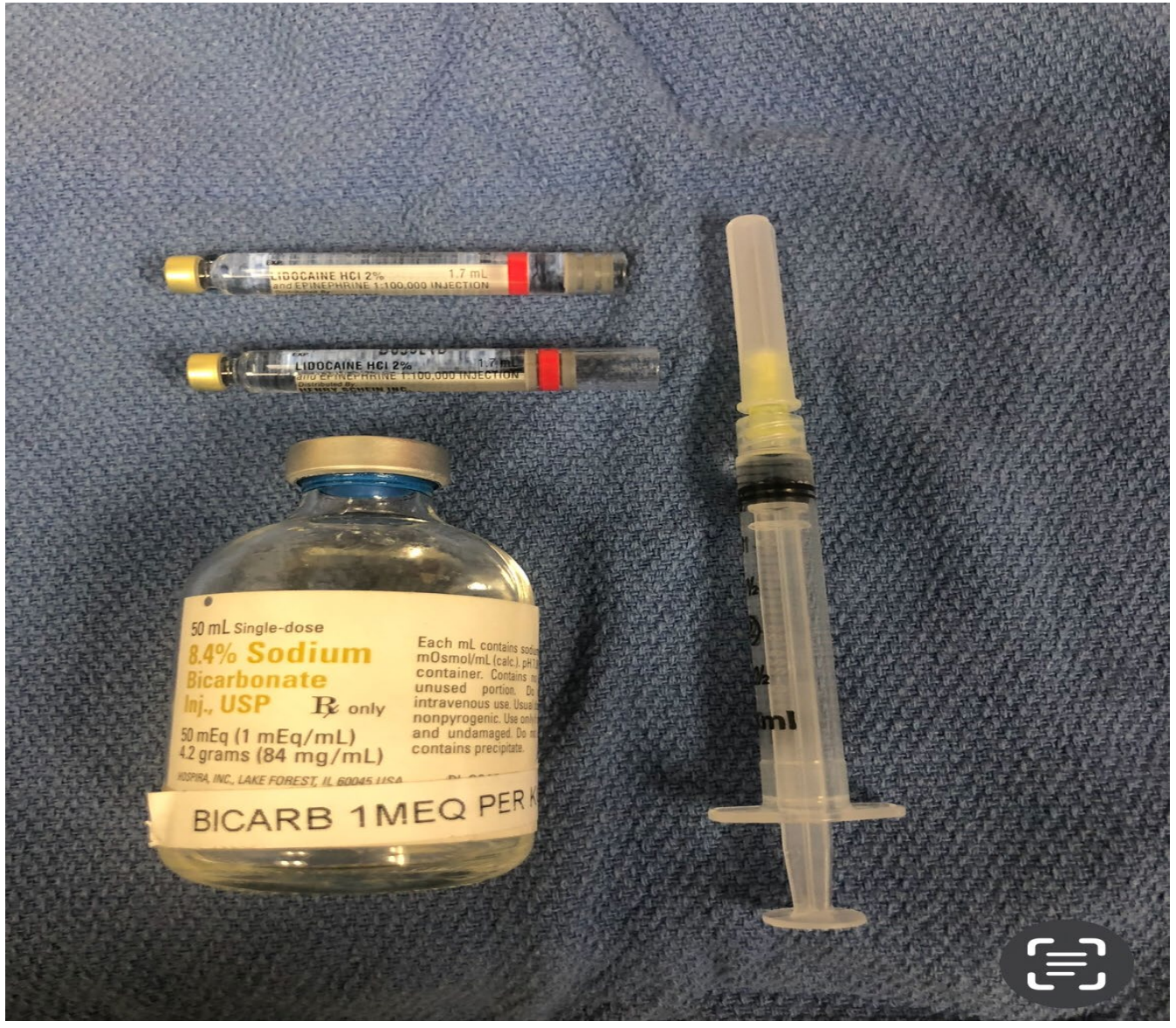
Medical Consultation

- When you are unsure about the risk
- To Clarify the patient’s condition
- Ask for optimization of patient pre-procedure
- To ask for modifications of therapy

Stress Reduction

- Clear and Concise pre-operative instructions
- Schedule am appointments
- Pre-op vital signs
- Adequate pain control (during and after procedure)

Profound Local Anesthesia- Buffered Local



The Diabetic

- Accurately determine diabetes medicines and doses
- Discuss pre-op meal and NPO status

- Discuss day of procedure modification of medicines and doses

- Ask patient to bring blood sugar checking equipment to office
- Alternatively have capability to check Blood Sugar

Obstructive Sleep Apnea

- Need modifications to treatment and recovery
- Often occult heart failure
- Live with high CO2 levels
- Often more sensitive to lower doses of sedatives

Asthma

- Ask them to bring their inhaler and utilize it before treatment
- Remember that these patients often have chronic inflammation of the airways and are more prone to aspiration infections
- They often have excess mucous in their airways

Liver Disease

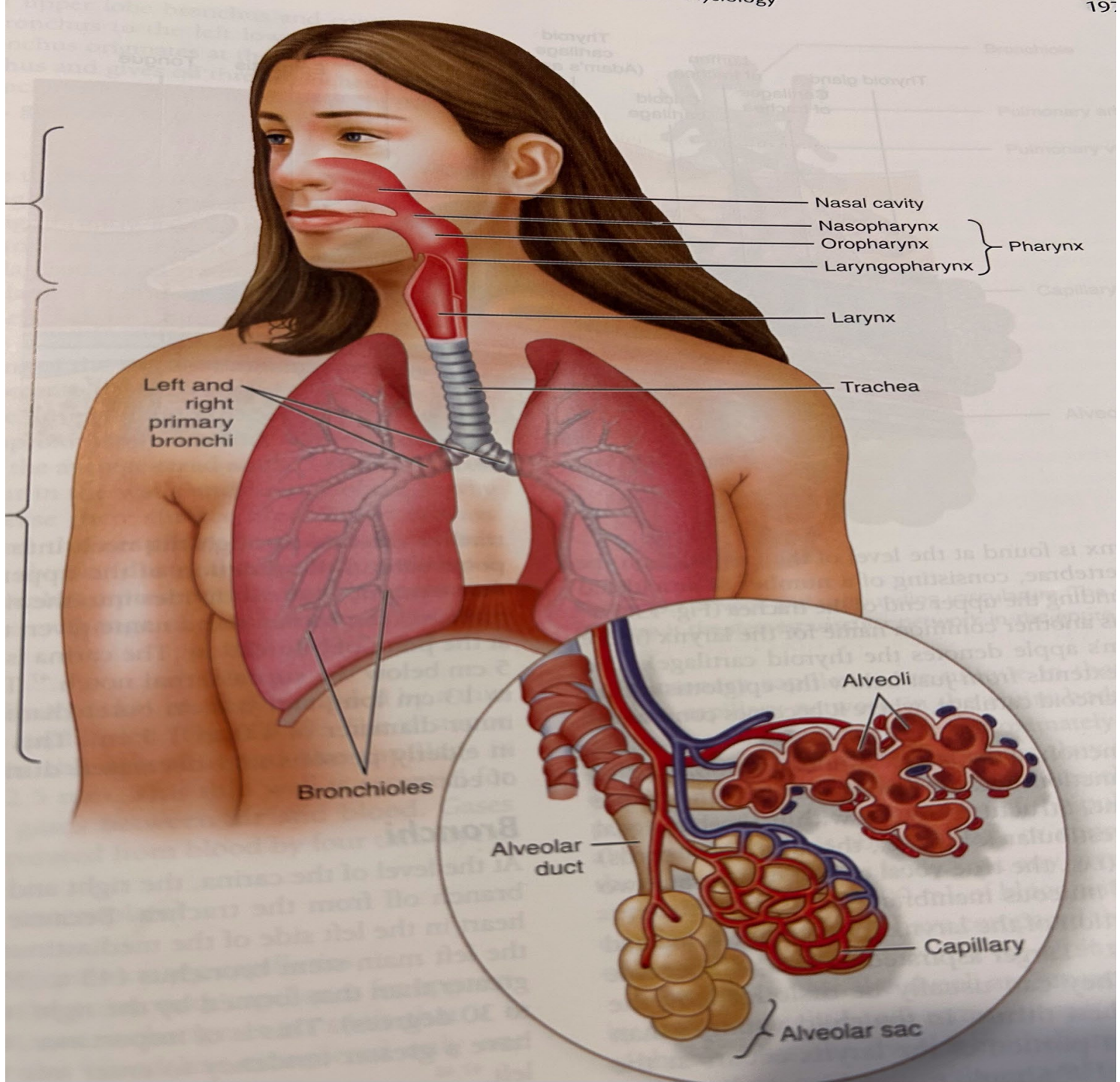
- Bio transformation for elimination of drugs is decreased
- Decrease drug doses by 50%
- Local anesthesia with vasoconstrictor is ok, Articaine HCL has combined metabolism in blood and liver, the ½ life is 27 minutes, it works well in the patient with liver disease

Medications

- Patients need to continue most meds:
- Hypertension, thyroid, seizure, asthma, anti-arrhythmic all should be continued
- Caution- patients often assume they are to discontinue meds. pre-procedure be specific about medication instructions

Physical Examination

- Listen to the heart- regular rhythm and rate, loud murmur?
- Listen to the lungs- normal breath sounds?
- General inspection of the patient- height, weight, special considerations, prosthetics
- Airway Considerations


Nasal cavity
Nasopharynx
Oropharynx
Laryngopharynx
Pharynx
Larynx
Trachea
Left and right primary bronchi
Bronchioles
Alveoli
Alveolar duct
Capillary
Alveolar sac

Airway Considerations

- Upper Airway (mouth breather)
- Neck Flexibility (fixed necks make airway control difficult)
- Mouth opening (rotates condyle to 35 mm/ translates to 55mm)
- Facial Hair (difficult mask seal)
- Neck circumference over 19 inches

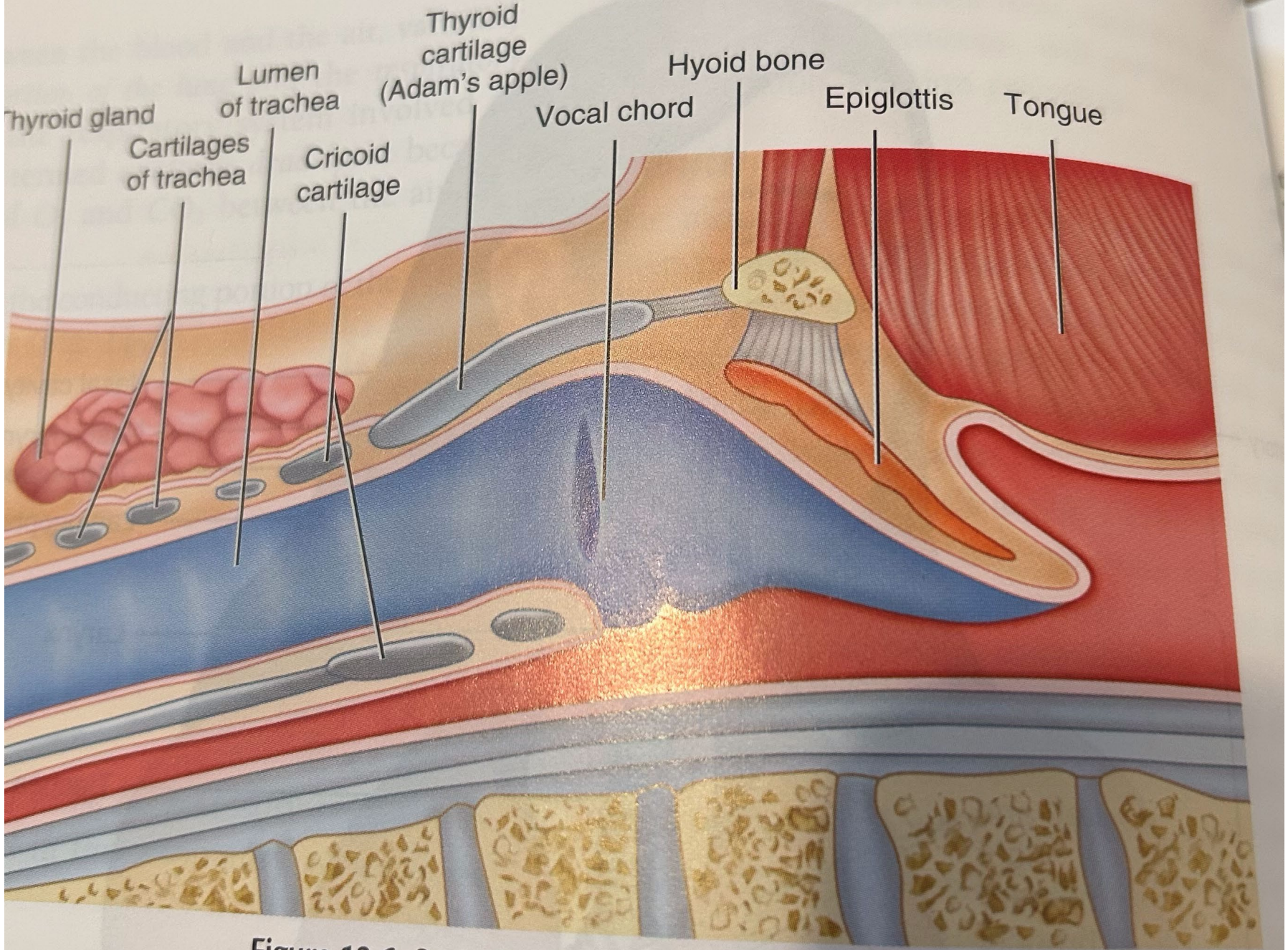
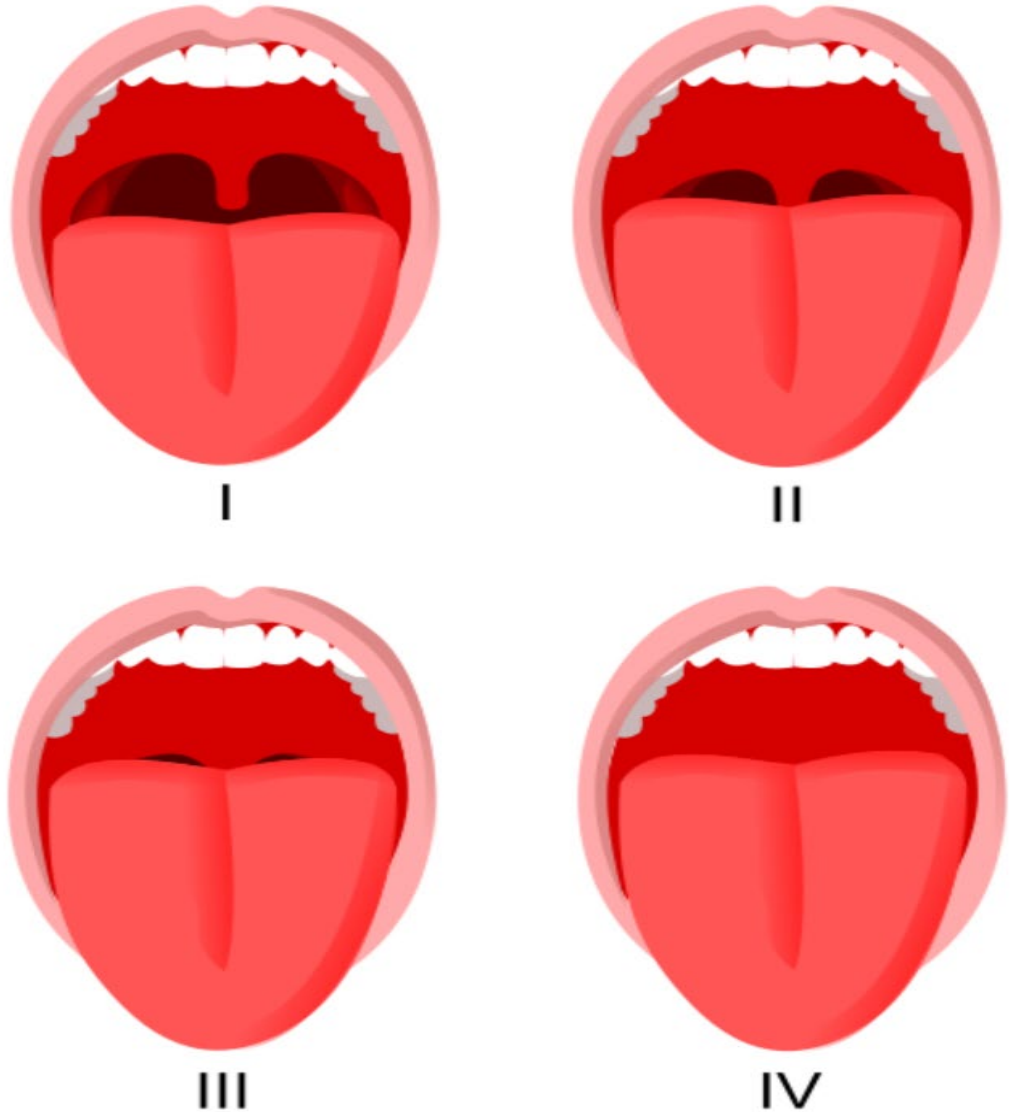


Figure 13.6 Sagittal section of the larynx.

Mallampati score

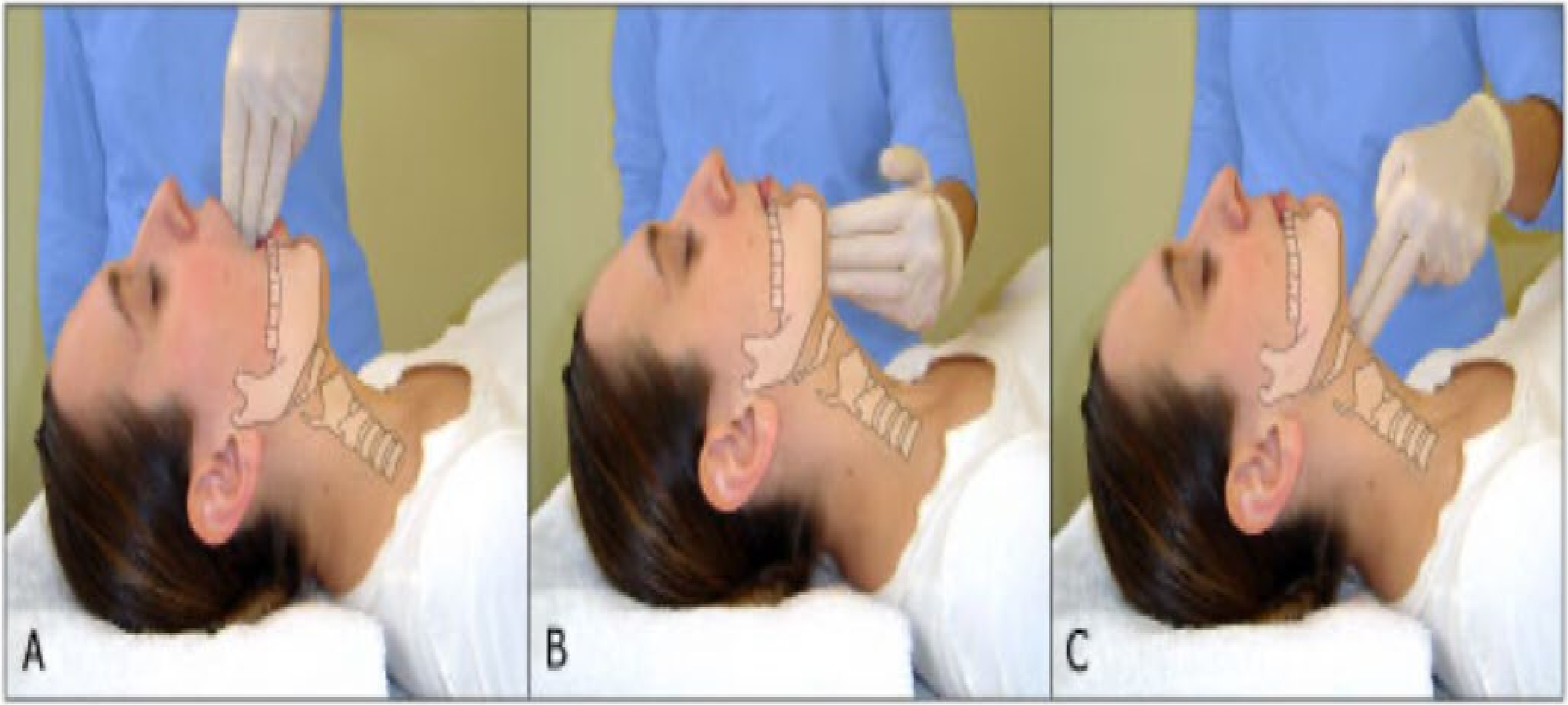
- The Mallampati score is an assessment to describe the relative size of the base of the tongue compared to the oropharyngeal opening to predict airway difficulty



Modified Mallampati score.

3-3-2 Rule

- Inter-incisor 3 finger breaths (45 mm)
- Hyoid to mental 3 finger breaths
- Thyroid to hyoid 2 finger breaths
- Palpable cricothyroid membrane


A
B
C

Predictors of difficult mask ventilation

▪ Older age (adult)
▪ Male sex
▪ Obesity
▪ Edentulous
▪ Facial hair (especially beard)
▪ Mallampati oropharyngeal class 3 or 4
▪ Inability to protrude the mandible
▪ Short thyromental distance
▪ Snoring (indication of OSA)
▪ Abnormal neck anatomy

Risk of difficult mask ventilation increases with greater number of predictors.

OSA: obstructive sleep apnea.

GI Drug Absorption

- Lipid solubility
- pH of the Gastric tissue
- Mucosal surface area
- Gastric emptying time
- Dosage form of the drug
- Drug inactivation
- Presence of food in the stomach
- Bioavailability of the drug
- Hepatic “first pass effect”

Lipid solubility and pH of Gastric tissue

- Lipid soluble drugs absorbed more rapidly
- Gastric pH is 1.4
- Only drugs that are organic acids are absorbed in the stomach
- pH in small intestine is 4-6
- Primary absorption is in the small intestine
- The vast surface area of the small intestine versus the smooth surface of the stomach

Drug Absorption

- Gastric Emptying Times:
- Liquids taken alone require 90 minutes (10ml/min)
- A mixed meal of food and liquid takes 4 hours
- Fat slows this down
- That is why oral drugs should be taken with a 8 ounce glass of water in the absence of food
- ANXIETY CAN SLOW GASTRIC EMPTYING

Bioavailability

- Aqueous solutions are quickly absorbed
- A ingested tablet or capsule must then dissolve
- The smaller the particle the greater the rate of absorption

First Pass Effect

- GI absorbed drugs go to the liver first via the portal vein
- Liver enzymes act on drugs to inactivate a %
- Example- oral lidocaine 90% inactivated, so the chemical structure of lidocaine was modified and drug TOCANIDE was invented for an oral anti-dysrythmia med


MY POP

Oral Drug Bioavailability

- At least 30 minute latent period to the 60 min to peak drug level
- Makes it hard to titrate
- Then 3-4 hour duration of clinical action
- Concept of titrating by appointment – specific drug effect timing for individual patient

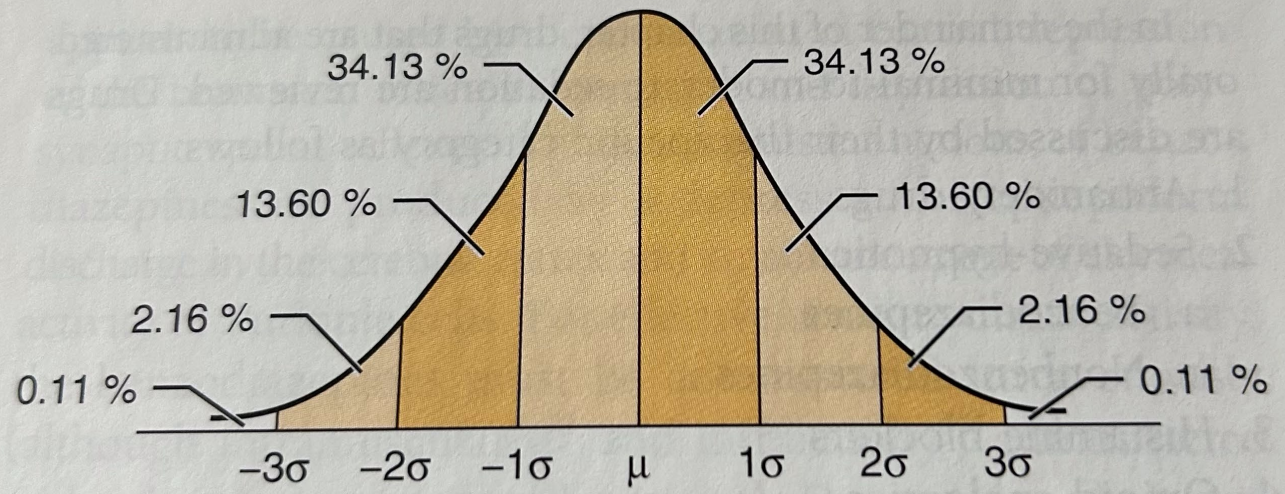


Figure 7.1 *Normal distribution curve ("bell-shaped" curve). Persons will respond to drug dosages in dissimilar ways. Approximately 2.5% of persons will be extremely resistant to a "usual dose," and 2.5% will be quite sensitive to the same dose. (Data from Bennett CR: Jorgensen Memorial Lecture: drug interactions. Anesth Prog 30(4):106–112, 1983.)*

Normal versus Stress Distribution Curve

- Shows clinically effective doses for 70% of patients
- 15% require larger dose
- 15% require smaller dose
- Stress shifts the curve toward higher doses

Drugs Commonly Used for Sedation[40]

Generic Name (Brand Name)	Dose Range (mg)*	Oral Formulations	Onset (min)†	Half-Life (h)†	Comments
Nonprescription drugs					
Diphenhydramine (Benadryl)	25–50	Syrup: 12.5 mg/5 mL and 25 mg/5 mL Tablets and capsules: 25 and 50 mg	15–60	2.4–9.3	Anticholinergic side effects can occur
Hydroxyzine (Atarax, Vistaril)	50–100	Syrup: 10 mg/5 mL Capsules: 10, 25, 50, and 100 mg Oral suspension: 25 mg/5 mL Tablets and capsules: 25, 50, and 100 mg	15–60	14	Anticholinergic side effects can occur
Promethazine (Phenergan)	25–50	Syrup: 6.25 mg/5 mL and 25 mg/5 mL Tablets: 12.5, 25, 50, and 100 mg	15–60	7–15	Anticholinergic side effects can occur
Prescription drugs: benzodiazepines					
Triazolam (Halcion)	0.125–0.5	Tablets: 0.125 and 0.25 mg	15–30	1.5–5	Very good for short to moderate length appointments (2–4 hours)
Lorazepam (Ativan)	0.25–4	Oral solution: 2 mg/mL Tablets: 0.5, 1, and 2 mg	30–60	>8	Very good for longer appointments (>3 hours)
Diazepam (Valium)	2–10	Oral solution: 5 mg/5 mL and 5 mg/mL Tablets: 2, 5, and 10 mg Extended release tablets: 15 mg	20–40	>24	Best administered the evening before a sedation appointment given long half-life
Prescription drugs: nonbenzodiazepines					
Eszopiclone (Lunesta)	1–3	Tablets: 1, 2, and 3 mg	30	6	Metabolized by CYP450‡ 3A4 and 2E1
Ramelteon (Rozerem)	8	Tablets: 8 mg	30	1–2	Melatonin receptor agonist Not a controlled substance
Zolpidem (Ambien)	5–10	Tablets: 5 and 10 mg	30	1.5–4.5	Not contraindicated in pregnancy
Zaleplon (Sonata)	5–20	Capsules: 5 and 10 mg	20	0.5–1	Good for short appointments (1–2 hours) Not contraindicated in pregnancy

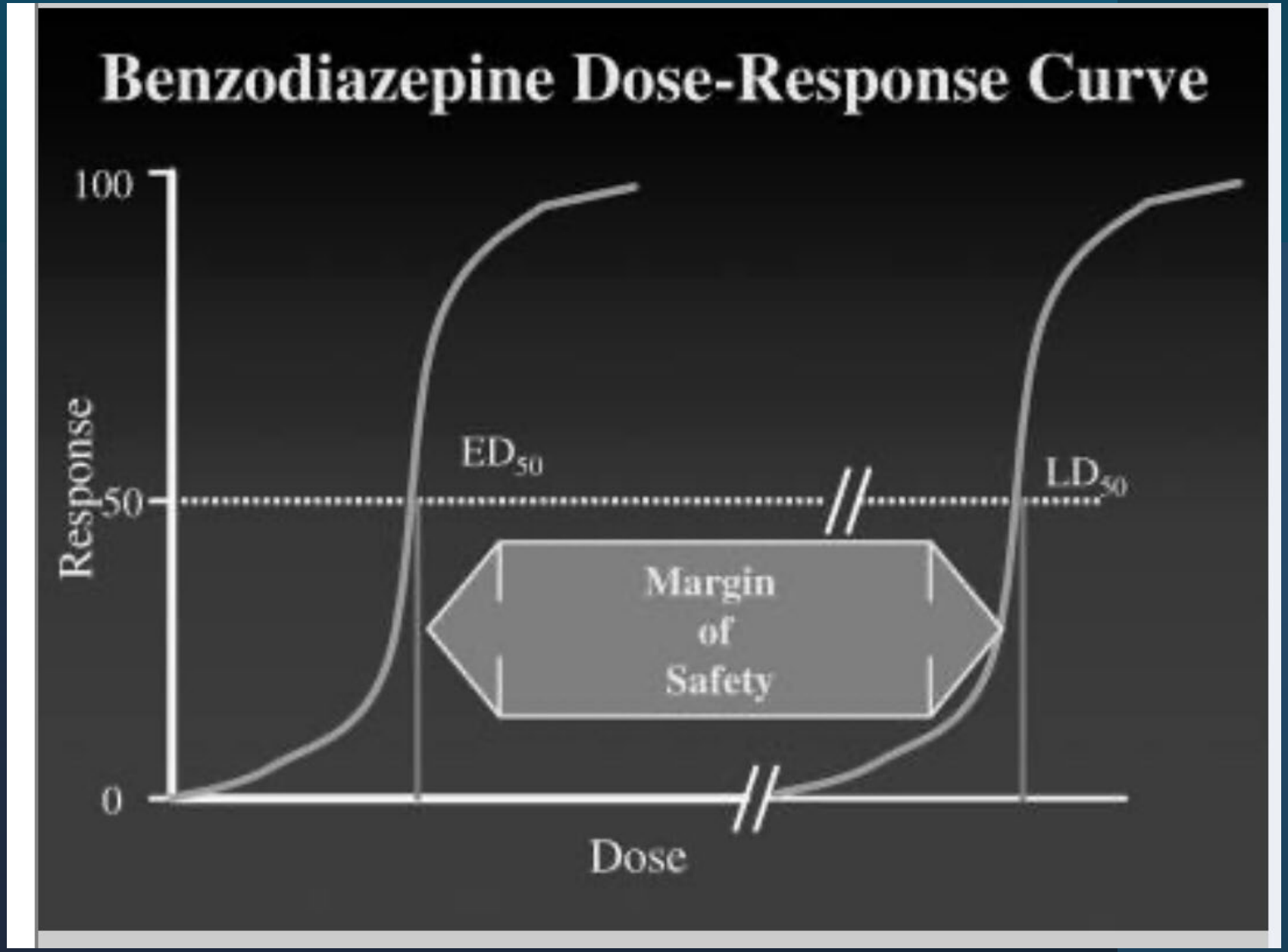
* In general, therapy should be started at the low end of the dose range and increased if needed based on effect.
† Administration of a drug with a fast onset and short half-life decreases the risk of adverse effects such as falls.
‡ CYP450 indicates cytochrome P450.

Level of sedation is a Continuum

- Oral sedation does not guarantee anxiolysis, nor does it guarantee that the patient will not drift to a deeper level of sedation
- Airway is always the chief concern
- Airway obstruction is the danger, rarely respiratory depression
- The patient may not overcome this obstruction and hypoxia

Benzodiazepines

- Bind to GABAa complex receptors
- Lets in chlorine ions with GABA for a more negative resting membrane
- Neurons are less responsive to excitatory stimuli
- Potentiates an endogenous neurotransmitter (GABA)
- This why they are relatively safe-
- The high therapeutic index gives a large margin of safety
- The safety and efficacy of benzodiazepines are virtually identical the onset and duration are unique features

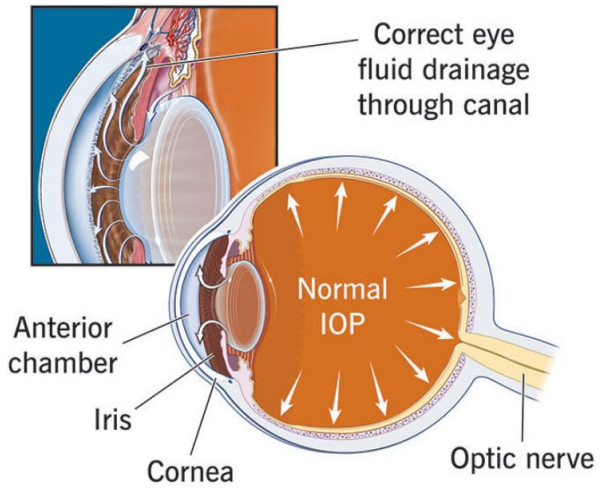

Benzodiazepine Dose-Response Curve
100
Response
50
0
ED50
LD50
Margin
of
Safety
Dose

Narrow Angle Glaucoma

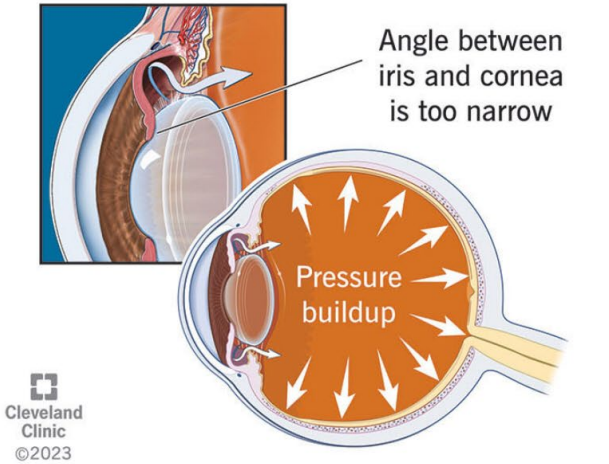
- Benzodiazepines can dilate pupils and potentially trigger acute angle closure glaucoma
- In narrow angle glaucoma, the space between the iris and cornea (the drainage angle) is already narrow
- Sudden and painful ocular emergency

Angle-closure glaucoma

Healthy eye



Closed-angle glaucoma



Cleveland Clinic

Diazepam (Valium)

- Fast onset 20-40 minutes
- Peak plasma 1hour 30 minutes
- 100% bioavailability (lipophilic)
- Long elimination ½ life (20-80 hrs –lots of active metabolites)
- Hepatic metabolism of drug and metabolites
- Caution in Narrow Angle Glaucoma

- 5-10 mg one hour before treatment

Lorazepam (Ativan)

- Lower lipid solubility slows brain redistribution and the sedative effect is longer (peak blood level 2 hrs)
- ½ life (12Hrs)
- Phase II hepatic metabolism to inactive metabolites excreted by the kidney, hepatic disease (hepatitis and cirrhosis) does not alter liver metabolism

- Caution in NARROW ANGLE GLAUCOMA

- 1-4 mg one hour before appointment

Triazolam (Halcion)

- Rapid onset (30 min) with peak blood level 75 minutes
- No active major metabolites (½ life 1.5-5.5 hours)
- Relies on the Liver P450 system for metabolism
- Caution in Narrow Angle Glaucoma
- Incremental dosing (.125 - .5 mg)

Midazolam (Versed)

- Oral syrup 2 mg/ ml
- Peak action/plasma level is 15- 30 minutes after ingestion
- ½ Life 1-4 hours
- 0.5-1 mg/kg po up to maximum of 20 mg in children
- Effective 75% of time as single agent

midazolam

generic

BLACK BOX WARNINGS

Appropriate Use

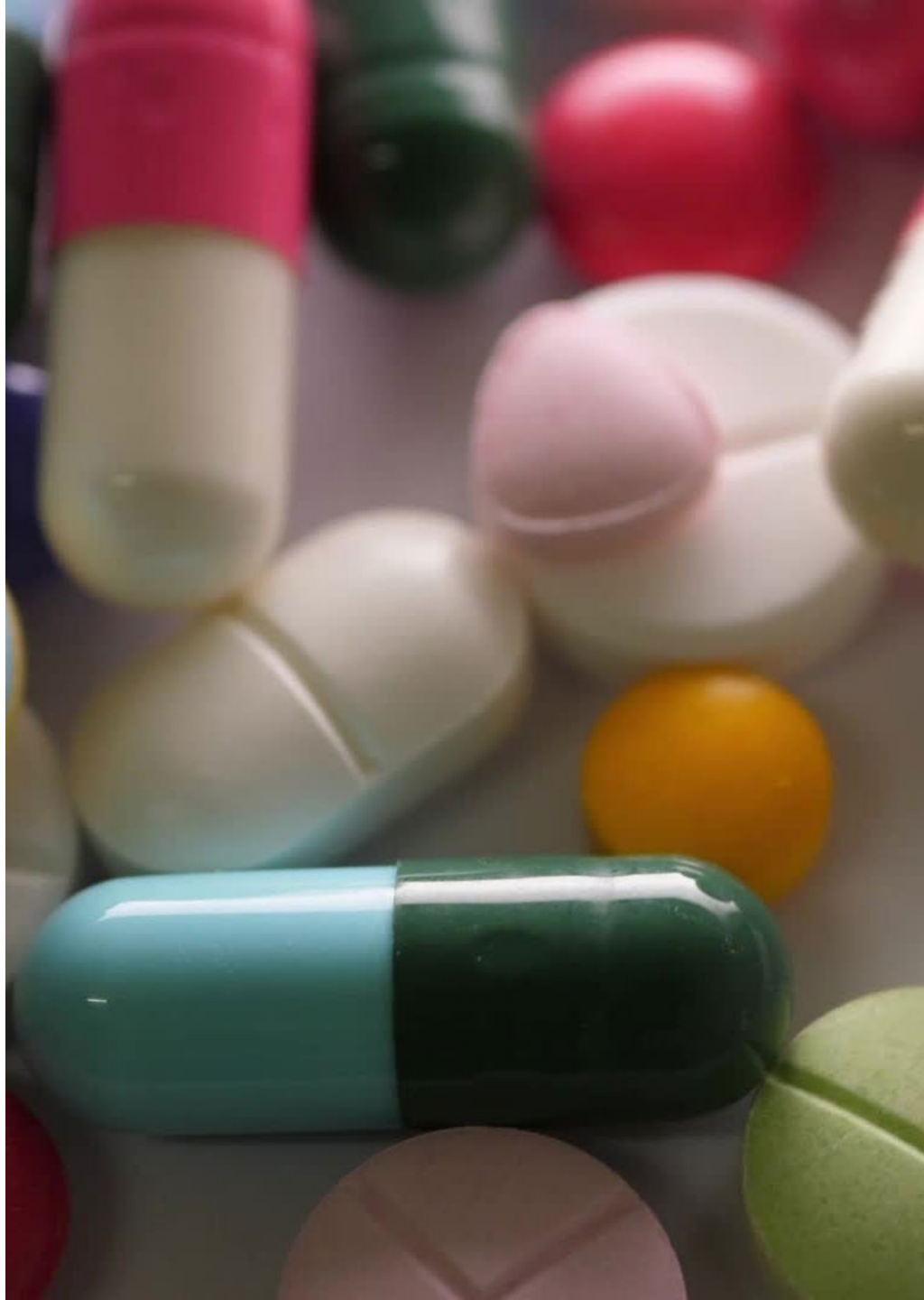
use only in hospital/ambulatory care setting w/ continuous resp./cardiac fxn monitoring, resuscitative drugs, appropriate ventilation/ intubation equipment, and personnel trained/ skilled in airway management; continuously monitor deeply sedated pediatric pts via 1 dedicated person other than practitioner performing procedure

Respiratory Depression/Arrest Risk

syrup assoc. w/ resp. depression, airway obstruction, desaturation, hypoxia, apnea, and arrest, especially w/ sedation use in noncritical care settings and most often in combo w/ other CNS depressants

Pharmacokinetics

- The movement of drugs into, through, and out of the body
- The time course of absorption, bioavailability, distribution, and excretion.
- The effect of the timing of multiple doses on the blood level of any drug considering all factors



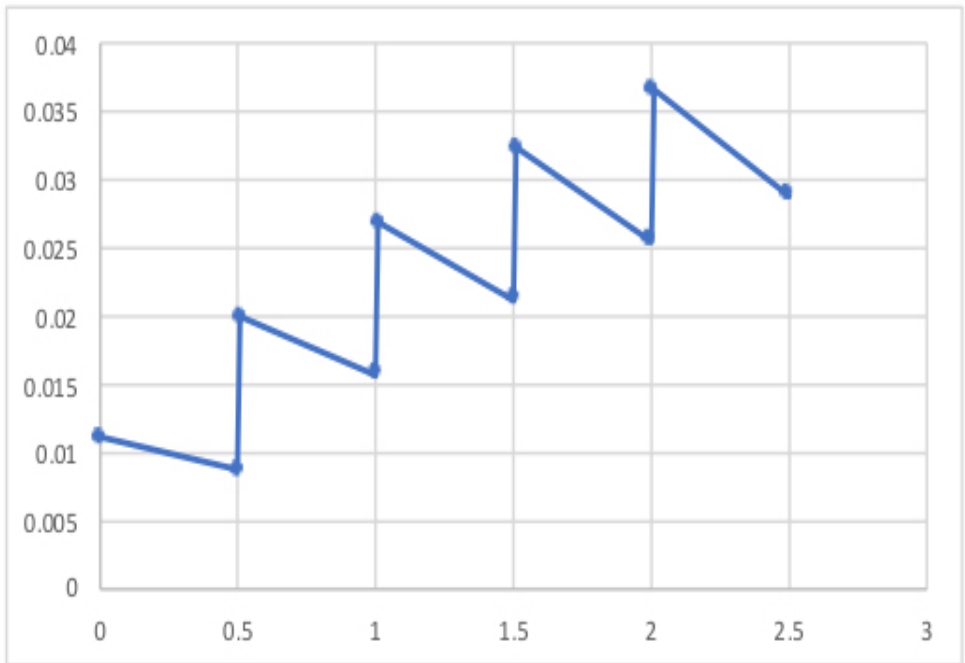
Pharmacokinetics of Triazolam

These graphs are created using Triazolam 0.5 mg doses administered Q 30 min for 5 doses.

The “normal” patient uses 150 lb and assumes normal clearance.

The “obese” patient uses 300 lb and assume a lower clearance. With obesity the calculated volume of distribution is larger due to lipophilic drug’s increased distribution into excess fat.

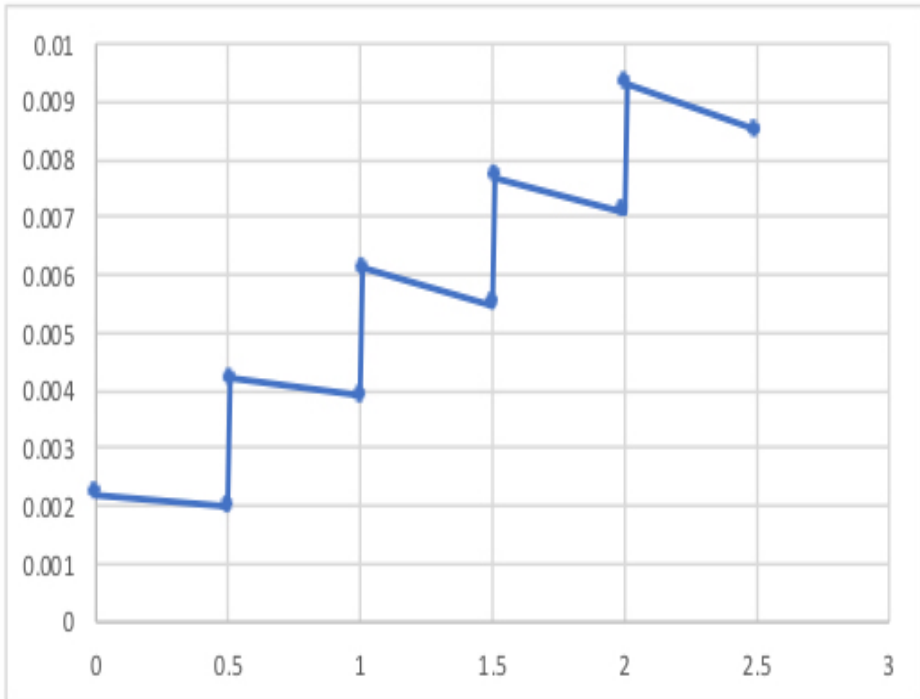
Normal										
Time (hr)	0	0.5	0.51	1	1.01	1.5	1.51	2	2.01	2.5
Conc (mg/L)	0.0111	0.00877	0.0199	0.0157	0.0268	0.0212	0.0323	0.0255	0.0366	0.0289



For Normal:
Higher initial concentration with the same dose than obese pt due to leaner body mass.
Accumulation from first to fifth dose is about 3 fold at the fifth peak and trough. This patient would likely experience adverse events during procedure while in the office.

Obese

Time (hr)	0	0.5	0.51	1	1.01	1.5	1.51	2	2.01	2.5
Conc (mg/L)	0.0022	0.002	0.0042	0.0039	0.0061	0.0055	0.0077	0.0071	0.0093	0.0085



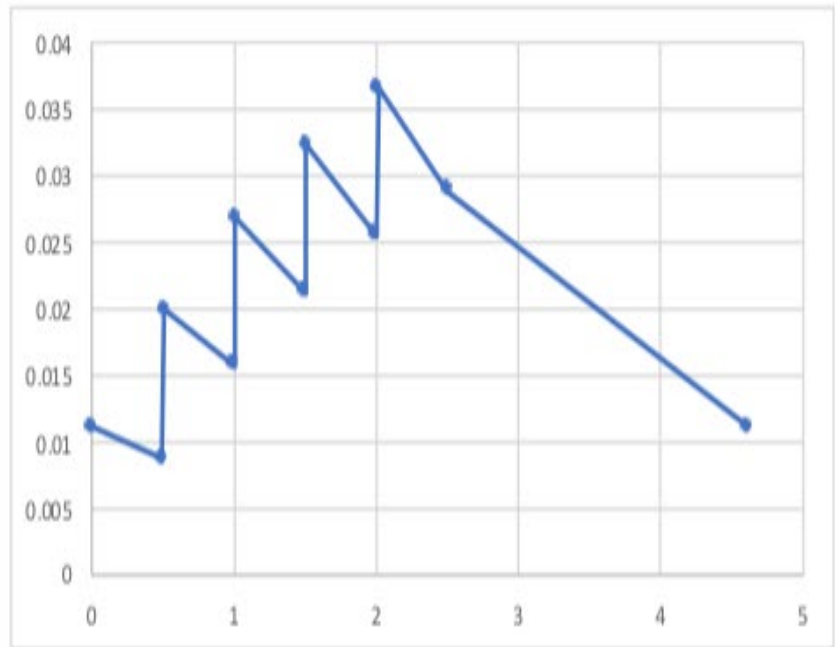
For Obese:
Lower initial concentration with the same dose than normal pt due to excess fat mass that increases distribution. Since increased distribution also increases half-life this results in greater accumulation by the fifth dose of more than 4 fold. This patient would be at a greater risk to experience cumulative adverse events after procedure and discharge.

For the normal patient it takes 2.6 h after the 5th dose to decline to concentration at the first dose

For the obese patient it takes 8.1 h after the 5th dose to decline to concentration at the first dose.

Normal

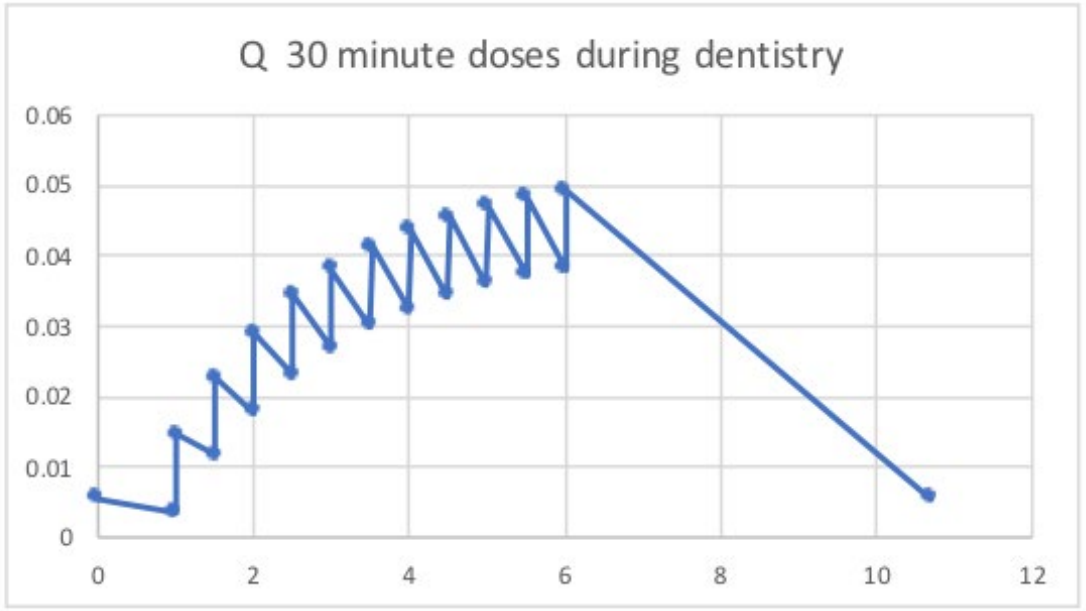
Time (hr)	0	0.5	0.51	1	1.01	1.5	1.51	2	2.01	2.5	4.61
Conc (mg/L)	0.0111	0.00877	0.0199	0.0157	0.0268	0.0212	0.0323	0.0255	0.0366	0.0289	0.0111



Triazolam blood levels

Therapeutic range	2-20
Toxic level	> 40

Halcion 0.5 mg every 30 minutes during procedure



For the concentration to return to the concentration achieved following the dose taken at home (considered safe when at home unsupervised) it would take

4.15 h after the dose at the 3 hour time from the home dose (1 hour into procedure)

4.44 h after the dose at the 4 hour time from the home dose (2 hours into procedure)

4.6 h after the dose at the 5 hour time from the home dose (3 hours into procedure)

4.7 h after the dose at the 6 hour time from the home dose (4 hours into procedure)


FILL-RITE
12 VOLT DC PUMP
15
FARM FUEL TRANSFER HOSE W/STATIC WIRE

Non benzodiazepines Anxiolytics/Hypnotics

- Zolpidem (Ambien) 5-10 mg
- Zaleplon (Sonata) 5-10 mg
- Eszopiclone (Lunesta) 1-3 mg
- All have 30 minute onset of action
- Flumazenil antagonizes all three

Histamine Blockers

- Promethazine (phenergan)
- Hydroxyzine (vistaril or atarax)
- Diphenhydramine (Benadryl)
- All can have anticholinergic side effects

Anti cholinergic side effects

- BLIND as a bat (dilated pupils/blurred vision)
- DRY as a bone (dry mouth an skin)
- RED as a beet (flushed)
- MAD as a hatter (agitated and confused)
- HOT as a hare (hyperthermia)
- And the HEART runs alone (tachycardia)

- More common in older patients with COPD and Urinary incontinence

Promethazine

- Antiemetic and sedative
- Does not produce unconsciousness or depress heart or respiration
- Extrapyramidal Reactions- Akathisia (restless)
- Acute Dystonia (facial grimacing, hyper extension of the neck, tongue protrusion)
- Parkinsonism (tremor)
- Tardive dyskinesia (late appearing involuntary movements of the face trunk and extremities)
- Dose is 12.5-50 mg one hour before treatment

Hydroxyzine

- Sedative and anti-emetic properties
- Clinical action 15-30 minutes after ingestion
- Additive effects to other sedatives
- Duration of action 3-4 hours
- Metabolized in liver and excreted in urine
- Low side effects (emergence delirium)
- Adult dose 25-100 mg 1hour pre-op
- Children .5-2mg/kg depending on additional drugs


ake Fores
ptist Health


nGenuity
1mV
II
ECG
BPM
106
SpO2
99 %
Low SpO2 Alarm 90%
CO2
EXP
34
mmHg
INS
2
20 Br/m
CO2
TIME
HR BPM
SpO2 %
NIBP mmHg
RESP Br/m
ETCO2 mmHg
09:12 68 S 97 142/ 89(106) 30 E ---
09:17 70 E 96 144/ 81(104) 23 E ---
09:22 67 E 96 143/ 83(99) E ---
09:28 65 E 97 139/ 82(105) 23 C 25
09:33 92 E 98 153/ 91(113)
MAP mmHg
153/ 91 (113)
SYS
DIA
CYCLE 0:05:00
AGE 7:52
ET 0:00:49
V000 - NO ADMIT
Adult
APR-24-25
09:41:23
On/Off
Stand By
NIBP
NIBP Cycle/Stat
Trend
Freeze
Print
Default
Silence
CRITICARE
TECHNOLOGIES, INC.
HENRY SCHEIN

Monitoring

- Pulse – Heart Rate and Rhythm
- Blood Pressure
- Electrocardiography- EKG
- Ventilation- End Tidal CO_2 or Pre-cordial/tracheal stethoscope
- Pulse Oximeter- SpO_2
- Temperature (when indicated)

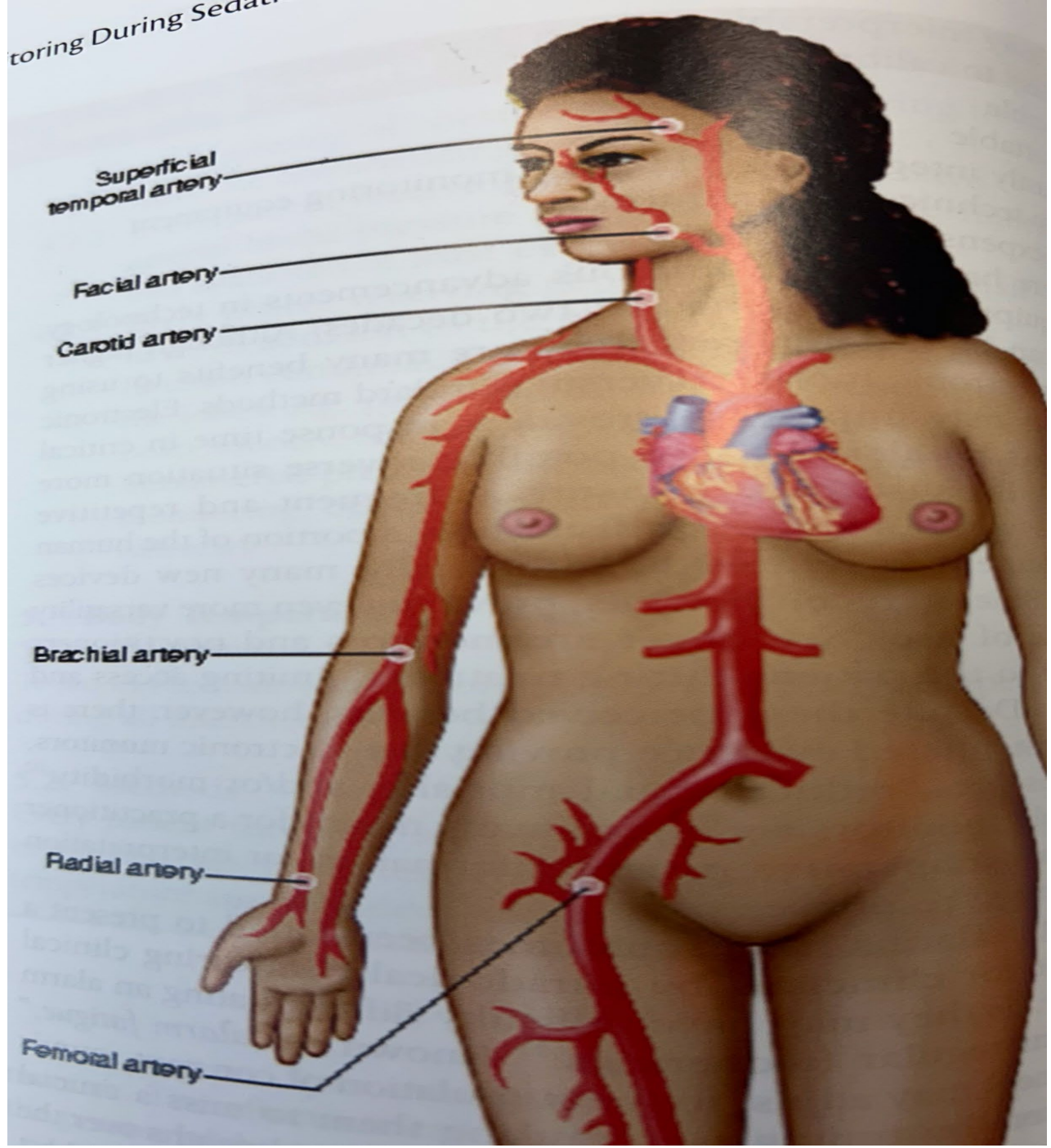
Pulse and Blood Pressure

Figure 5.4 Vital signs monitor, includes ECG (*arrow*).

Palpation of Blood Pressure in Emergency

- Radial pulse the SBP is at least 80 mm Hg
- Brachial pulse the SBP is at least 70 mm Hg
- Carotid pulse the SBP is at least 60 mm Hg

toring During Sedat



Blood pressure cuff problems

- Large arms- appropriate cuff, substitute lower arm for upper
- Trouble with arms then use the lower leg
- Be aware not to take BP on the mastectomy side
- Be aware not to take BP over dialysis site

Electrocardiography (EKG)

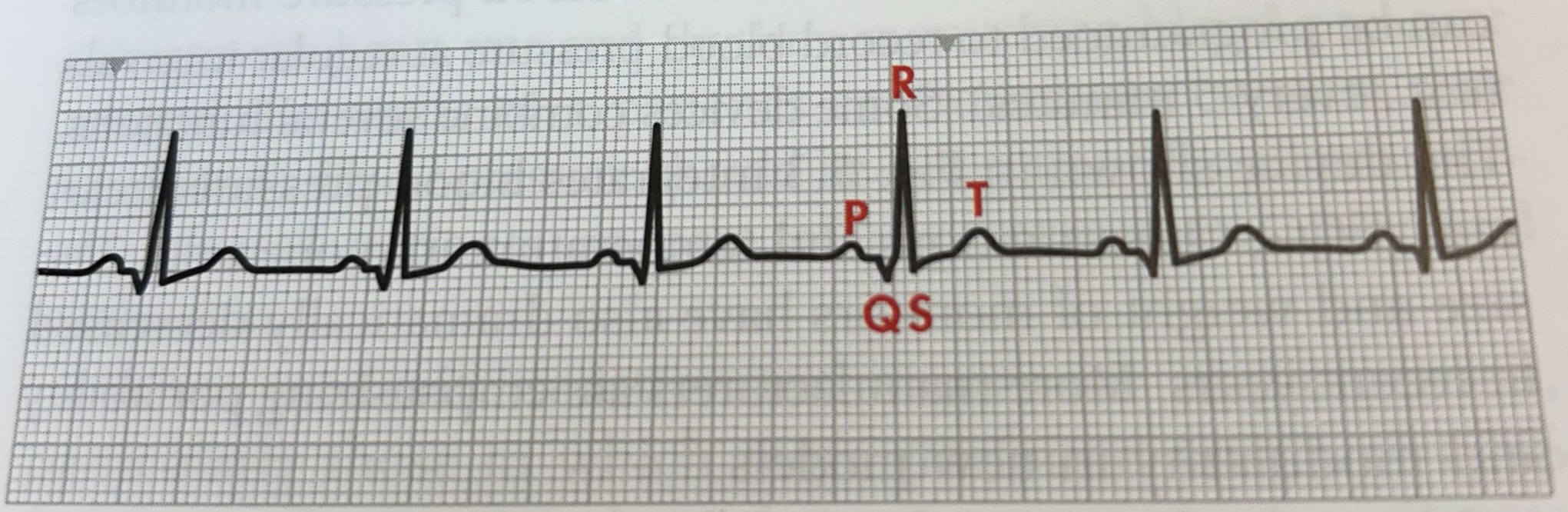


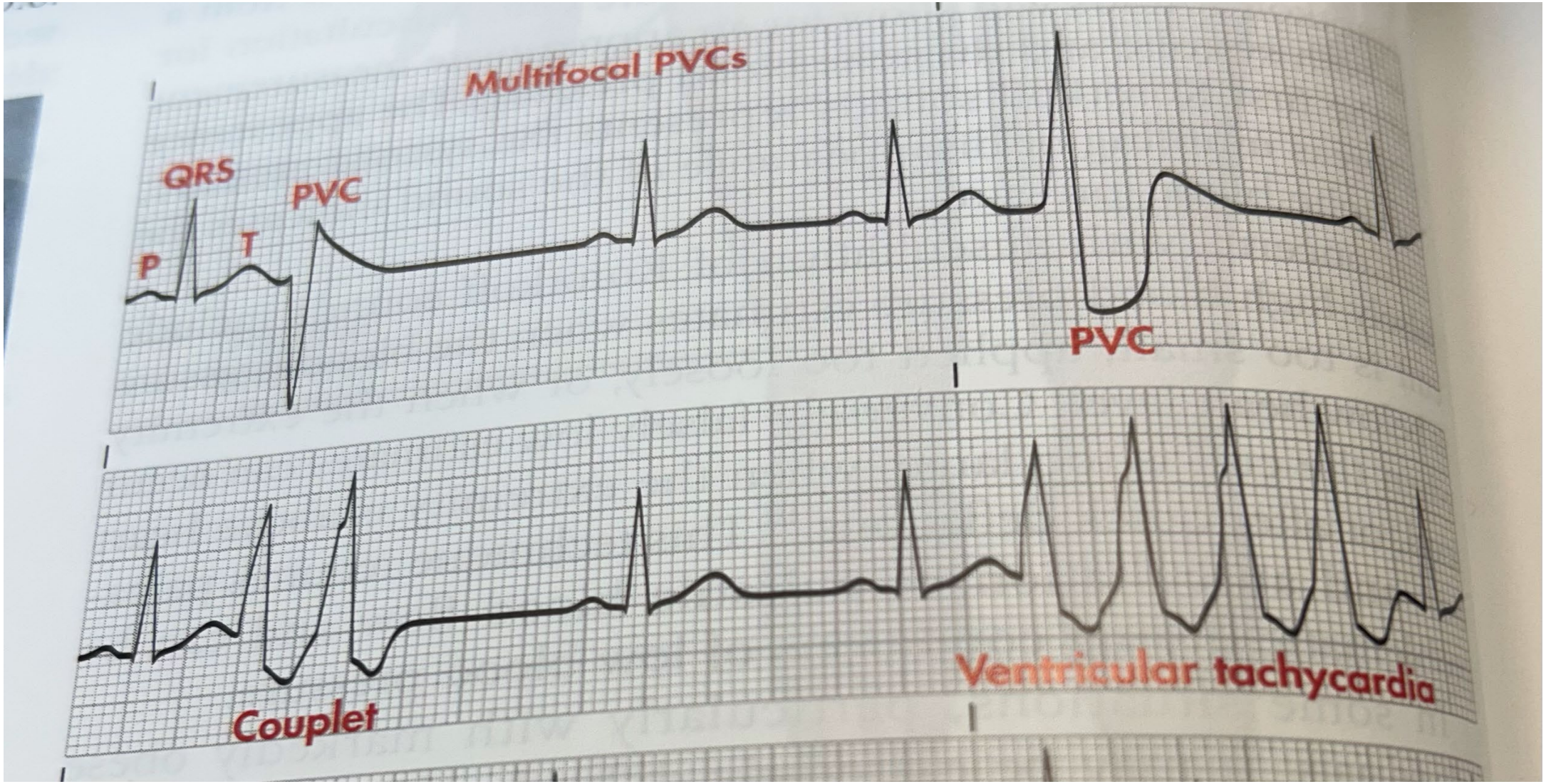
Figure 5.5 Normal sinus rhythm. (From Lewis SL et al: *Medical-surgical nursing: assessment and management of clinical problems*, ed 7, St Louis, 2007, Mosby.)


RA
LA
LL

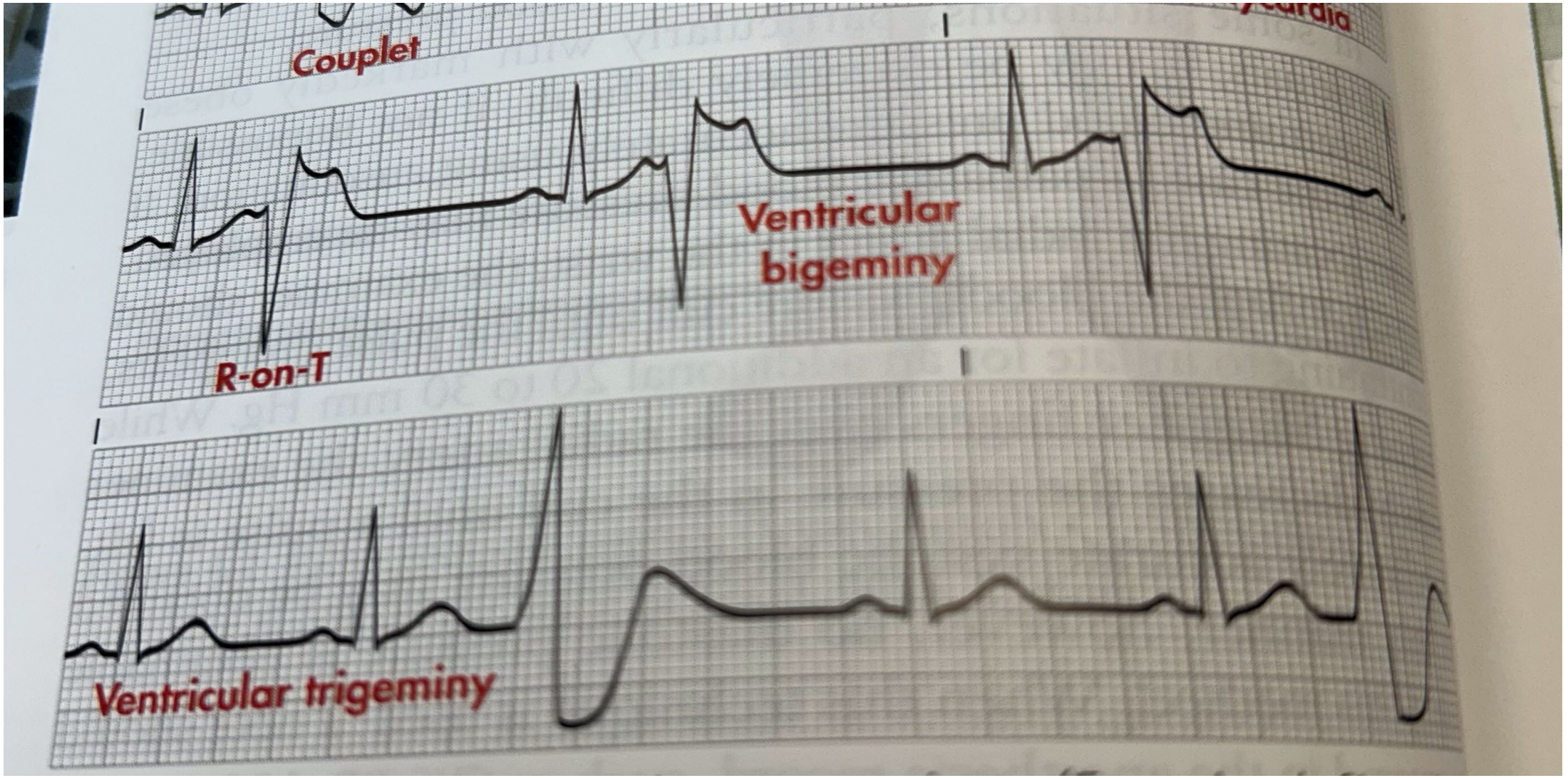
Modified Lead II EKG

- Right Arm (white)
- Left Arm (black)
- Low left chest (red)

Premature Ventricular Contractions



Premature Ventricular Contractions



3 common causes of dysrhythmias

- Hypoxia leading to myocardial ischemia
- Endogenous catecholamines (inadequate pain or anxiety control)
- Hypercapnia (poor ventilation)

Ventilation

- Rate of breathing
- Quality of breath sounds

- Pre-tracheal
- Pre-cordial
- Quite whoosh
- Wheezing, snoring, gurgling, crackling of fluid
- Quite !!! ?APNEA?

Foreign matter(fluid) in the Sedated Airway

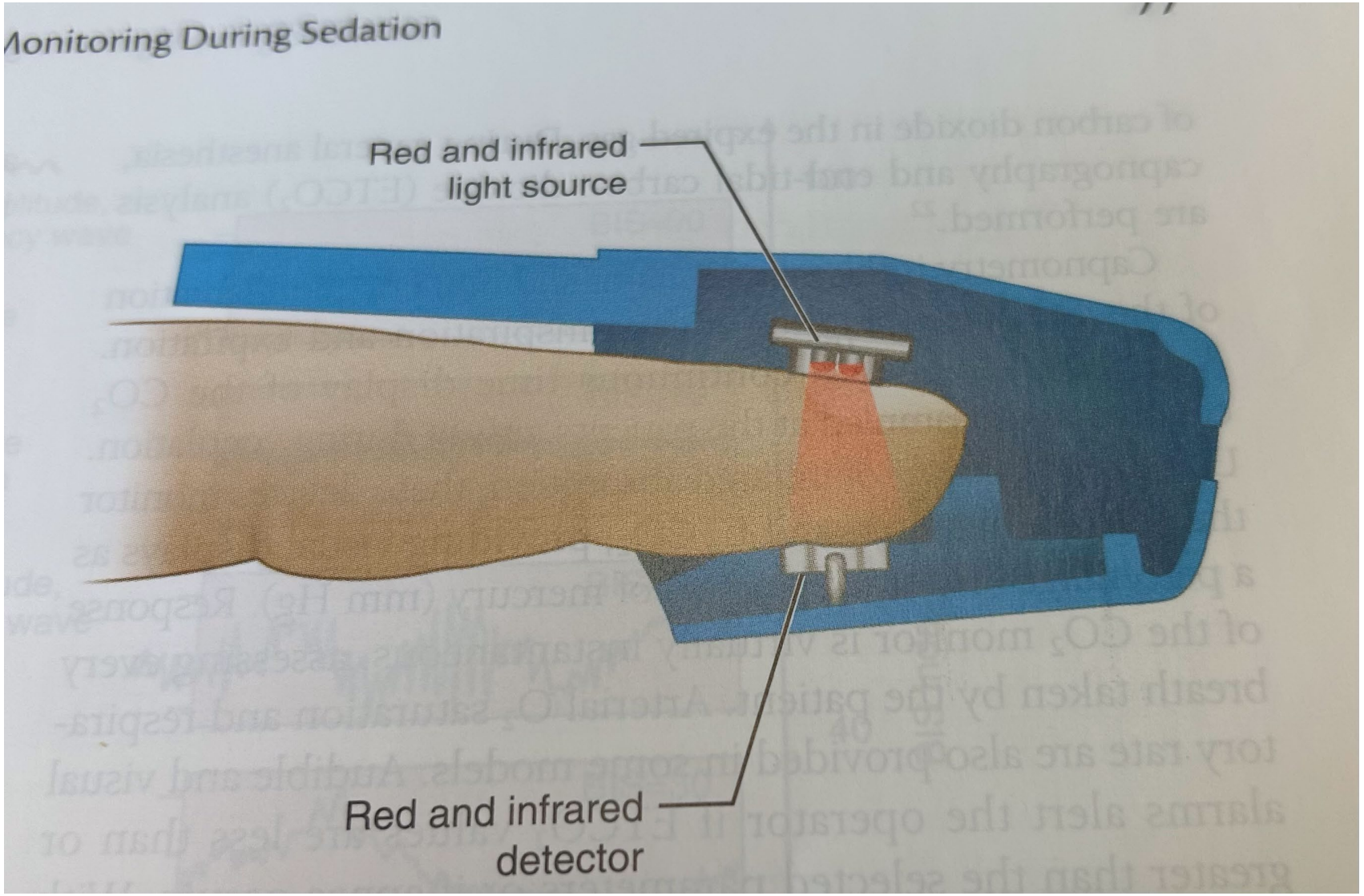
- Patient coughs or you suction with tonsil tip
- Patient aspirates
- Complete or partial airway obstruction
- Laryngospasm

Causes of Partial Airway Obstruction

Table 5.4 Causes of Partial Airway Obstruction

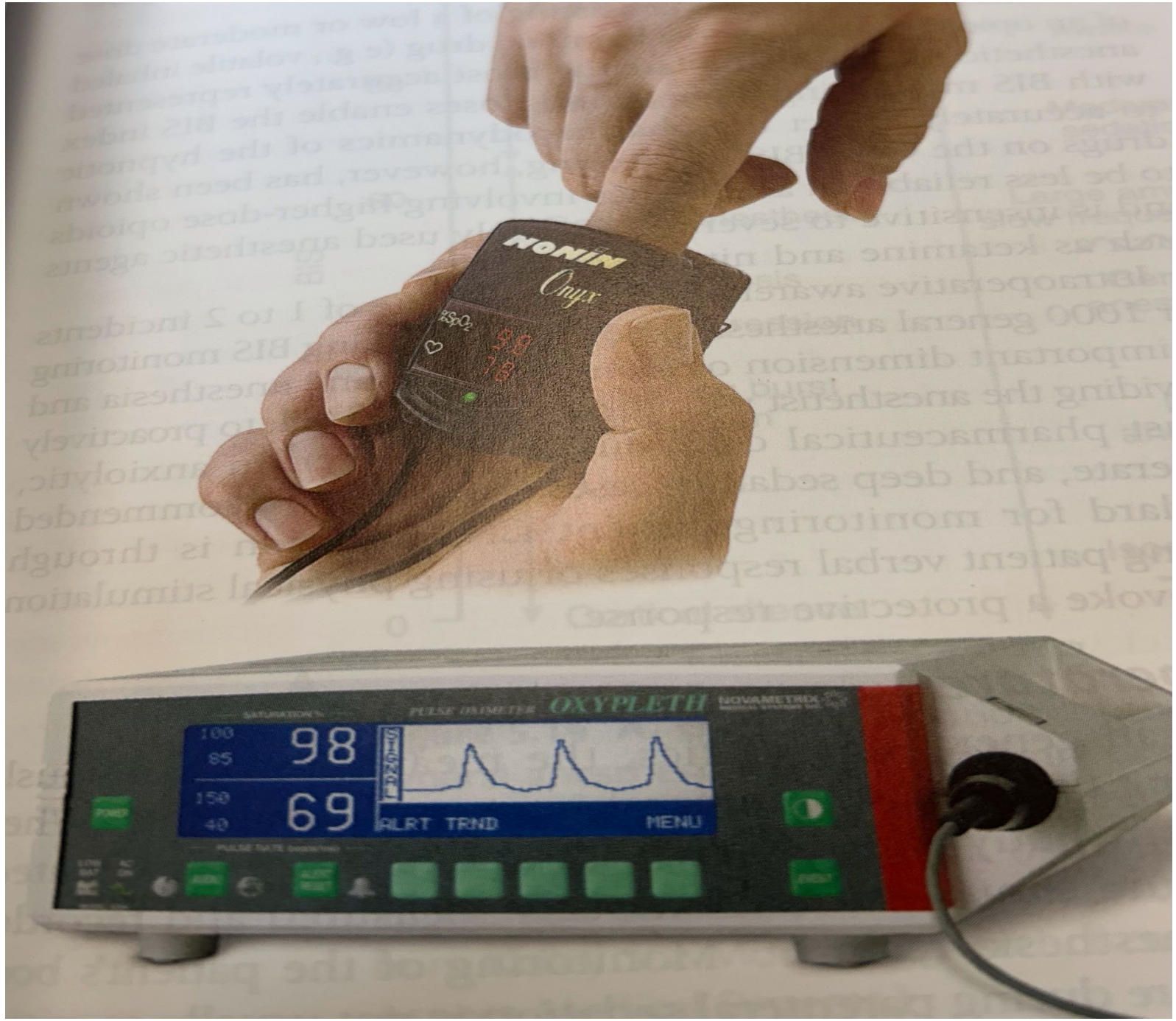
Sound Heard	Probable Cause	Management
Snoring	Hypopharyngeal obstruction by the tongue	Repeat head tilt–chin lift
Gurgling	Foreign matter (blood, water, vomitus) in airway	Suction airway
Wheezing	Bronchospasm	Bronchodilator (via inhalation, only if conscious; IM, IV if unconscious)
Crowing (high-pitched)	Laryngospasm (partial)	Suction airway; + pressure O_2

Pulse Oximetry



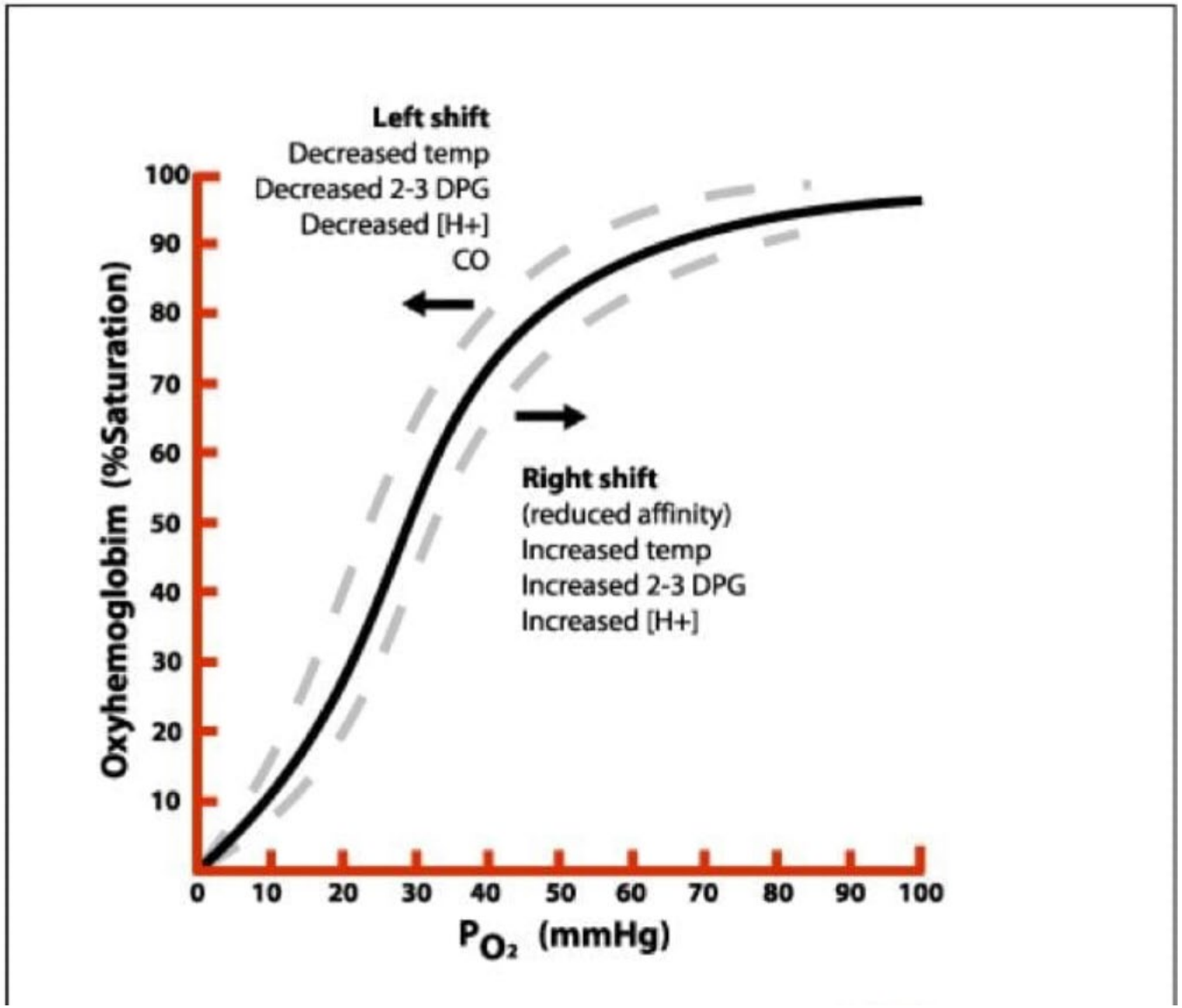
Pulse Oximetry

- Detects and quantifies Hypoxemia
- Oxygen Saturation % of arterial blood is measured
- Normal on room air is 94-99%
- The ratio of oxygenated to reduced hemoglobin is determined by absorption spectrophotometer, two wavelengths of light are passed thru tissue, hemoglobin and oxygenated hemoglobin absorb light different and are calculated %.
- The pulse is also detected and displayed


NONIN
Onyx
OXYPLETH
NOVAMETRIX
100
85
98
150
40
69
ALRT TRND
MENU

Inaccurate SpO2 Readings

- Ill fitting probe
- Cold extremity (put in head rest cover and wrap with towel)
- Motion artifact/shivering (warm patient in blanket)
- Finger nail polish (ask patient to remove)
- BP Cuff on same arm


Left shift
Decreased temp
Decreased 2-3 DPG
Decreased [H+]
CO
Right shift
(reduced affinity)
Increased temp
Increased 2-3 DPG
Increased [H+]
Oxyhemoglobim (%Saturation)
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
P_{O_2} (mmHg)

End Tidal CO2 (Capnography)

- Monitoring exhaled CO2 along with qualitative clinical signs gives confidence in adequate ventilation
- In the open systems used with sedation the Capnography gives early warning of decreased ventilation
- The important quantification is breaths per minute or obstruction


1mV
II
ECG
BPM
106
SpO2
99 %
Low SpO2 Alarm 90%
CO2
CO2
EXP
34
mmHg
INS
2
20 Br/m
CO2
TIME
HR BPM
SpO2 %
NIBP mmHg
RESP Br/m
ETCO2 mmHg
09:12 68 S 97 142/ 89(106) --- ---
09:17 70 E 96 144/ 81(104) 30 E ---
09:22 67 E 96 143/ 83(99) 23 E ---
09:28 65 E 97 139/ 82(105) 40 E ---
09:33 92 E 98 153/ 91(113) 23 C 25
MAP mmHg
CYCLE 0:05:00
AGE 7:52
ET 0:00:49


Matrx

Alarm Fatigue

- Alarms need to be customized for patients with special needs
- Turning alarms off is a mistake
- Set the Alarm to an acceptable parameter and loudness

Records

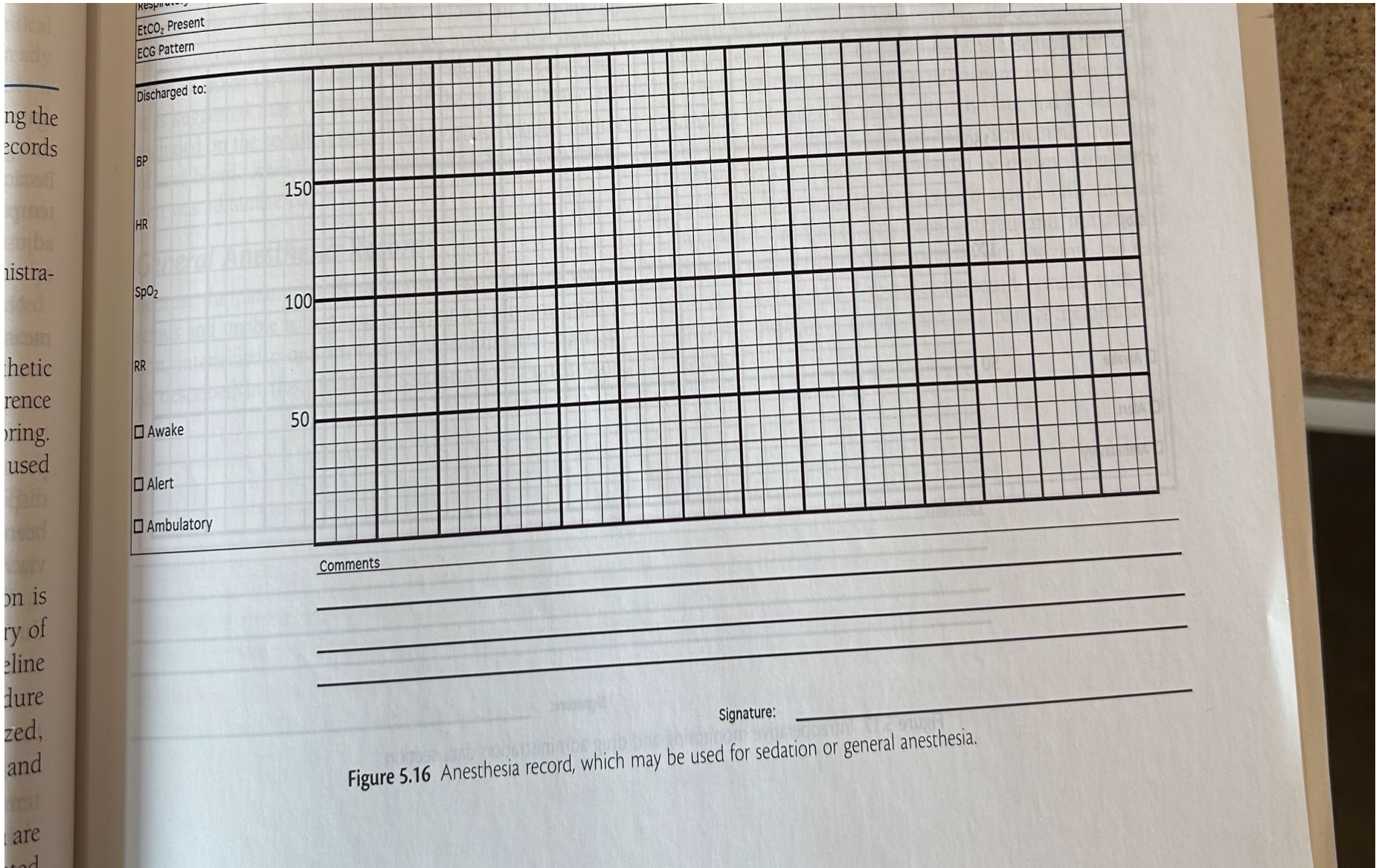


Figure 5.16 Anesthesia record, which may be used for sedation or general anesthesia.

Nitrous Oxide

- Produces analgesia
- A 50%-50% mixture is equivalent to 10 mg Morphine
- Current fail safe Nitrous administration systems make sure adequate Oxygen is administered
- Diffusion Hypoxia is real and requires a 5 minute oxygen flush

Nitrous Oxide Caution

- Nitrous oxide “dreaming”
- Cases of alleged operator sexual misconduct
- Never administer nitrous and/or sedation without a chaperone (preferably an assistant of the opposite sex)
- Most of these accusations happen at concentrations greater than 50% (almost all allegations involve high concentrations)

Adverse Drug Reactions

- No drug ever exerts a single action
- No clinically useful drug is entirely devoid of toxicity
- Potential toxicity of a drug rests in the hands of the user
- Will occur unexpectedly

Emergency Preparedness

- Train all office staff in BLS
- Invite EMS staff to your office to become familiar
- Designate office staff responsible for activating EMS (911)
- Have emergency drills once a quarter

Preparation for Office Emergencies

- Doctor and/or assistant –evaluate patient (monitors) declare emergency (Help)

- Staff on hearing emergency (Help)- bring emergency drug kit, portable oxygen/bag valve mask/airways, AED

- Staff- monitor vital signs, assist with BLS, activate 911, prepare to meet EMS and allow access to patient, prepare emergency drugs, keep written timeline record during emergency.


Nobel
surgilube
AND EARS.


RUSCH
use once


i-gel O2™
Resus Pack
50-90kg 4
110 – 200
en Supraglottic airway resuscitation pack
fr Kit réanimation voie aérienne supraglottique
da Reanimationspakket mit supraglottischem Airway
es Kit control de vía aérea con cánula supraglótica
pl Kit Via Aérea Supraglótico Para Reanimação
it Kit di rianimazione con dispositivo sovraglottideo
no i-gel O2 resus pack, supraglottisch luchtwegmanagement device
fi Lungeredningspakke for supraglottisk luftvei
sv Supraglottala kavitetema återupplivningskit
cs Supraglottisk luftväg återupplivningskit
sl Supraglottisk luftvej, Resus pack
el Πακέτο ανάνηψης υπεργλωττιδικών αεραγωγών
lt Gaivinimo įrankinys su virš gerkliniu vamzdeliu
ru Zestaw do nadgłośniowego udrażniania dróg oddechowych
bg Надгортанный воздуховод с дополнительным кислородным портом
hu Supraglottická sada pro resuscitaci dýchacími cestami
sl Szupraglottikus légút újraélesztő csomag
lv Supraglotiční pripomoček za vzdrževanje proste dihalne poti
et Supraglotāls reanimācijas komplekts
ba Supraglotilise hingamistee komplekt
Супраглотичен въздуховод комплект за реанимация на дихателни пътища
sr Reanimacioni paket za supraglotički disajni put
ro Set de resuscitare supraglotic pentru căile respiratorii
sk Súprava pre supraglotickú resuscitáciu vzdušnými cestami
hr Reanimacijski paket za supraglotički dišni put
tr Supraglotik hava yolu resüsitasyon paketi
ja i-gel O2 レサシパック
zh-Hant 聲門上通氣道急救包
zh-Hans 声门上通气道急救包
ar مجموعة انعاش مجرى هوائي فوق المزمار
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REF KLTSD423
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Broselow-Luten™
green
#3
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2026-10-01
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4 - 5 ft
122 - 155 cm
STERILE EO
40 - 55 ml
US: Rx only
Made in Malaysia
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Lubricating Jelly
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ultra-lite
SUCTION INTERVAL
(SECONDS)
ON
OFF
INT
CONT
BATTERY
CHARGE
MODE
MIN
MAX
VACUUM
ADJUST
Model 326/326M
Portable Continuous & Intermittent Suction System
FOR APPROXIMATION MEASUREMENTS ONLY

Emergency Record

ofs Oral & Facial Surgery

Sheffield AL 35660

Time Event Recognized _____ Location _____ Witnessed: ☐ Yes ☐ No

Age _____ Weight _____ Height _____ 911 called? ☐ Yes ☐ No Time _____ ☐ AM ☐ PM

Conscious at Onset? ☐ Yes ☐ No Monitoring at Onset: ☐ ECG ☐ BP ☐ Pulse Ox ☐ Capnography

Brief Medical History: _____

Allergies: ☐ None ☐ _____

Pertinent Medications Given:

Patient Name: _____

DOB: _____

Doctor(s) present: _____

Staff present: _____

Time In-Office Resuscitation Ended: _____ ☐ AM ☐ PM

Airway/Ventilation

Breathing: ☐ Spontaneous ☐ Apneic ☐ Agonal ☐ Assisted

Ventilation: ☐ Nasal Cannula ☐ Bag-Valve-Mask ☐ Endotracheal Tube ☐ Other: _____

Time of First Assisted Ventilation: _____

Intubation: Time: _____ Size: _____

By Whom: _____

Confirmation: ☐ Auscultation ☐ Exhaled CO_2 ☐ Other: _____

Circulation

Time Chest Compressions Started: _____

Compressions: ☐ None ☐ Manual ☐ Device: _____

1st Rhythm Requiring Compressions: _____

1st PULSELESS Rhythm : _____

AED Applied: ☐ Yes ☐ No Time _____ ☐ AM ☐ PM

Defibrillator Type(s): _____

Bolus **Dose / Route** **Infusion Dose/cc per hr**

Time (5 min Increments)	Breathing: Spontaneous	Breathing: Assisted (✓)	Pulse: Spontaneous	Pulse: Assisted (✓)	BP	Rhythm	Defibrillator Type AED/Manual	Joules	Time (Exact Time)	Drug	Dose	IV Fluid	Comments i.e.: Response to Interventions

Recorder Printed Name: _____

Date: ____/____/____

Page ____ of ____ ☐ Originial ☐ Copy for EMS

☐ Mark Millican DMD, MD ☐ Chris Nestor DMD, MD ☐ J. Frederick DMD, MD

Provider Signature: _____ Date: ____/____/____

Essentials of 911 call

- Give doctor’s office address, phone number, and your name
- Tell them what has happened (suspected MI or Stroke)
- Patient’s Age
- Conscious or unconscious?
- Is patient breathing?
- Assistance being provided: CPR, Rescue Breaths, Drug intervention, AED
- Stay on the line until you are told to hang up

Drugs: The Basic Eight

- Injectable:
- Epinephrine
- Diphenhydramine (Benadryl)
- Antagonists- Flumazenil (benzodiazepines) and Naloxone (opiates Now comes as a nasal spray)

Drugs: The Basic Eight

- Non-injectables:
- Albuterol (metered dose inhaler – bronchodilator)
- Nitroglycerin (vasodilator sublingual tablets)
- Aspirin (chewable thrombolytic)
- Glucose (orange juice, sugar, insta glucose)

Drugs the Basic Eight

- Oxygen- E cylinders or a monitored central Nitrous/Oxygen system
- Self filling Bag-Valve Mask with supplemental oxygen port
- Masks and airways
- Tonsil tip suction and auxiliary suction apparatus
- An E cylinder has 680 L of O2 (lasts 30 min-1 hr in emergency)

Epinephrine

- For life threatening allergic reactions and bronchospasm
- Peds pre-loaded syringes (1:2000) .15mg for 15-30 kg
- Adult pre-loaded syringes (1:1000) .3 mg for 30 kg up
- Comes also as 1 ml ampules 1:1000
- Neffy spray 2mg epi Intranasal (pt 15 kg and up –can repeat)

FDA APPROVED

epinephrine nasal spray (neffy)


▲open
Rx only
NDC 76329-3318-1
STOCK NO. 3318
Luer-Lock Prefilled Syringe
EPINEPHRINE
Injection, USP
1 mg/10 mL
(0.1 mg/mL)
1 mg / 10 mL (0.1 mg/mL)
FOR INTRAVENOUS USE
PROTECT FROM LIGHT
Single-dose. Discard unused portion.
LUER-JET™ LUER-LOCK PREFILLED SYRINGE
Auvi-Q®
epinephrine injection, USP
0.15 mg auto-injector
NDC 60842-022-02
Rx Only
Pull device up from this case
(01)00351662166215
(17)260112
(21)8942226529
(10)000010055522
RX ONLY
SEE MANUFACTURE'S INSERT
DISTRIBUTED BY HF ACQUISITIONS CO., LLC
MUKILTEO, WA 98275
For single-dose injection. Refill prescription after use.
FOR ALLERGIC EMERGENCIES
in patients weighing 33 lb to 66 lb
Instructions for use found inside on device
FRONT
NDC 54288-103-01
Epinephrine Injection, USP
1 mg/mL
Dilute before Intravenous
Intraocular use.
For Intravenous Infusion
Intramuscular, Subcutaneous
Intraocular Use
Single-Use Ampule
CONTAINS NO SULFITES
OR PRESERVATIVES
Auvi-Q®
epinephrine injection, USP
0.3 mg auto-injector
NDC 60842-023-01
Rx Only
Pull device up from this case
(01)00351662132012
(17)250827
(21)28558641756
(10)000009775845
RX ONLY
SEE MANUFACTURE'S INSERT
DISTRIBUTED BY HF ACQUISITIONS CO., LLC
MUKILTEO, WA 98275
For single-use injection. Refill prescription after use.
FOR ALLERGIC EMERGENCIES
in patients weighing over 66 lb
Instructions for use found inside on device
FRONT

Diphenhydramine (Benadryl)

- Management of delayed allergic response, definitive management of acute allergy
- Liquid 12.5 mg/5cc
- Tablet 25 mg
- Injection 50 mg/ml (takes 30 minutes to work IM)


NDC 67457-124-10 10 mL
diphenhydrAMINE
Hydrochloride
Injection, USP
500 mg/10 mL
(50 mg/mL)
For Intravenous or
Intramuscular Use
HIGH POTENCY
Mylan
Rx only
Multi-Dose Vial
Sterile. Pyrogen-Free.
Each mL contains: Diphenhydramine Hydrochloride
50 mg, Benzethonium Chloride 0.1 mg, as a germicidal
agent in Water for Injection. The pH may have been

Intramuscular Injections

- Deltoid injection absorb 20% faster into the central vascular system
- Easy access
- Can only accommodate 4 cc injected

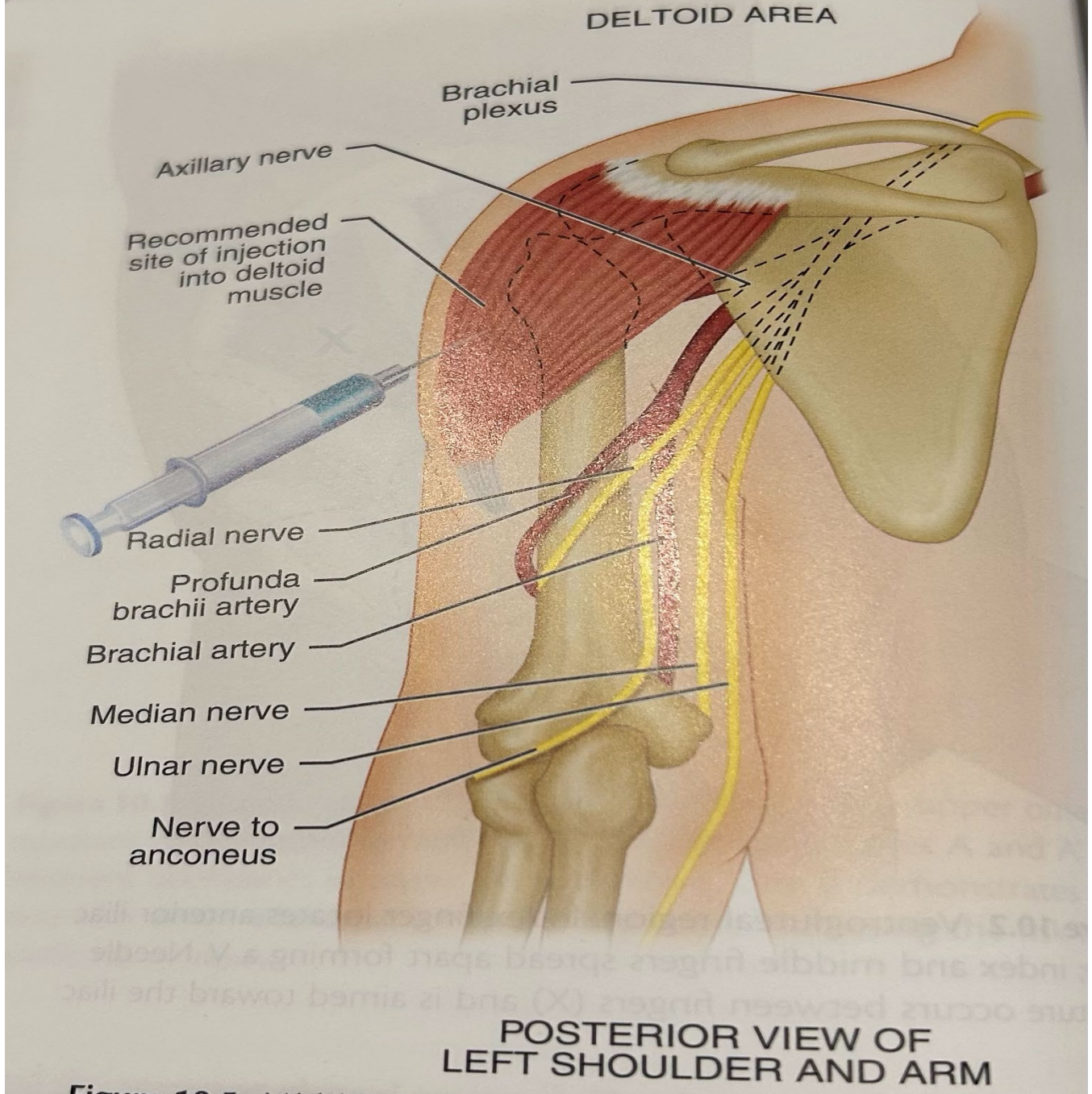


Figure 10.5 Middeltoid injection site in upper third of arm.

Figure 10.6 Area to be injected is grasped with one hand, holding tissue taut, while the syringe, held in a dartlike grasp, is inserted to the proper depth. (From Malamed SF: *Medical emergencies in the dental office*, ed 7, St Louis, 2015, Elsevier Mosby.)

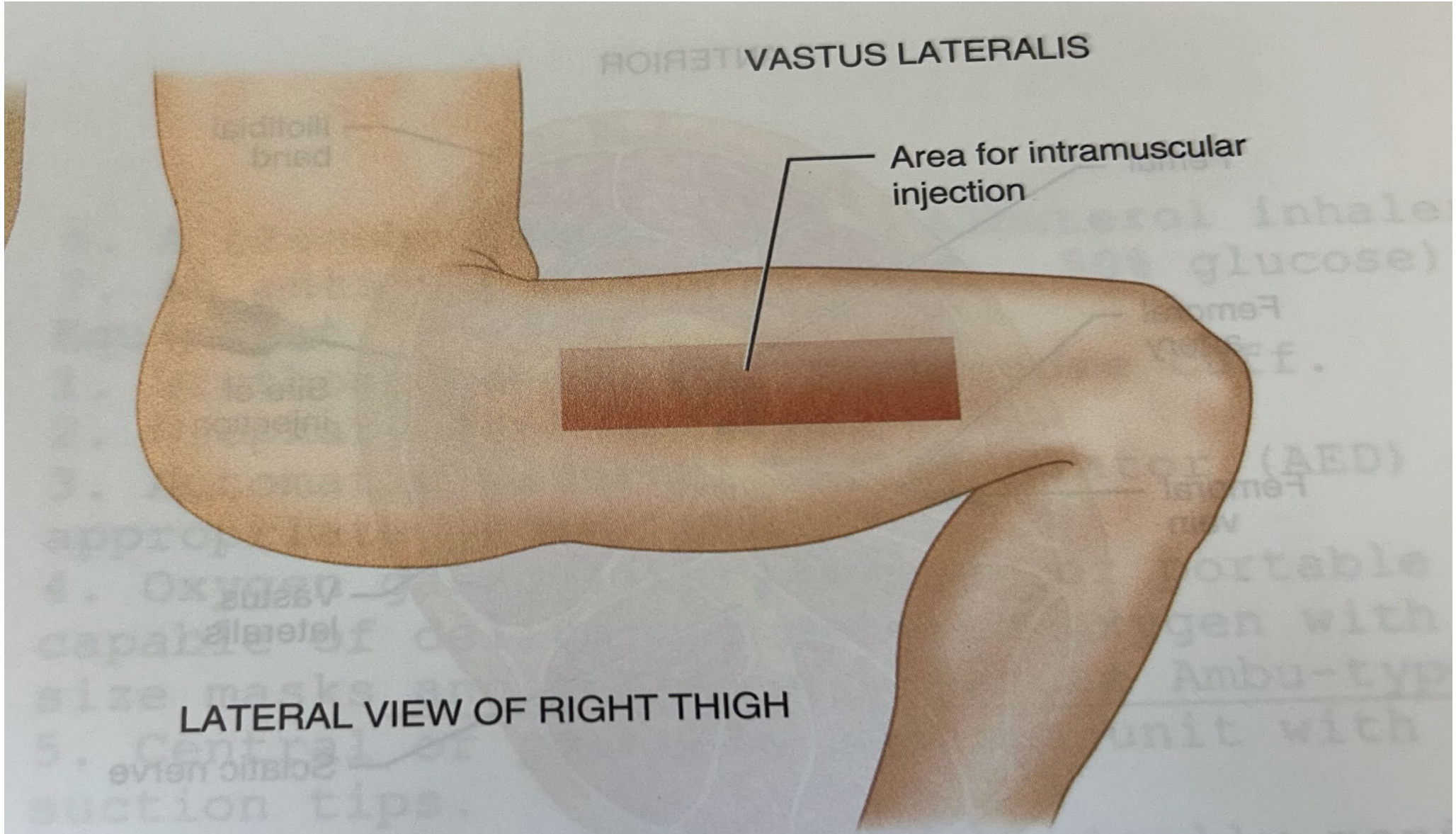
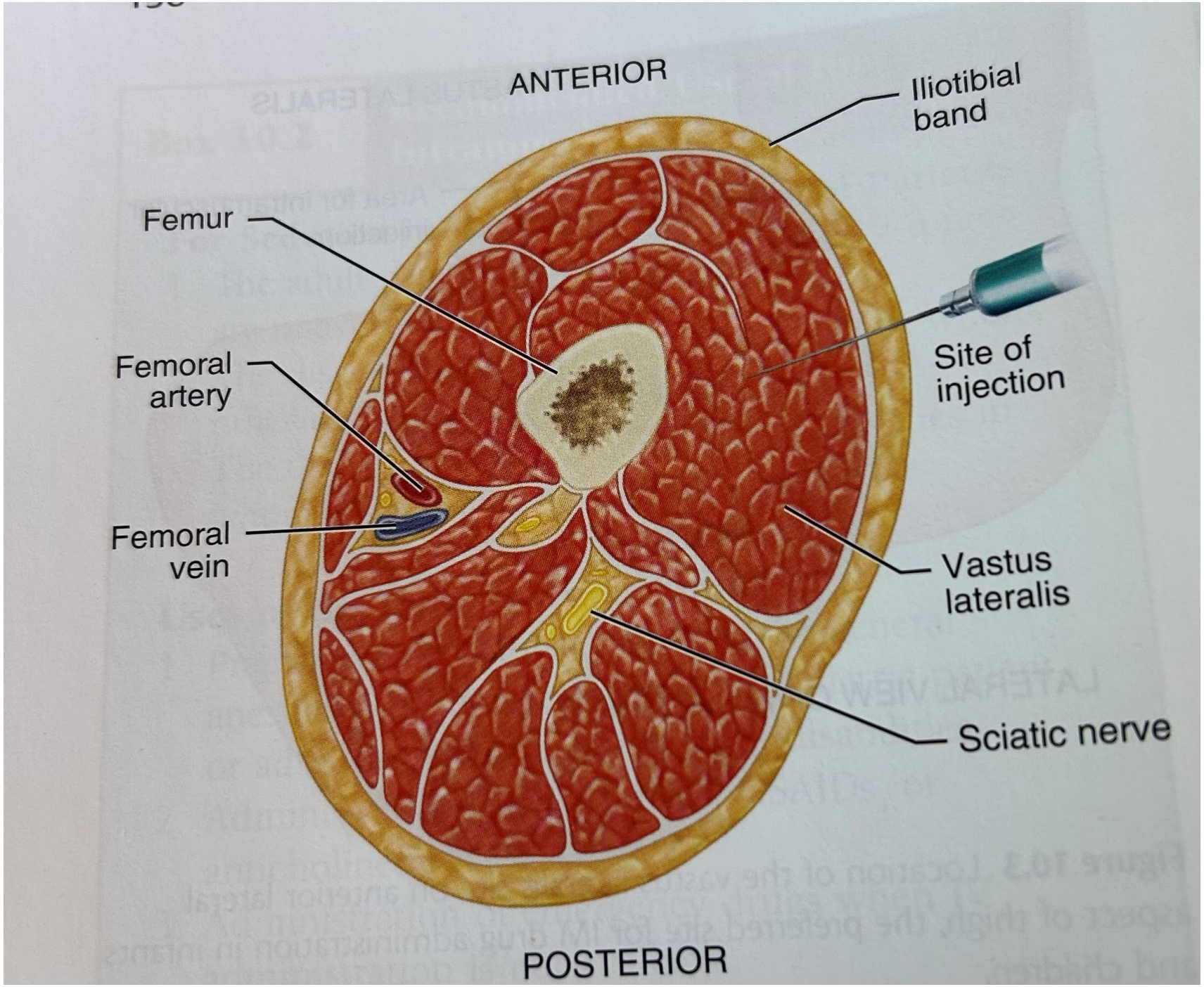


Figure 10.3 Location of the vastus lateralis site on anterior lateral aspect of thigh, the preferred site for IM drug administration in infants and children


ANTERIOR
Iliotibial band
Femur
Femoral artery
Femoral vein
Site of injection
Vastus lateralis
Sciatic nerve
POSTERIOR

Antagonist – Flumazenil (Romazicon)

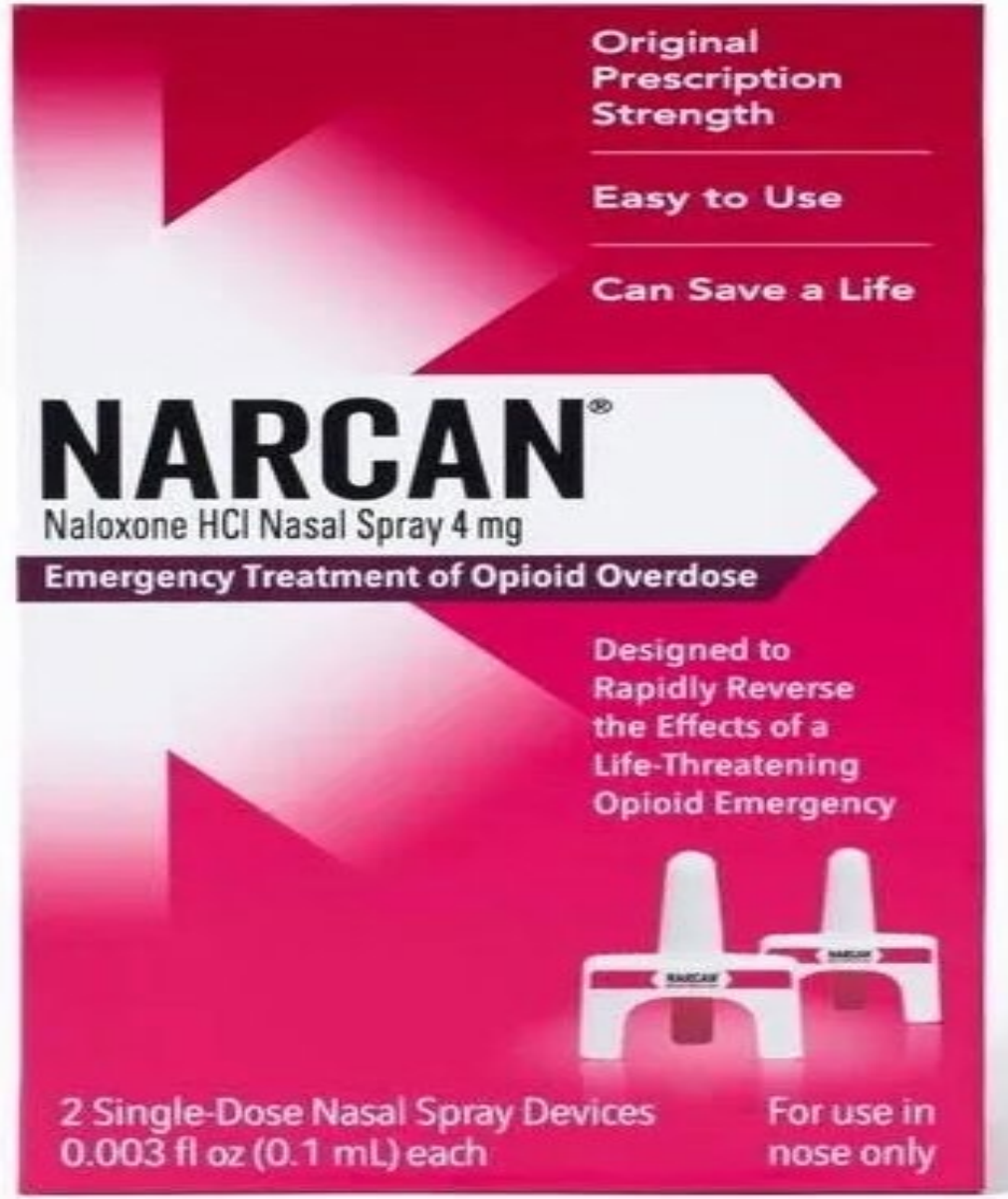
- For Reversal of Benzodiazepines
- Comes .1mg/ml
- .2 mg IV over 15 seconds, .5mg over 30 seconds up to 3 mg
- Slow responders may need up to 5 mg
- Duration of action only 20-50 minutes (so re-sedation risk!)

- In a pinch with no IV, .2 mg -2cc intranasal


5 mL
DIN 0224956
Code 2630
Flumazenil Injection
0.1 mg/mL 0.5 mg/5 mL
IV
Sterile
Fiole Multidose Vial
Discard on/Jeter le :
SANDOZ

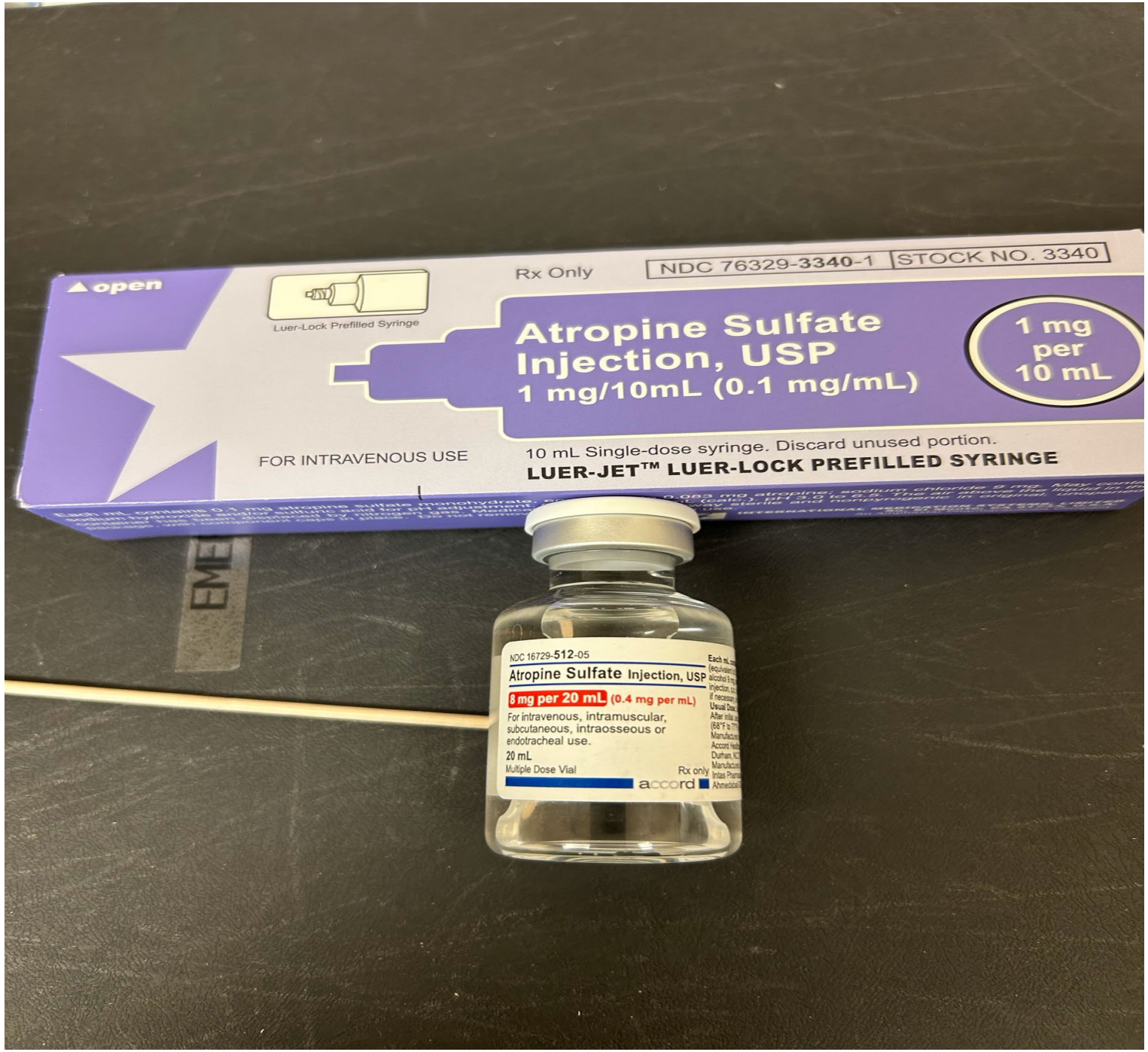
Naloxone (Narcan)

- Opiate Antagonist
- Comes as injectable (.4 mg/ml) and nasal spray
- Adult (administer .1 mg every 3 minutes up to 2mg)
- Child 0.01 mg / kg starting dose


Original
Prescription
Strength
Easy to Use
Can Save a Life
NARCAN®
Naloxone HCl Nasal Spray 4 mg
Emergency Treatment of Opioid Overdose
Designed to
Rapidly Reverse
the Effects of a
Life-Threatening
Opioid Emergency
2 Single-Dose Nasal Spray Devices
0.003 fl oz (0.1 mL) each
For use in
nose only

Atropine

- Symptomatic Bradycardia in the absence of reversible causes
- Pediatric bradycardia is rarely cardiac and often secondary to hypoventilation and hypoxia, persistent bradycardia despite adequate respiratory support may require atropine.
- Bradycardia 1 mg every 3-5 minutes up to 3 mg
- Maximum dose child .5mg (x2) and adolescent 1mg (x2)


open
Luer-Lock Prefilled Syringe
Rx Only
NDC 76329-3340-1
STOCK NO. 3340
Atropine Sulfate Injection, USP
1 mg/10mL (0.1 mg/mL)
1 mg per 10 mL
FOR INTRAVENOUS USE
10 mL Single-dose syringe. Discard unused portion.
LUER-JET™ LUER-LOCK PREFILLED SYRINGE
NDC 16729-512-05
Atropine Sulfate Injection, USP
8 mg per 20 mL (0.4 mg per mL)
For intravenous, intramuscular, subcutaneous, intraosseous or endotracheal use.
20 mL
Multiple Dose Vial
Rx only
accord

Nitroglycerine

- For Hypertensive crisis or Angina
- Nitro-Stat .3-.4 mg sublingual (repeat every 5 minutes PRN up to 3 x)
- Nitro-Lingual spray .4 mg per squirt (1-2 squirts q 5 min up to 3x)
- Nitro-Bid – 2% topical paste (2-5 inch q4h x 3)
- Contraindicated in those taking erectile dysfunction medicines within the last 24 hours

1:13

picture of nitro lingual

MIMS

Nitrolingual: Dosages and Ingredients | Full...

Visit >

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Share

Save


SAVAGE LABORATORIES®
NDC 0281-0326-30
NITRO-BID®
(Nitroglycerin Ointment USP, 2%)
℞ only
NET WT 30 grams
SAVAGE LABORATORIES®
NDC 0281-0326-30
NITRO-BID®
(Nitroglycerin Ointment USP, 2%)
℞ only
NET WT 30 grams
© 2014 GS

Nifedipine 20 mg capsule

- To treat severe hypertension
- Puncture capsule several times with explorer
- Place under tongue and have patients suck on capsule
- For Hypertensive Emergencies not Urgencies!

Nifedipine (Procardia) 20 mg

Albuterol Inhaler

- To treat or PREVENT bronchospasm
- Inhaled B2 agonist
- Shakiness, tremor, tachycardia, nervousness

- Metered dose inhaler

- In an emergency 4-8 puffs as needed


60 Metered Inhalations
gsk
NDC 0173-0682-24
Ventolin HFA
(albuterol sulfate
inhalation aerosol)
90 mcg per actuation
For oral inhalation with Ventolin HFA actuator only.
Contents: Each canister contains a microcrystalline suspension of albuterol sulfate in propellant HFA-134a (1,1,1,2-tetrafluoroethane). Each actuation delivers 108 mcg of albuterol sulfate equivalent to 90 mcg albuterol base from the mouthpiece.
Rx only
Net Wt. 8 g
EMERGENCY

Anti-hypoglycemic

- Hypoglycemia – less than 70 mg/dL
- Twitching, Tremor, Nervousness, Sweating, Cold/clammy, Pallor, Headache, Nausea
- Check the Blood Sugar prior to starting treatment and be aware of altered food intake and/or diabetic medicines


50 mL Single-dose
50% DEXTROSE
Injection, USP
25 grams (0.5 g/mL)
50% DEXTROSE Inj., USP
50% DEXTROSE

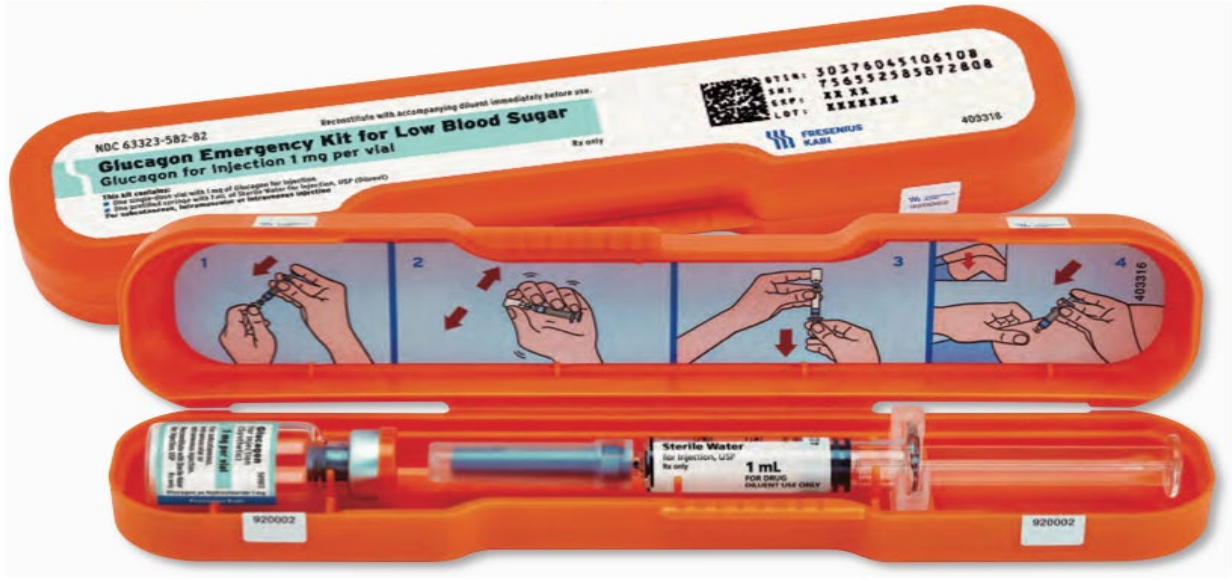
Glucagon

- Peptide hormone to raise blood sugar
- Severe hypoglycemia
- Adults and children (over 12 years old) 1mg/ .2ml IM/SC/IV can repeat x1 if no response after 15 minutes

Glucagon Auto injector

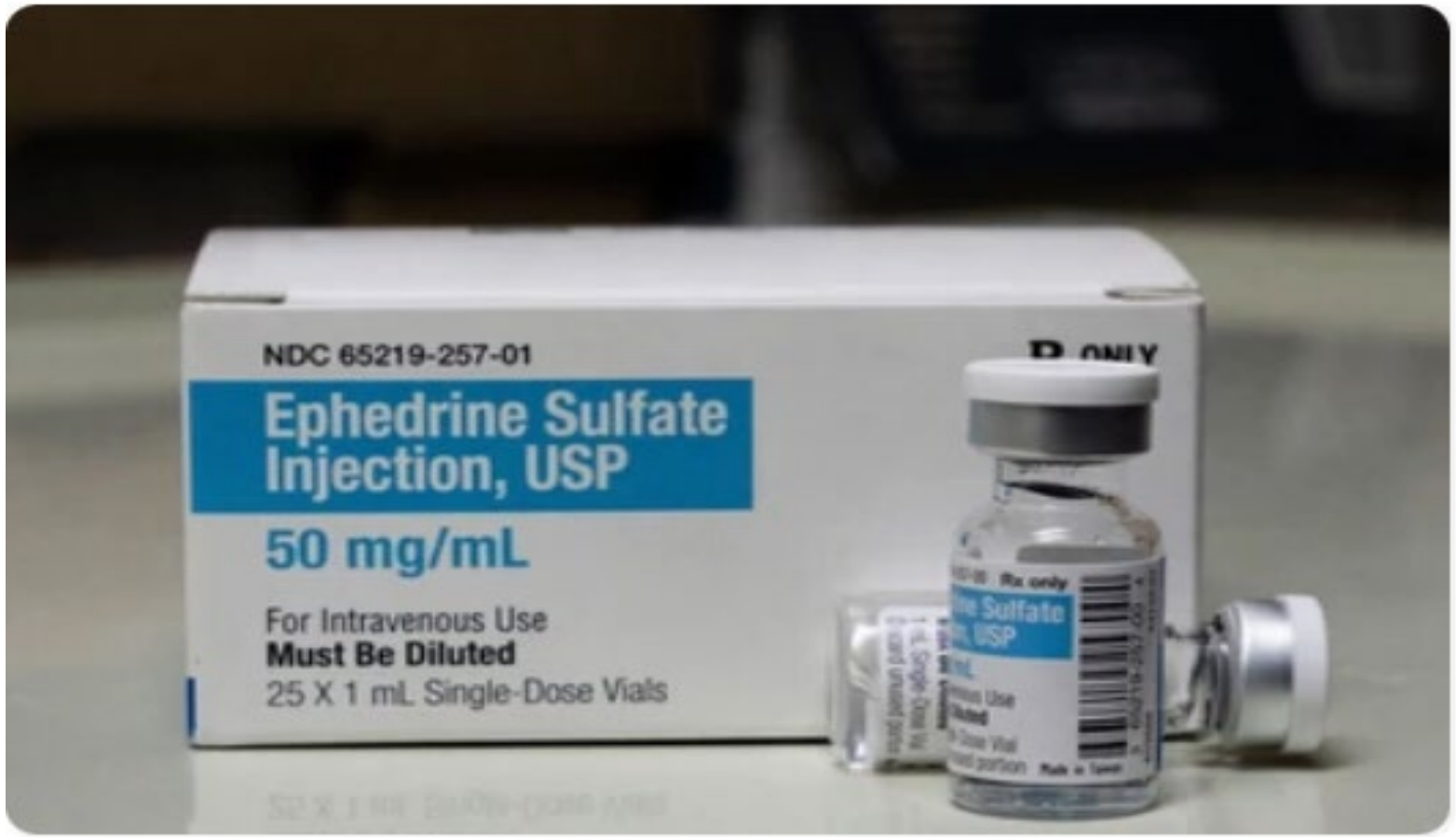
Glucagon
Emergency Kit

The FDA-approved Glucagon Emergency Kit from Fresenius Kabi is a cost-effective alternative to emergency solutions you have trusted for years.



Ephedrine

- Anti-hypotensive and Bronchodilator
- Raises BP with little secondary on the workload of the heart
- Comes 50 mg/ml
- 5-10 mg diluted IV or 25-50 mg IM


NDC 65219-257-01
Ephedrine Sulfate
Injection, USP
50 mg/mL
For Intravenous Use
Must Be Diluted
25 X 1 mL Single-Dose Vials

Equipment

- BP Cuff and Stethoscope
- Airways (oropharyngeal and nasal)
- Oxygen delivery system and Ambu-type bag
- Central and back up suction

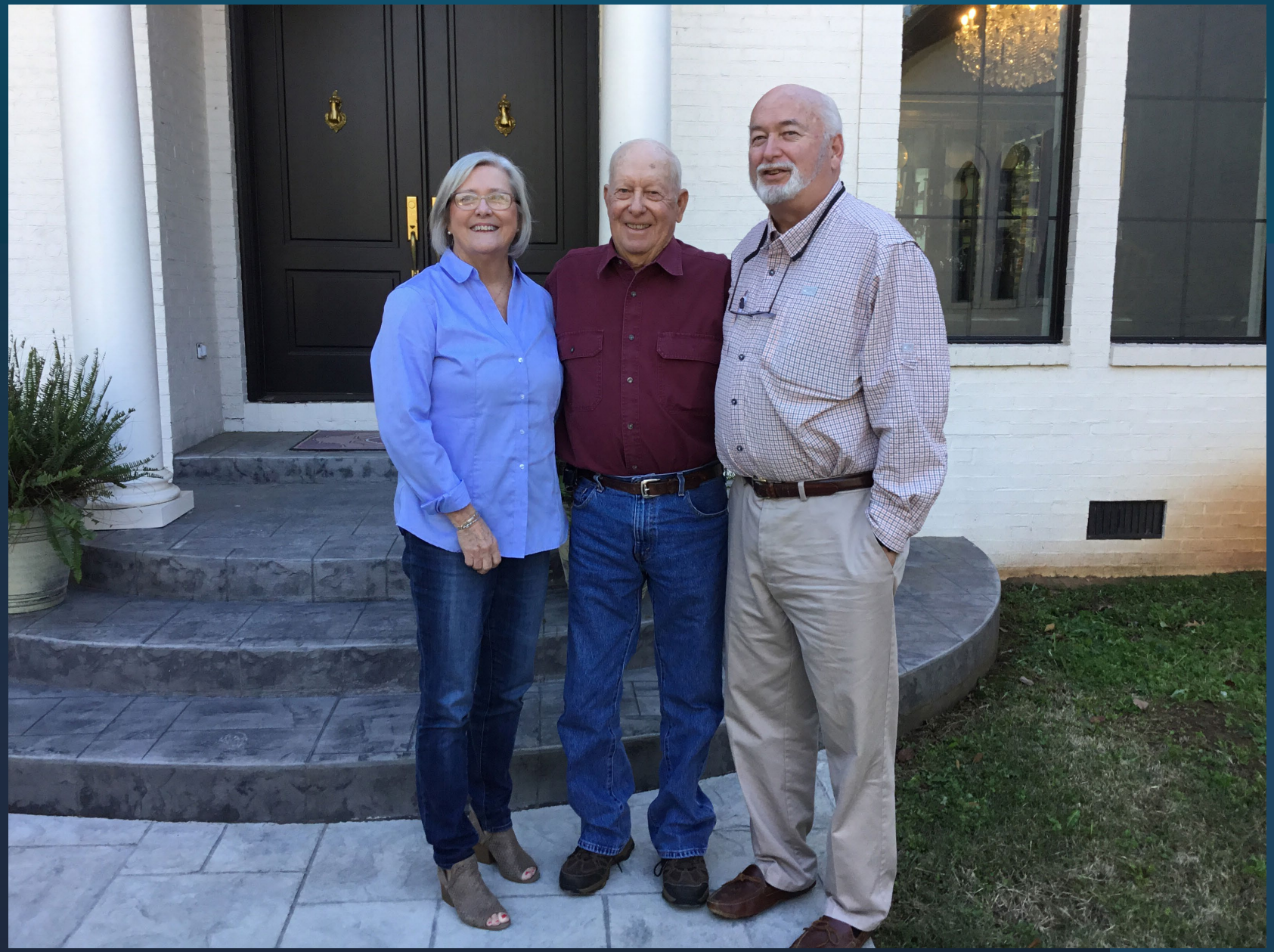
- Appropriate monitors (BP, O2 Sat, Capnography, heart rate, +- precordial stethoscope, EKG)

Hypoglycemic Emergency

- Conscious patient- administer orange/apple Juice with 2 tbsp of added sugar (8-12 ounces) or sucrose paste (cake icing)

- Unconscious patient- needs IV to administer 30 ml of D50
- In Peds patient dilute the the D50 to D25 and give 30 ml

- Glucagon- can be given IM .5-1 mg



RESCUE

- Because sedation and anesthesia are a continuum it is not possible to predict how an individual will respond. Practitioners intending to produce a given level of sedation should be able to diagnose and manage the physiological consequences (rescue) for patients whose level of sedation becomes deeper than intended.

- The practitioner must have the training, skills, drugs, and equipment to identify and manage such an occurrence until assistance arrives or the patient returns to the intended level.

Syncope

- 50% of Dental Office Emergencies
- Sudden drop in heart rate (<40 BPM)
- Leads to a sudden drop in Blood Pressure
- Decreases CNS blood and Oxygen delivery
- Pseudo-seizure

Syncope

- If consciousness is lost for any period of time reschedule treatment (rarely happens in medicated patient)
- Consciousness usually returns in 15-20 seconds, if not activate EMS
- The patient often feels nauseous, aches, and lethargic.

Syncope

- Stop treatment and position patient with feet elevated
- Assess Circulation, Airway, Breathing
- Administer O2, monitor vital signs, ammonia inhalant
- Brief syncopal episodes with recovery do not need EMS or Hospital care

Seizures

- Most likely in Epilepsy patients (make sure they take medications)
- Intravascular injection of local anesthesia (immediate)
- Local anesthesia overdose (5-10 minutes after injection)
- Protect the patient and airway- most grand mal seizures are self limited (last 2-5 minutes)
- Activate EMS- anticonvulsants rarely needed

Anticonvulsant in a pinch

- If you have no IV access and seizures continue more than 5 minutes

- Nayzilam (midazolam)- spray one dose 5 mg in one nostril may repeat in 10 minutes another 5 mg in the other nostril


Nayzilam
(midazolam) nasal spray
5 mg
FOR NASAL USE ONLY
Nayzilam
(midazolam) nasal spray 5 mg

Nayzilam

Hyperventilation

- Rapid breathing leads to decreased CO2
- Cold, tingling, paresthesia of extremities and perioral
- Lightheaded and chest tightness with increased anxiety
- Spasmodic contractions (carpopedal tetany)
- Then seizures and loss of consciousness

Hyperventilation Treatment

- Have patient cup hands in front of mouth and nose and rebreathe the exhaled air
- The exhaled air contains 100 x more CO2 than room air
- I ask patients to pinch one nostril shut and breathe with mouth closed thru one nostril

Emesis and Aspiration

- When protective airway reflexes are intact aspiration of vomitus is rare
- Regurgitation is passive, no muscle contraction required unlike vomiting that requires muscle contraction
- Diligent observation of the airway and suctioning with a tonsil tip suction is necessary.

Prone to nausea

- Female
- History of postoperative nausea
- Motion sickness
- Non smoker
- Age less than 50
- Takes GLP-1 (glucagon like peptide) Ozempic, Wegovy- consider stopping for 1 week prior to sedation

Nausea and Reflux Prophylaxis

- Omeprazole 20mg/bicarbonate 1100mg (Zegrid) one night before and one 2 hrs before
- Ondansetron (Zofran) ODT 4-8 mg one the night before and one two hours before
- Dexamethasone- take 8 mg night before

Gastric Aspiration (unconscious patient)

- Patient has lost protective reflexes and consciousness
- Turn on Right side with head Down 15 degrees
- Suction with tonsil tip and Activate EMS
- Secure airway with with ET tube
- Give Oxygen with Ambu Bag
- Tracheal Lavage- with head slightly elevated give 1—20 cc NS in tube, then suction and oxygenate, repeat x4
- Hospitalization for Aspiration Pneumonia

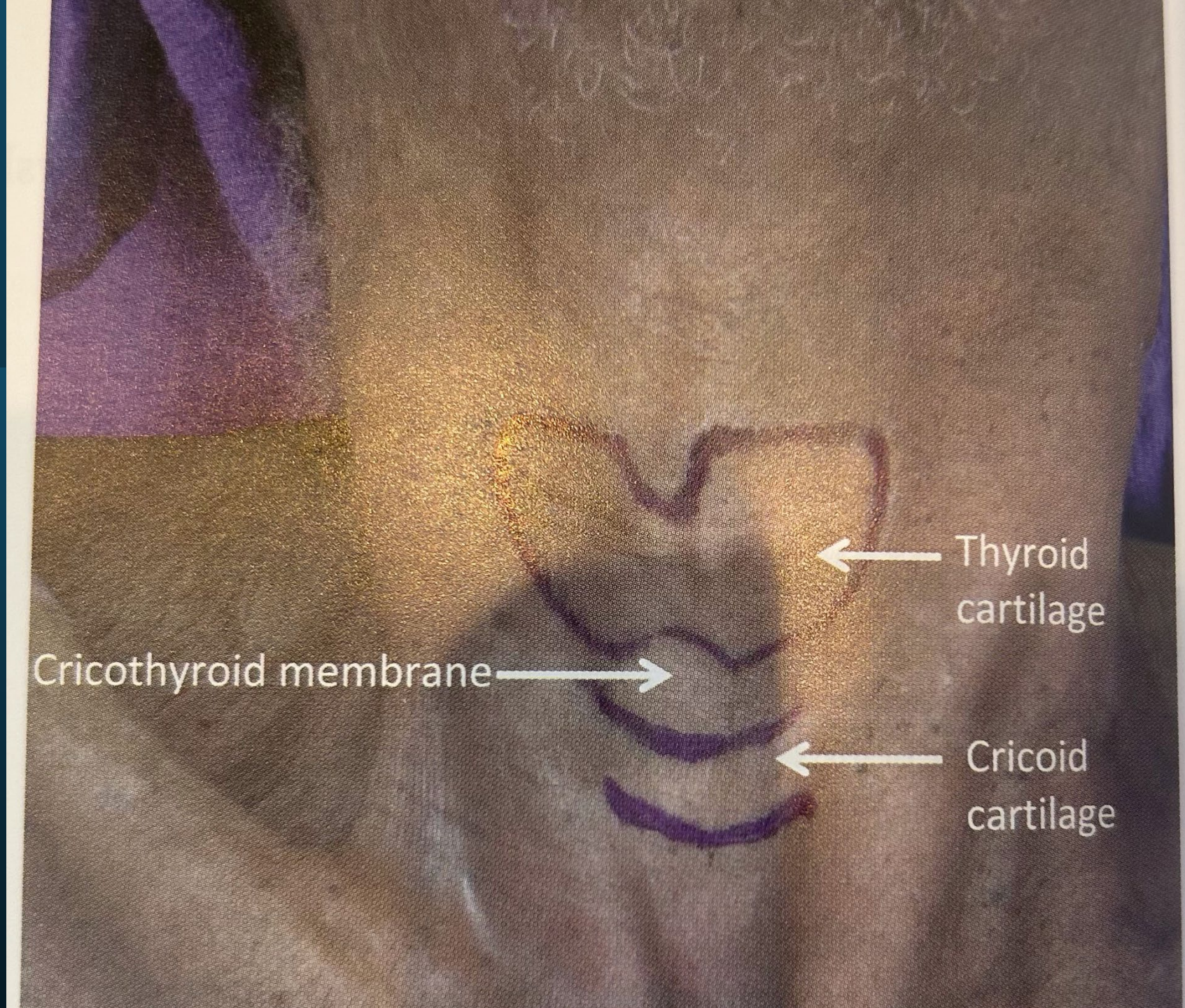
Foreign Body in Airway

- Minimize risk by 3x3 or 4x4 Gauze Moist Throat Shrouds
- Small instruments may be secured by dental floss
- Allow a coughing patient to dislodge the foreign body sitting up
- With complete obstruction often becomes unconscious in 1 min
- Death may develop in 4-6 minutes

Unconscious with Known Obstructed Airway

- Position Supine and activate 911
- Head tilt chin lift of airway
- Assess breathing- look, listen, feel- suction with tonsil tip
- Attempt ventilation with Ambu Bag –reposition airway PRN
- Look in mouth for foreign body
- Perform 5 abdominal thrusts, check mouth, repeat
- Last Resort-Cricothyroidotomy (12 years and up)

Cricothyroidotomy



Cricothyroidotomy

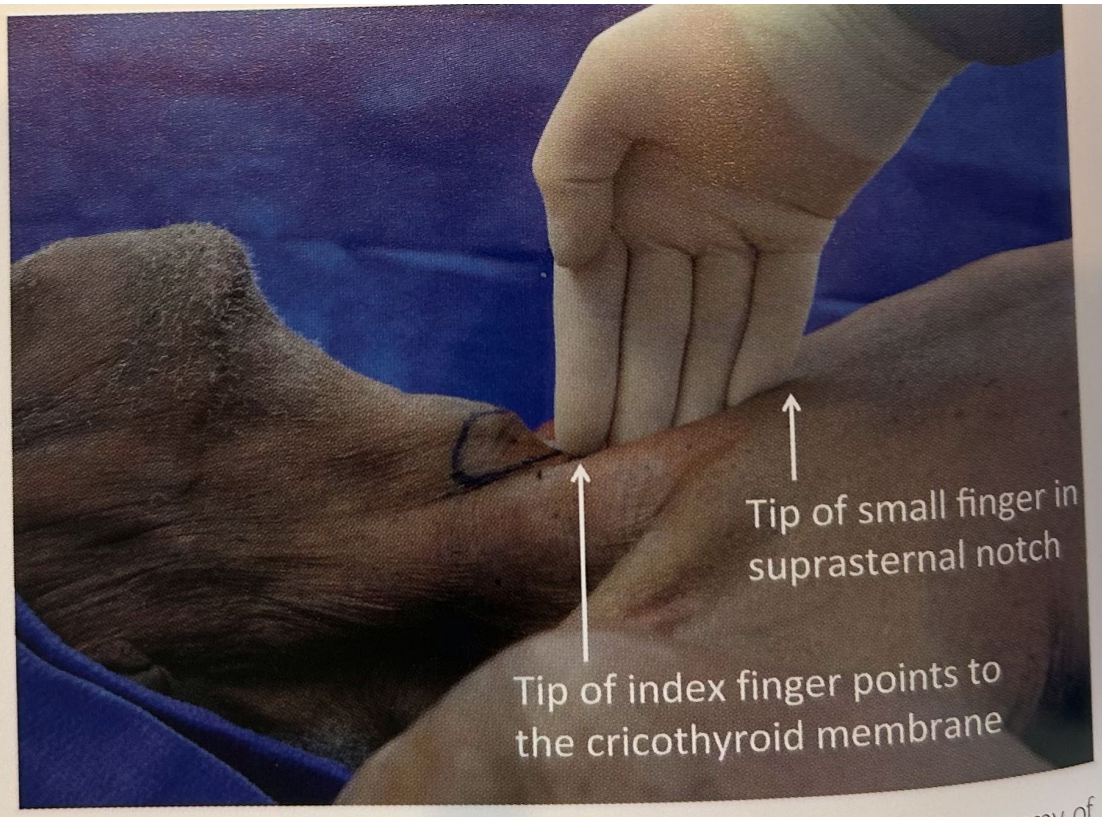
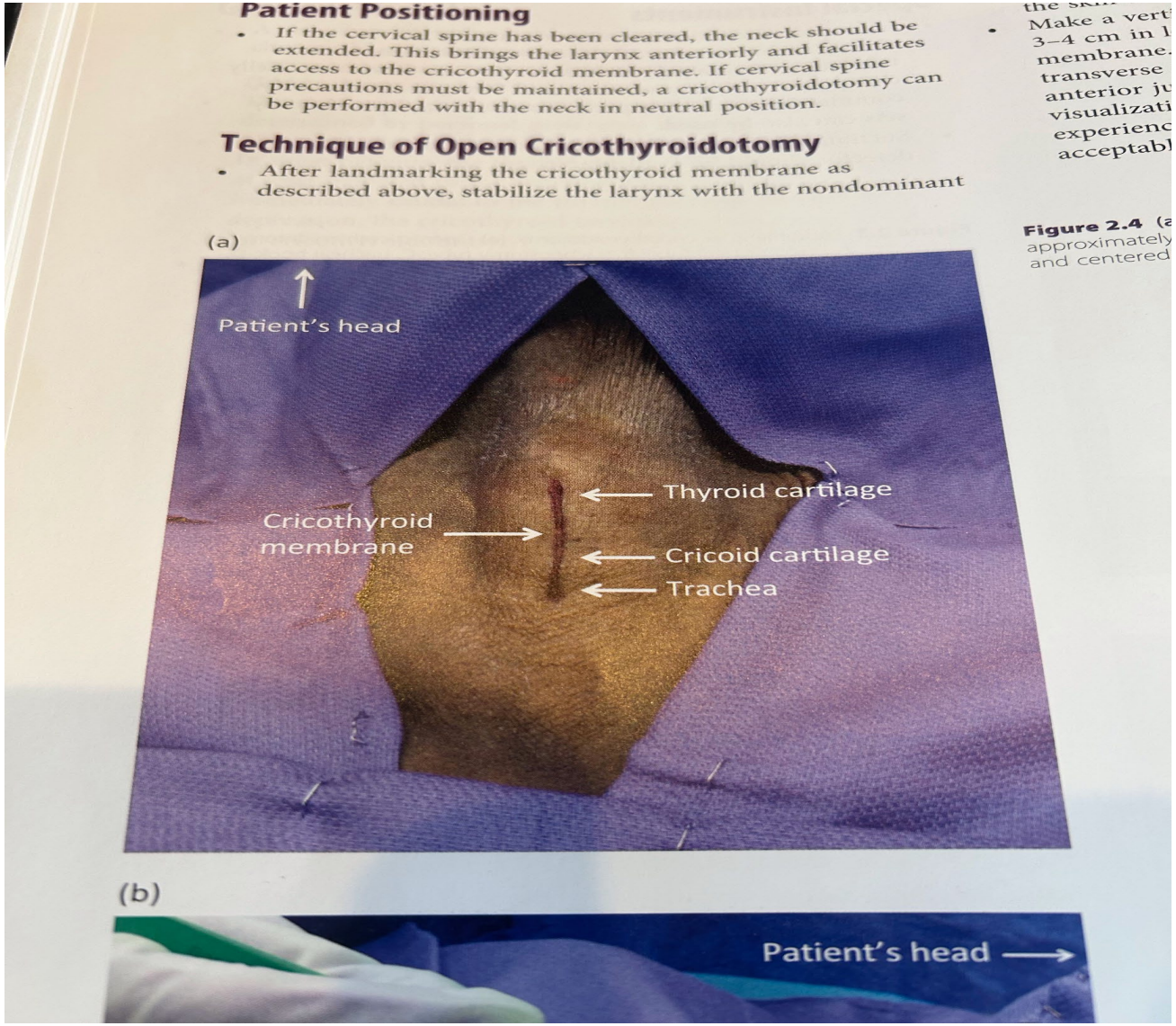


Figure 2.2 External landmarks for cricothyroidotomy. **(a)** Surface anatomy of the cricothyroid space. The cricothyroid space includes the inferior border of the thyroid cartilage and the superior rim of the cricoid arch. In adults, the cricothyroid membrane is about 1 cm in height and 2–3 cm wide. **(b)** The four-finger technique for identifying the cricothyroid membrane. With the palm extended, the tip of the small finger is placed in the suprasternal notch. The tip of the index finger touches the cricothyroid membrane in the midline.

Cricothyroidotomy



Patient Positioning

- If the cervical spine has been cleared, the neck should be extended. This brings the larynx anteriorly and facilitates access to the cricothyroid membrane. If cervical spine precautions must be maintained, a cricothyroidotomy can be performed with the neck in neutral position.

Technique of Open Cricothyroidotomy

- After landmarking the cricothyroid membrane as described above, stabilize the larynx with the nondominant

(a)

Patient's head

Thyroid cartilage

Cricothyroid membrane

Cricoid cartilage

Trachea

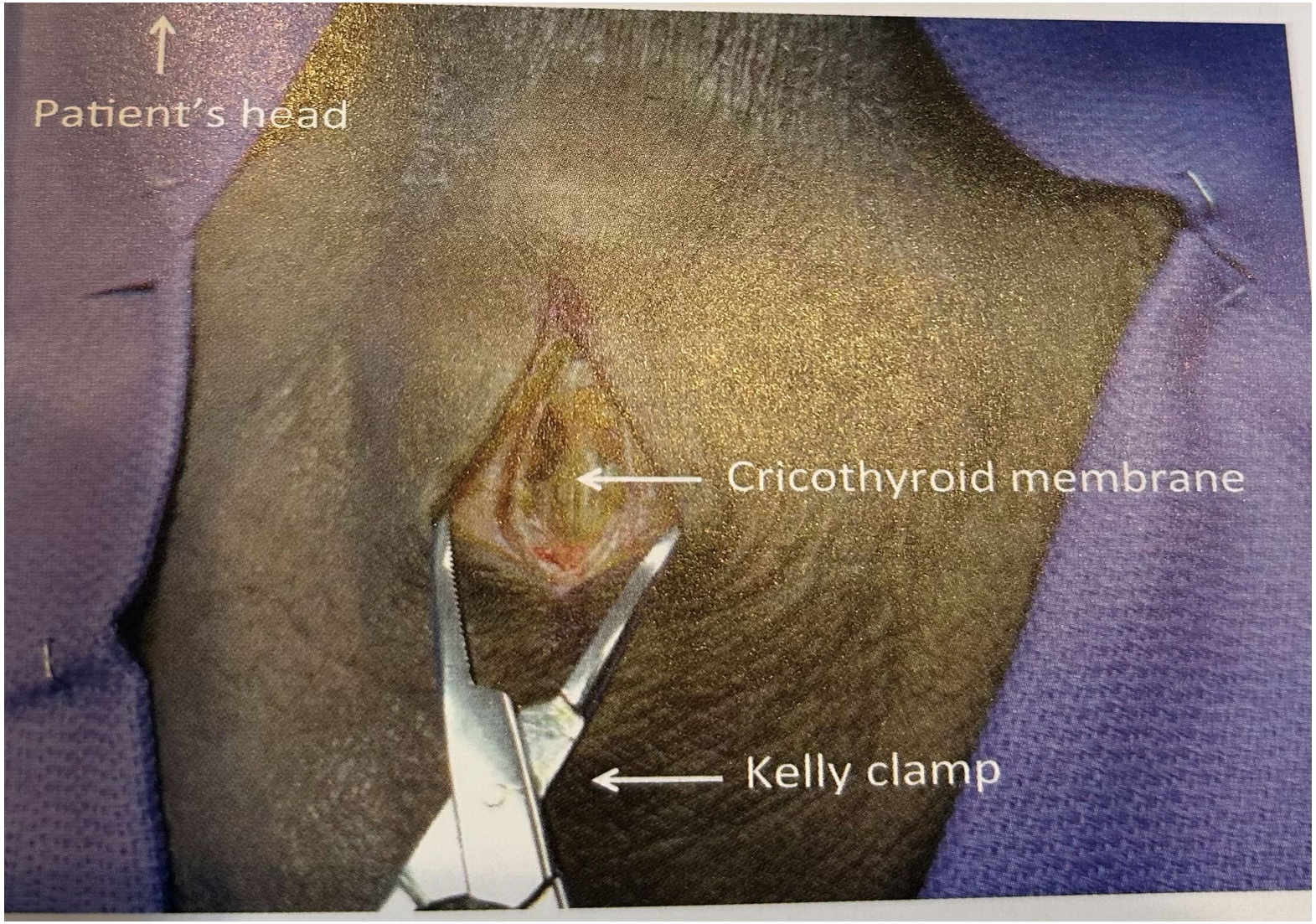
(b)

Patient's head

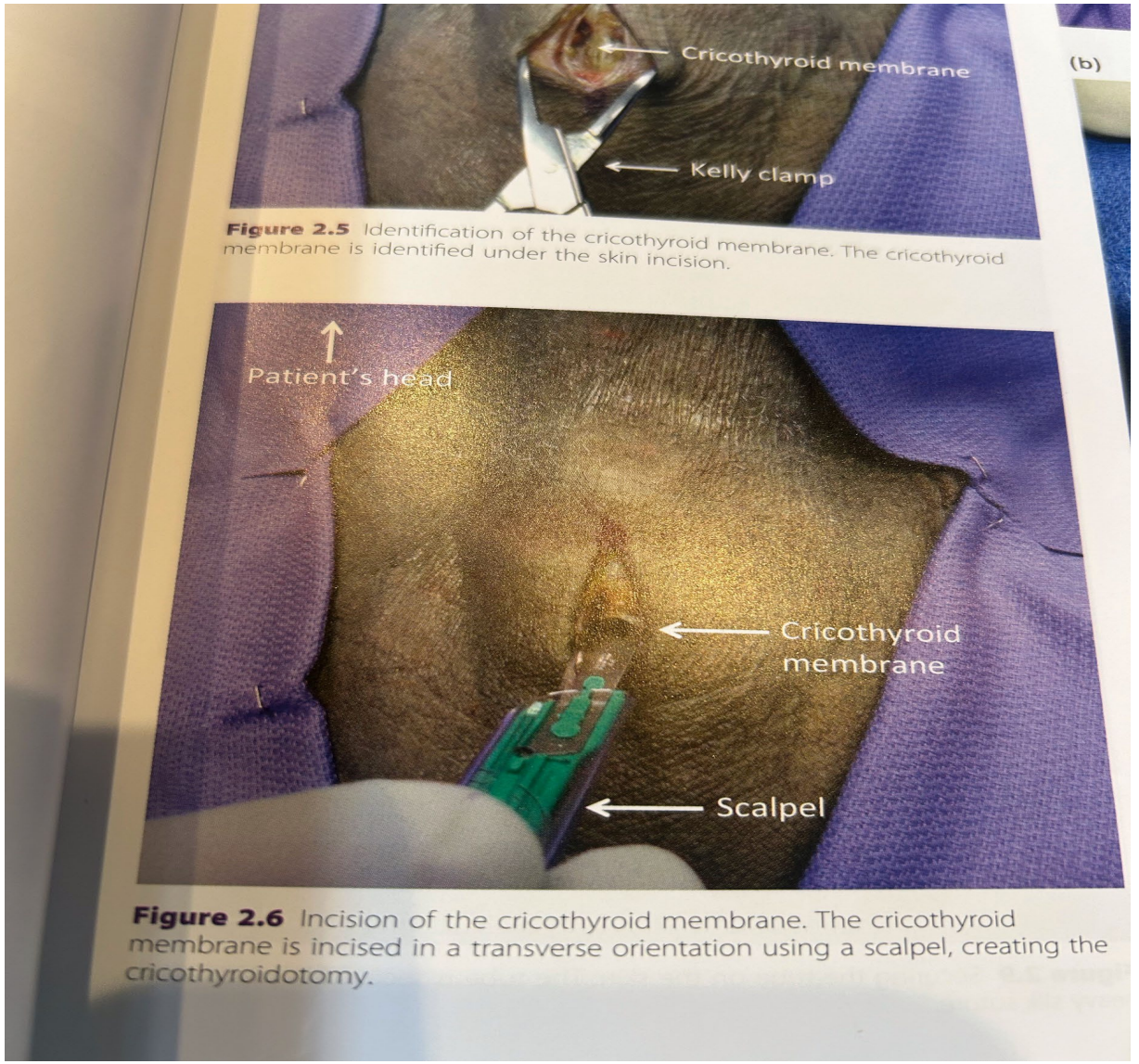
Make a vert
3–4 cm in l
membrane.
transverse
anterior ju
visualizati
experienc
acceptabl

Figure 2.4 (a
approximately
and centered

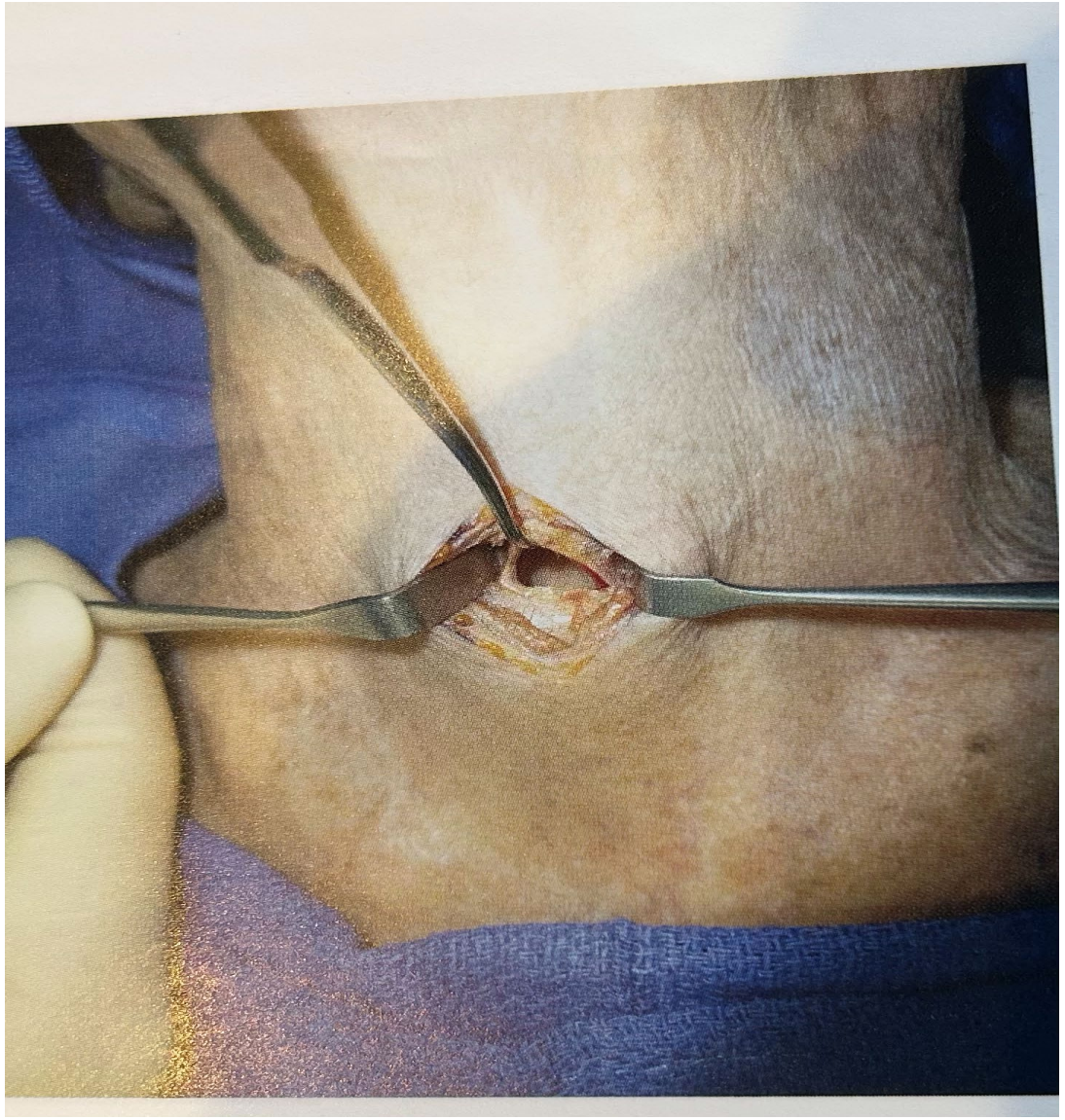
Cricothyroidotomy

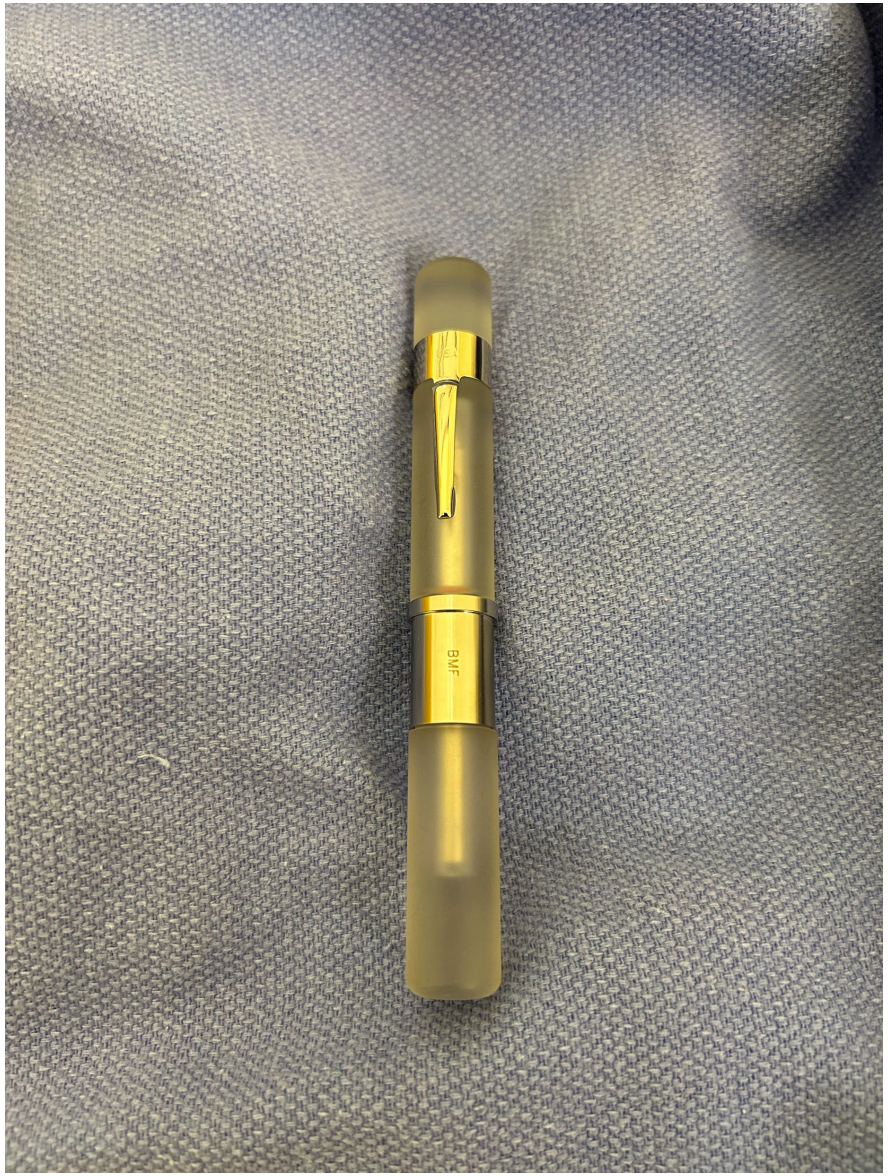


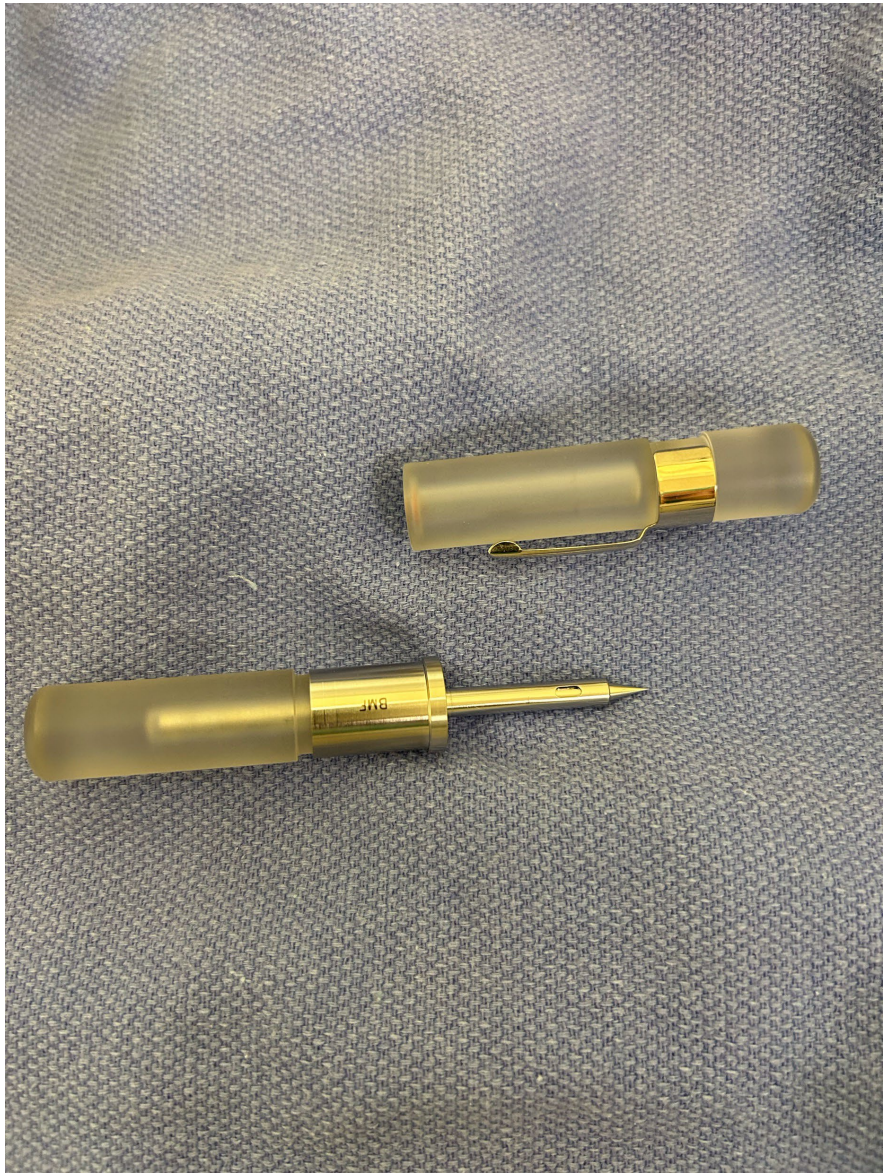
Cricothyroidotomy



Cricothyroidotomy




BMF

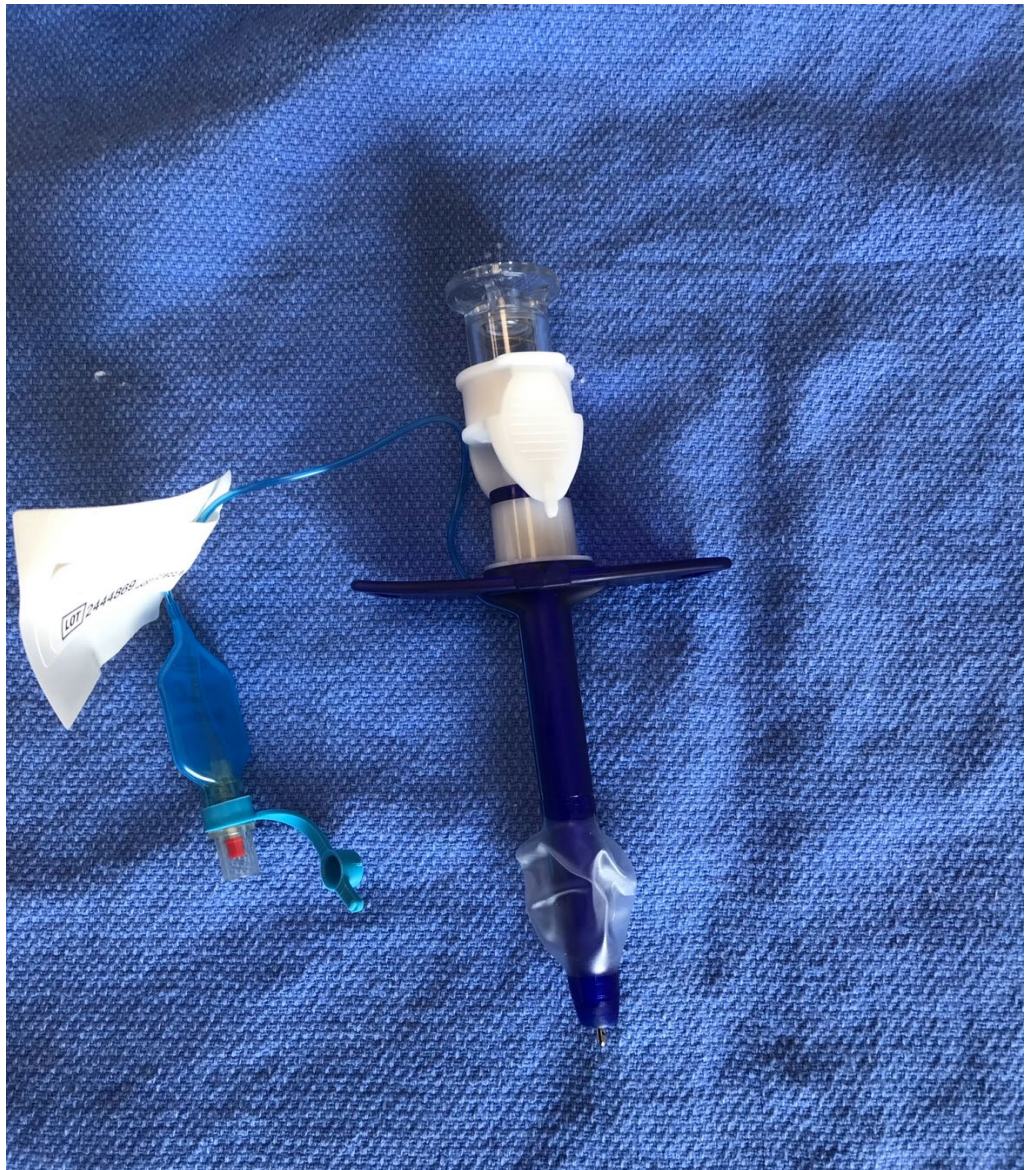

BMF

Cricothyroidotomy Emergency Kit


BMF

Cricothyroidotomy Emergency Kit

Cricothyroidotomy Emergency Kit



Cricothyroidotomy Emergency Kit

Tracheal Hook


LDRP 282

Angina Pectoris

- Substernal chest pain or radiating
- Precipitated by exercise, emotion, heavy meal
- Relieved by Vasodilator drugs and a few minutes rest
- Result of inadequacy of coronary circulation
- Described as tightness, constriction, heavy weight on chest
- The pain of Angina is quickly relieved with Nitroglycerin and Oxygen and does not quickly return!

Management of Angina

- Pain does not resolve with therapy immediate Activate EMS and have patient chew up a regular 325 Aspirin
- Therapy- Oxygen and Nitroglycerin (up to 3 doses)
- Monitor and record vital signs
- No prior history of Angina consider strongly EMS transport to medical facility for Evaluation

Myocardial Infarction

- Chest pain with no history of angina- monitor ABC, activate EMS
- Apply Monitors and have pt chew adult 325 mg aspirin

- No history of Angina –administer O2 (6L nasal hood or cannula)

- Awake patient SBP > 90 consider One dose of Nitroglycerin

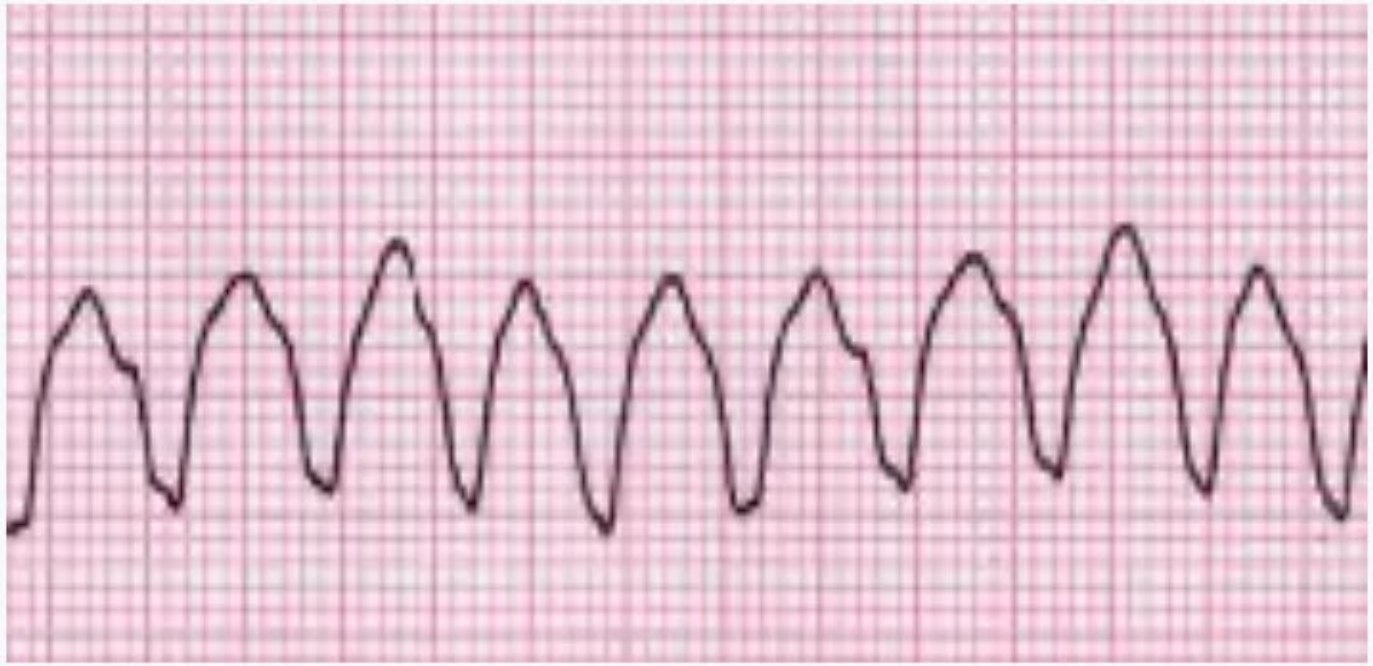
- Note that dysrhythmia develop in 96% of MIs and hypotension in 80% of MIs, be prepared to use AED and start CPR

Cardiac Arrest

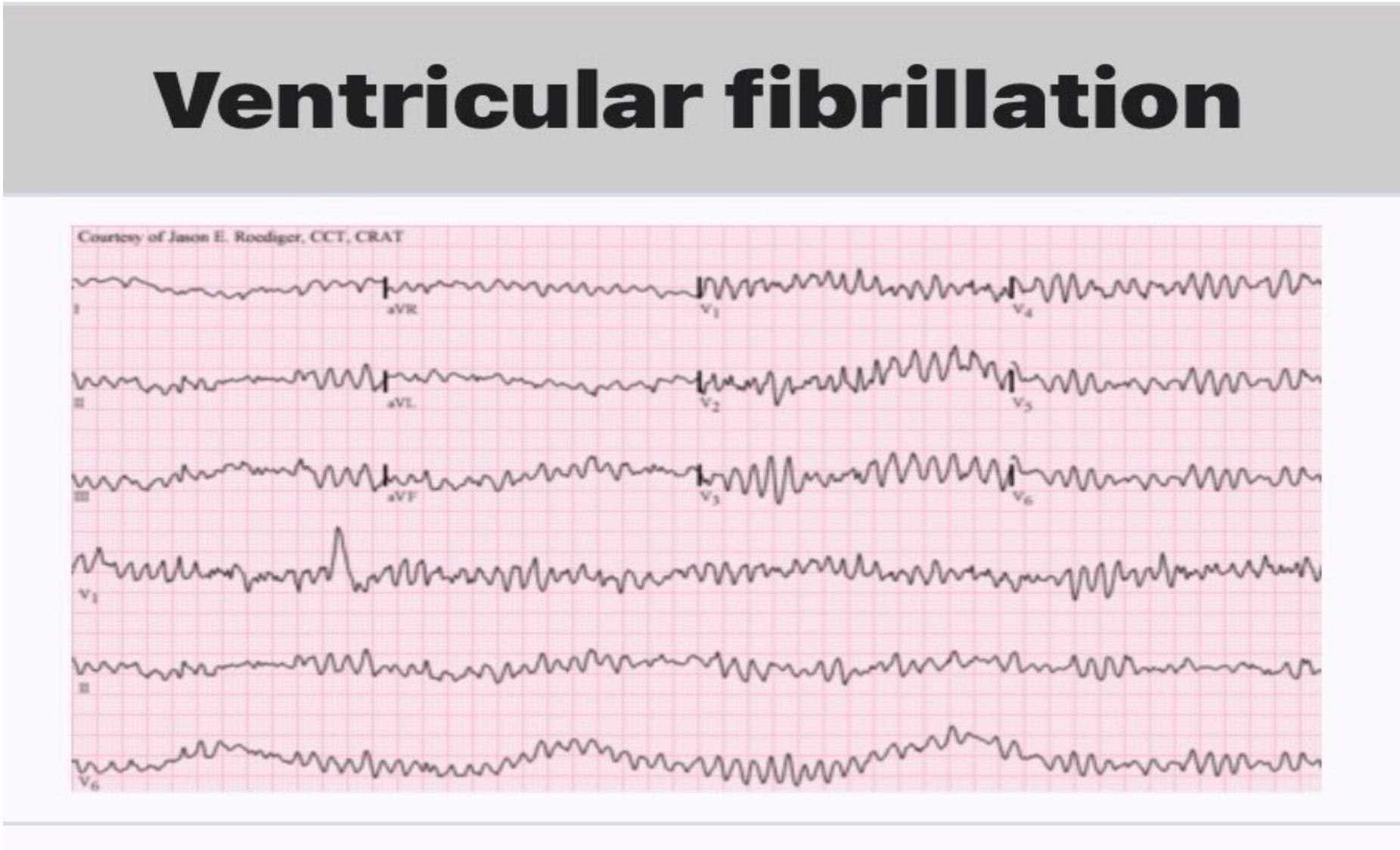
- If at any time the patient becomes unresponsive, no normal breathing, and no palpable pulse
- Start CPR
- Apply the AED
- Implement ACLS protocols

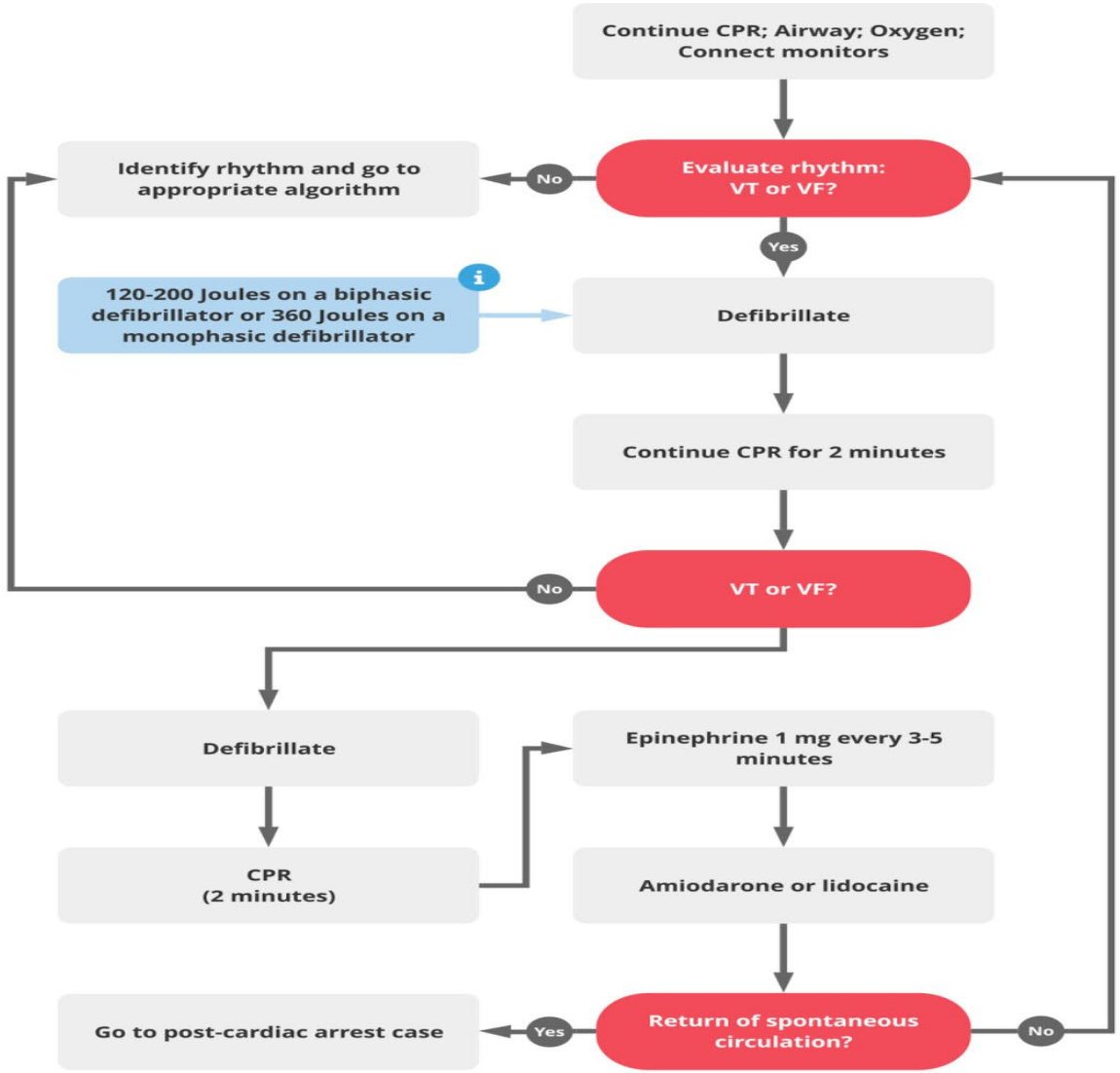
Ventricular Tachycardia

VT



Ventricular Fibrillation



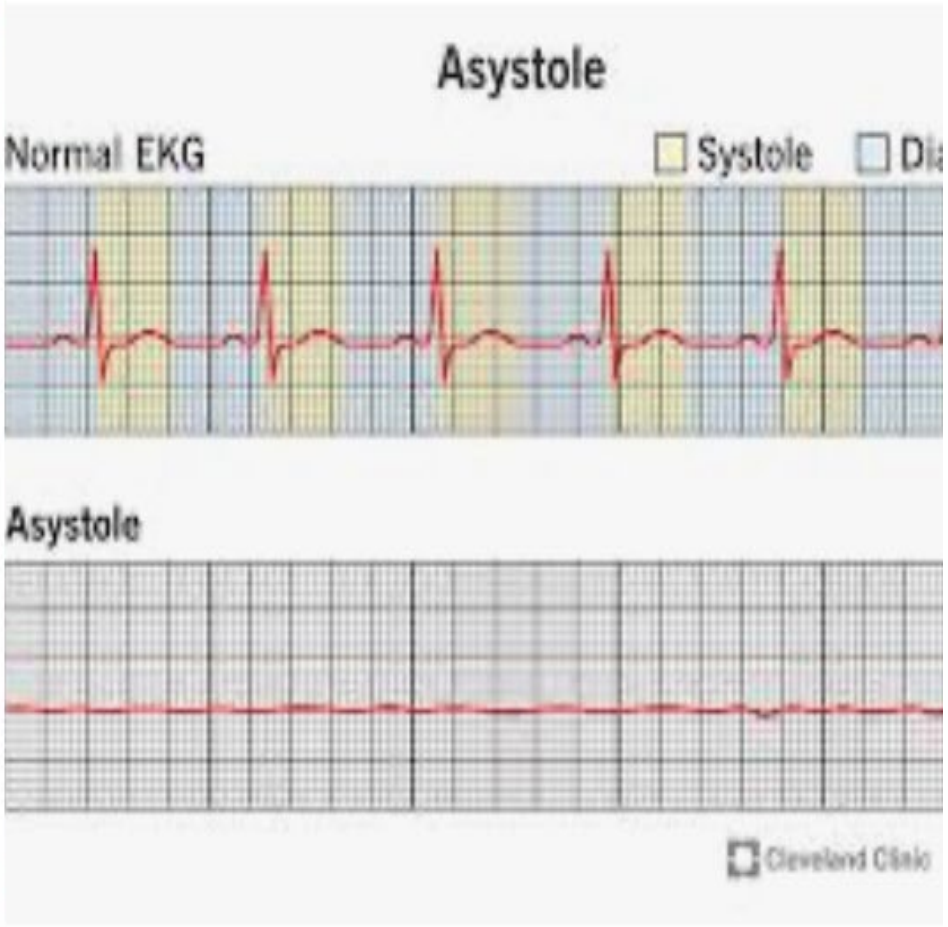


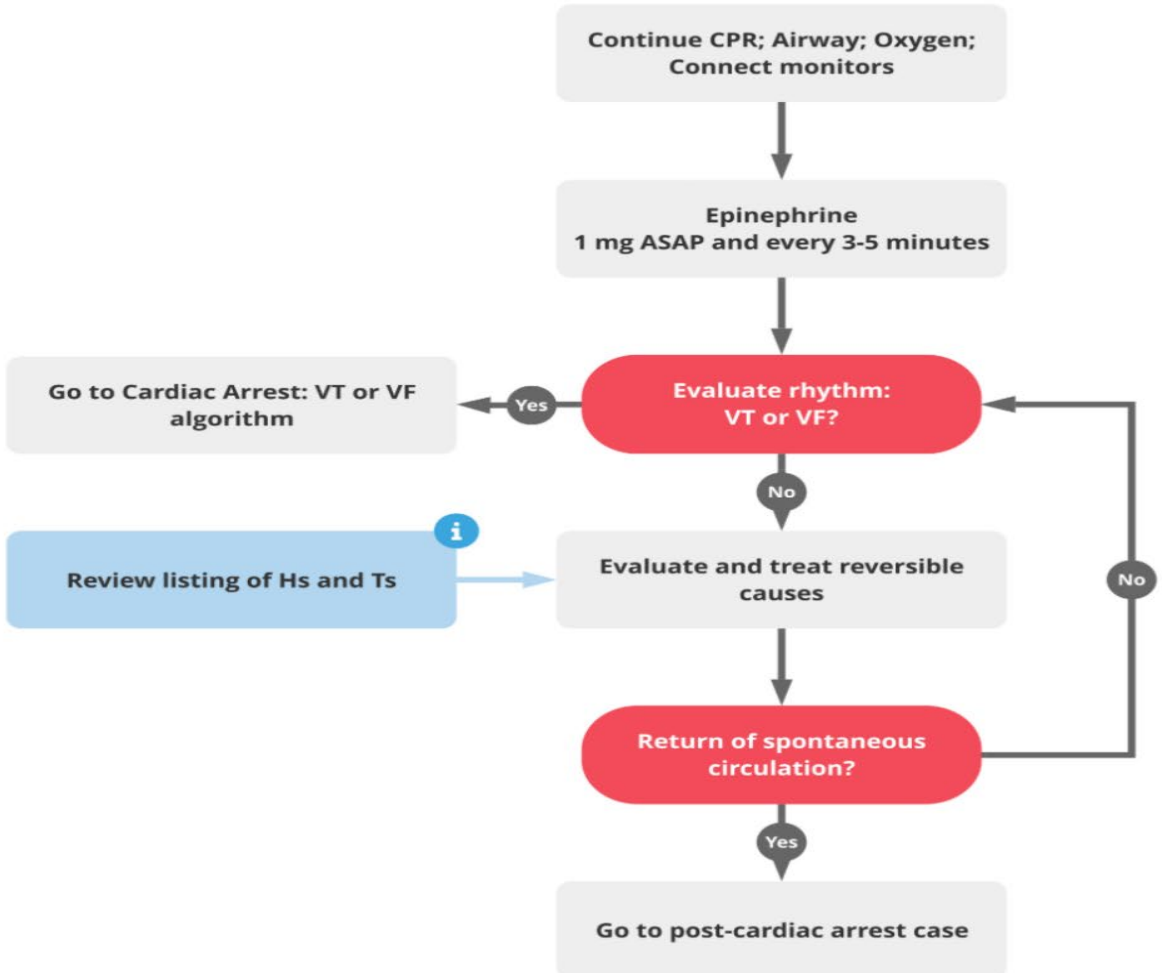
- Perform the initial assessment
  - Perform high-quality CPR


ELECTROLYTE GEL
Product No. 007884
MRL medical research laboratories, inc.
BATTERY
CHARGER (LINE)
LEVEL
Porta Pak/90A ECG Monitor
LEAD SELECT
RECORDER
AUTO
DELAY
DIAG
HEART RATE
ECG SIZE
QRS VOL
MONITOR
POWER
SYNC
POWER
INTRNL PADDLE RANGE
DISARM
DEPRESS BOTH FIRE BUTTONS
STERNUM
MRL
DEPRESS BOTH FIRE BUTTONS
APEX
MRL
MRL medical research laboratories, inc.
Porta Pak/90
DC Defibrillator


PATIENT IS UNCONSCIOUS, NOT BREATHING, HAS NO PULSE
1 TURN ON AED
2 FOLLOW PROMPTS
3 IF PROMPTED PRESS SHOCK
Pedi-padz II
ZOLL
AED - extra batteries
AED PLUS

Asystole





- Perform the initial assessment
  - Perform high-quality CPR

Laryngospasm

- A protective reflex that protects in airway from fluids and matter
- When protective airway reflexes are intact coughing, gagging, and swallowing protect the airway
- It is uncommon under mild and moderate sedation
- Associated with high pitched crowing sounds – stridor and increased difficulty ventilating
- It may be partial or complete (no sound)
- Prevention by protecting and suctioning the airway is necessary

Laryngospasm Prevention

- Consider prophylaxis in patients prone to laryngospasm.
- Consider Glycopyrrolate 1-2 mg 2 hours before sedation or anesthesia.
- Careful use of moist throat shroud to protect airway

Laryngospasm Management

- Administer O2 (6-8L)
- Displace the tongue and evaluate the airway (pack off bleeding)
- Suction the airway with tonsil tip
- Give positive pressure oxygen
- If appropriately trained give succinylcholine IV (10 mg for partial spasm and 20-40 mg for complete spasm)
- Be prepared to ventilate the patient until spontaneous respiration returns

Laryngospasm notch pressure

Laryngospasm notch pressure (also known as Larson's maneuver) may rapidly reverse laryngospasm. Pressure is applied with the finger tips to the area between the mastoid process, the ramus of the mandible, and the base of the skull.

Graphic 122933 Version 2.0

Bronchospasm

- Prevention- have the patient take 2 puffs of their inhaler pre-op
- Wheezing and use of accessory muscles and retractions
- First- assess Circulation, Airway, Breathing
- Calm Patient and allow comfort position (usually sitting up)
- Allow patient to self administer inhaler
- Alert EMS and administer .3 ml of 1:1,000 Epinephrine IM
- Consider Diphenhydramine 50 mg/1cc IM

Allergic Reaction (Anaphylaxis)

- Urticaria, erythema, pruritus, wheezing
- Rapidly progressing to cardiovascular collapse
- Immediate aggressive management

Anaphylaxis Management

- Recognize problem- place patient supine with legs raised
- Assess circulation, airway, breathing (head tilt chin lift)
- Administer Epinephrine 1:1,000 .3 ml IM (>30 kg) can repeat 5 min
- Activate EMS
- Administer 02 (6-8 L)
- Monitor Vital Signs (CPR as needed)
- In the event of laryngeal edema- consider Cricothyroidotomy to establish an airway


LA


a-dec

Hypotension

- Small decreases in blood pressure during sedation is expected
- A SBP of 90 mm hg may be ok in a 45 yo ASA 1 but dangerous in a ASA III 75 yo chronic hypertensive
- Manifests as: chest pain, shortness of breath, heart failure, restlessness, anxiety, disorientation, pallor, cold clammy skin, dilated pupils, capillary refill greater 2 seconds

Hypotension

- Radial artery pulse – at least 80 mm hg
- Brachial artery pulse- at least 70 mm hg
- Carotid artery pulse- at least 60 mm hg

Hypotension Management

- Position patient with head down and legs up
- Check circulation, airway breathing
- 6-8 L Oxygen (discontinue Nitrous)
- Consider IM/IV Flumazenil
- If an IV can be started and NS administered rapidly (250/500/1,000 cc as needed)
- Administer a vasopressor – Ephedrine 25-50 mg IM or if IV dilute to 5 mg per cc and give slowly.
- Severe Bradycardia consider Atropine .5-1 mg IV

Hypertension Crisis

- Crisis – SBP 220mm hg or greater
- Crisis - DBP 120mm hg or greater

- Increase of BP 20-30% over baseline

- Distinguish from modest and transient elevation of blood pressure

- Deepen sedation or eliminate pain (more local anesthesia)

Hypertensive Crisis Treatment

- Assess circulation, airway, breathing
- Monitor vital signs
- Without IV:
- Have patient suck on 20 mg nifedipine (puncture with explorer 5-6 times)
- Or Nitroglycerin- .4 mg sublingual tablet, spray or paste

Venipuncture- IV

- A technique SEPARATE and DISTINCT from IV sedation
- Superficial veins of the upper extremity give good access
- A small amount of practice is needed

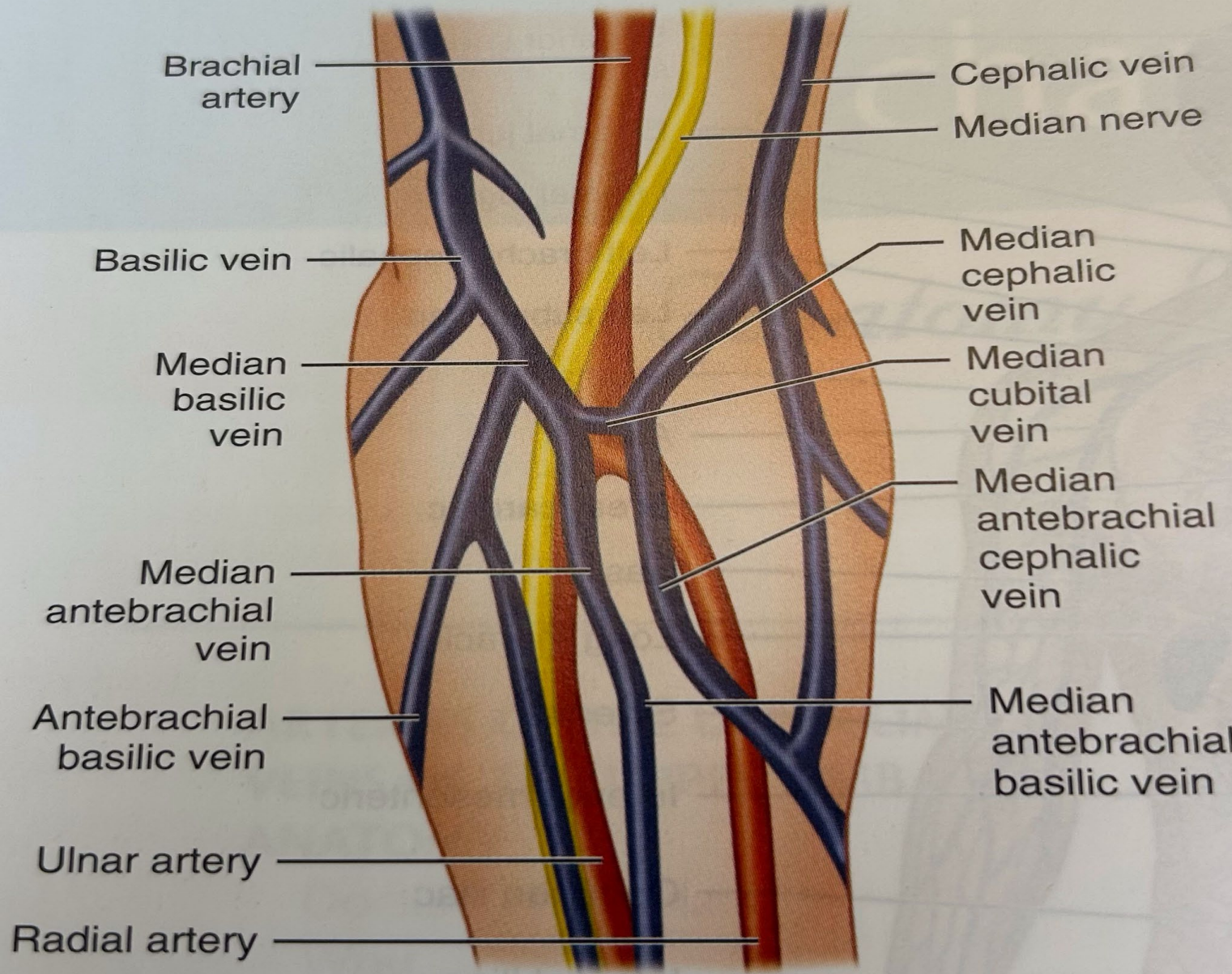
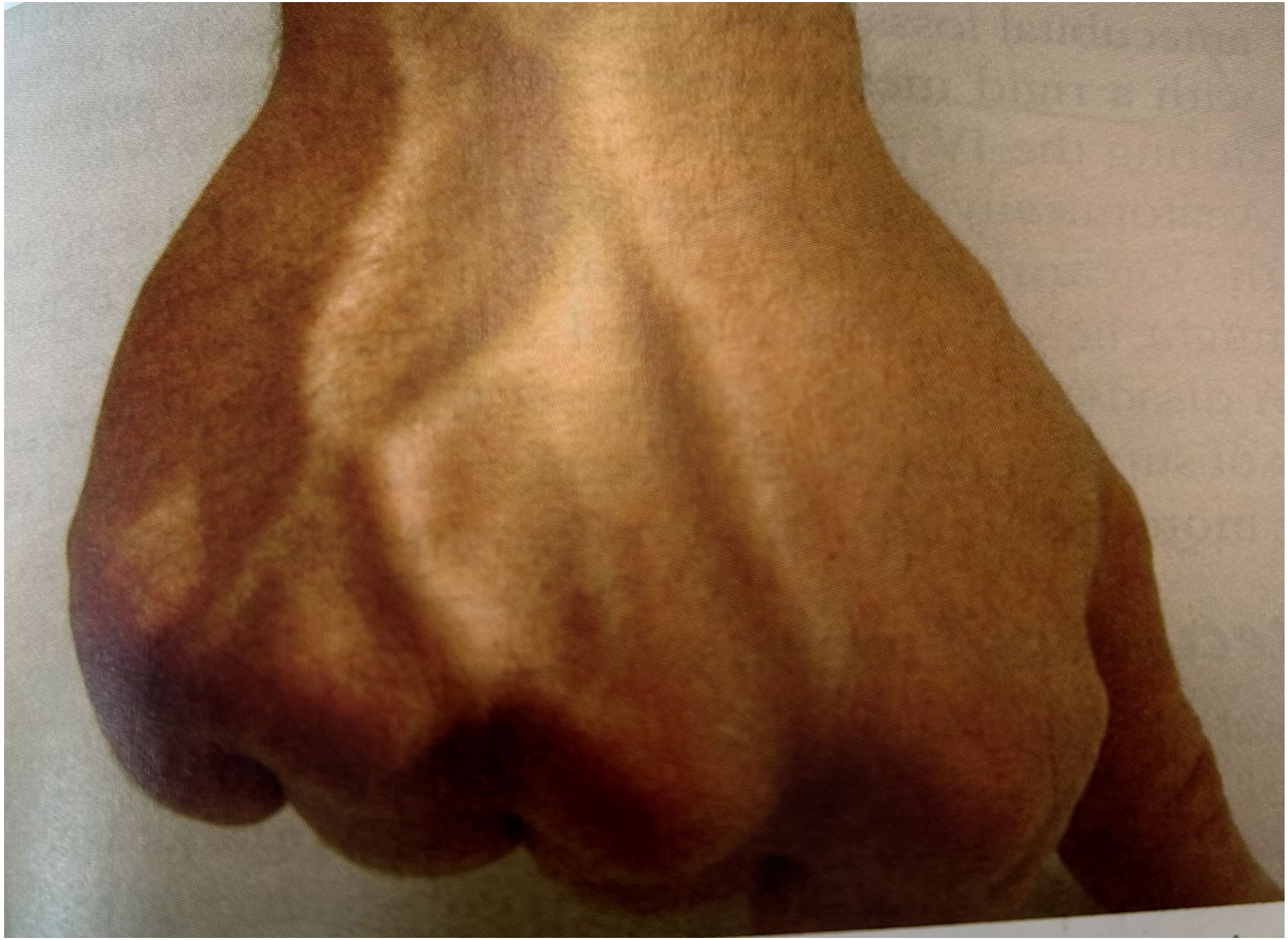
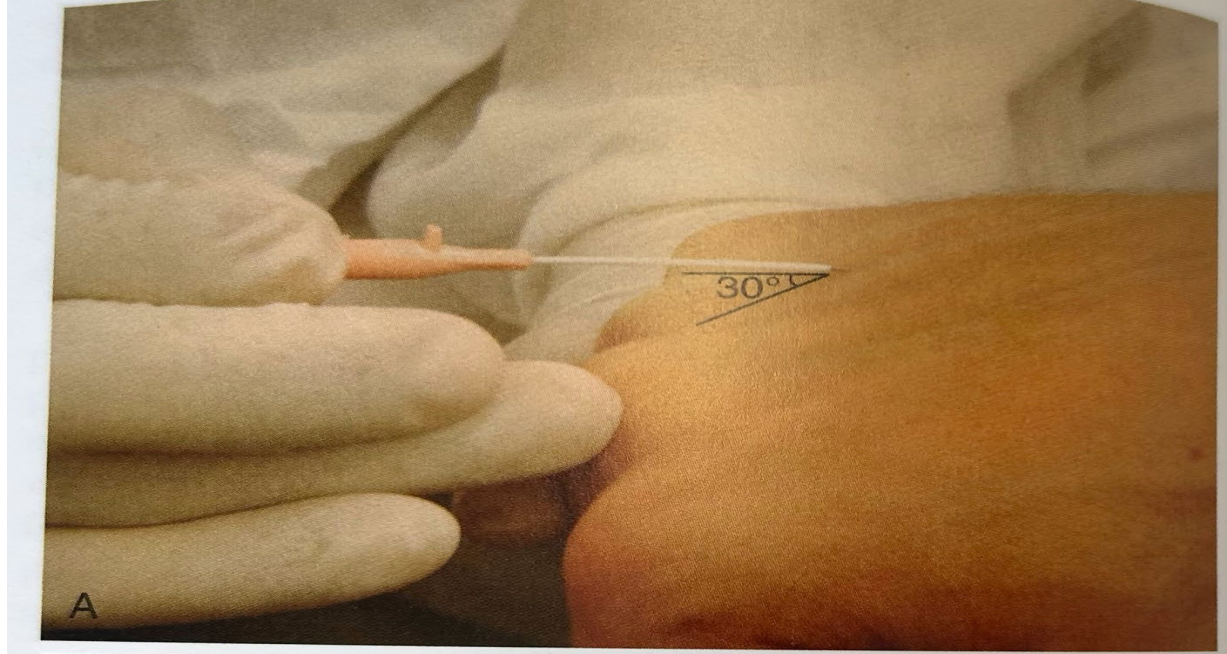


Figure 23.2 Relative location of major arteries in upper arm.





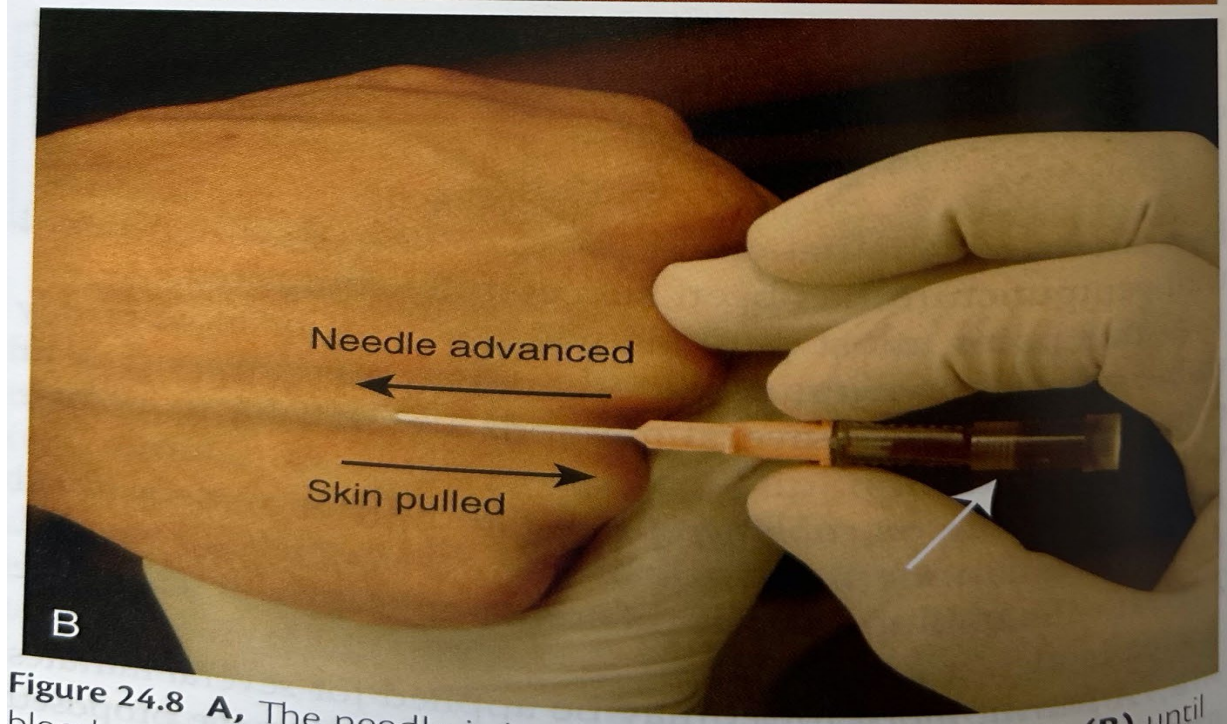


Figure 24.8 **A,** The needle is inserted into vein at 30° angle **(B)** until blood return is observed in plastic window *(arrow)*.

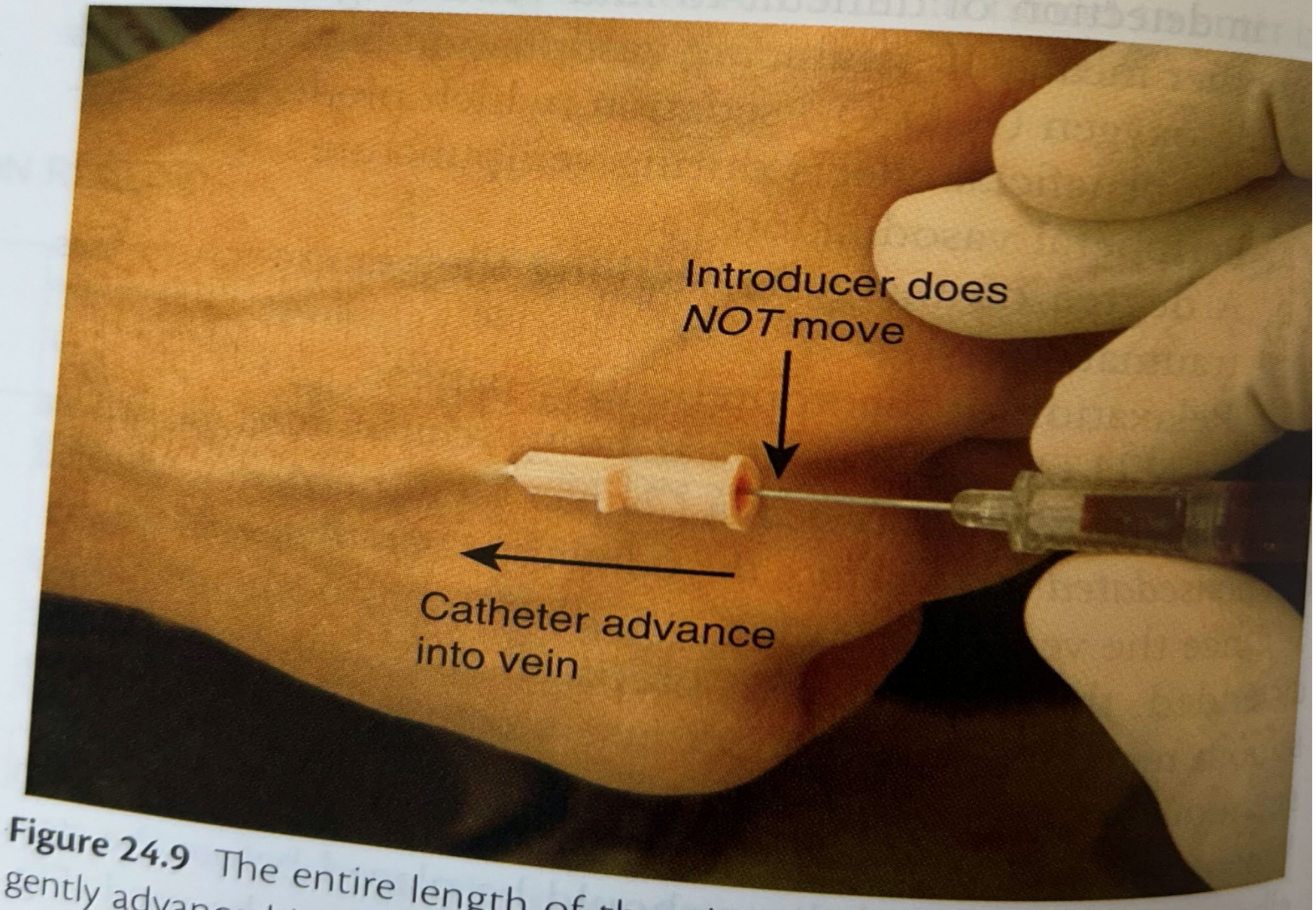


Figure 24.9 The entire length of the plastic catheter is slowly and gently advanced into the vein.

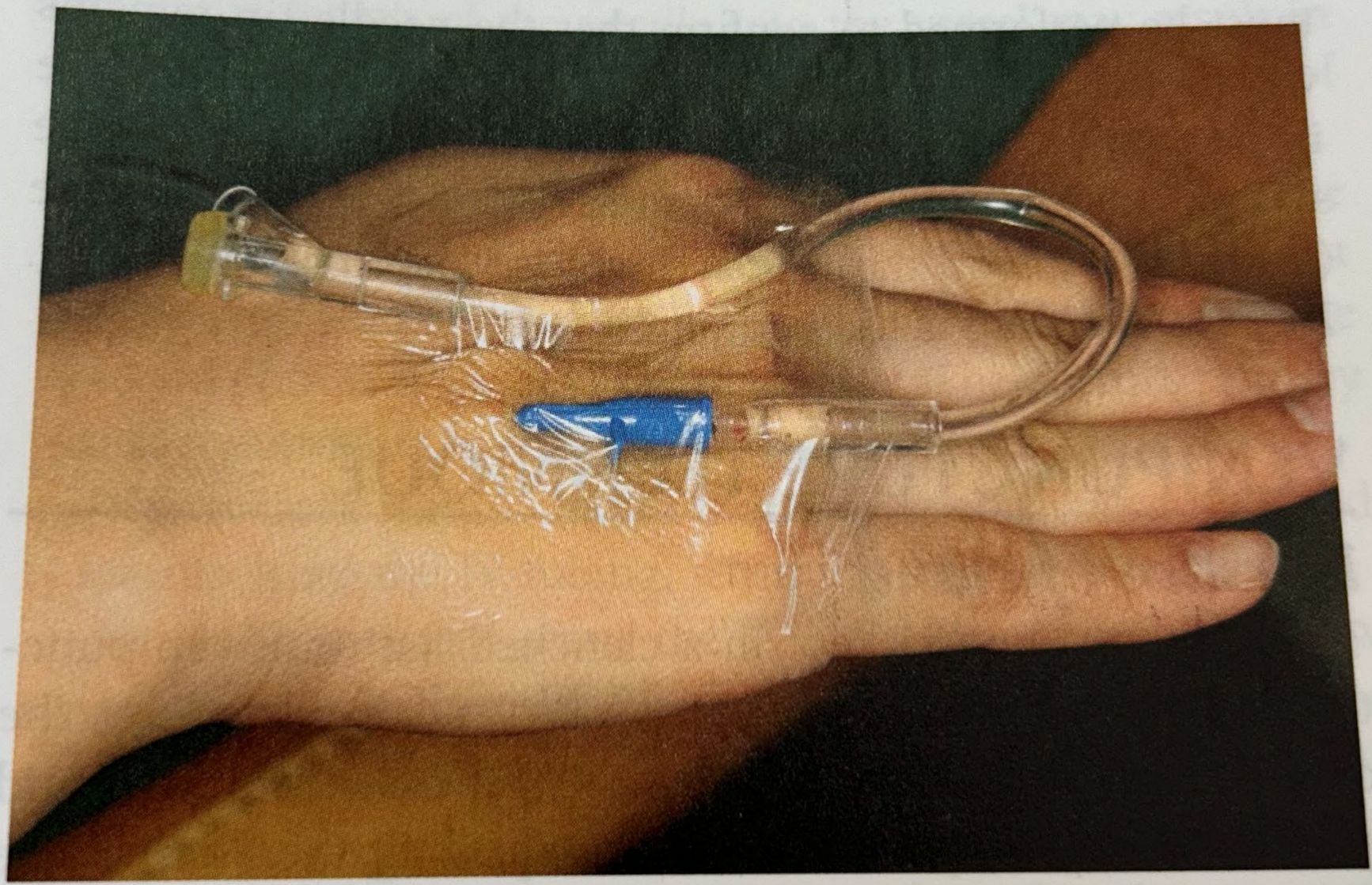


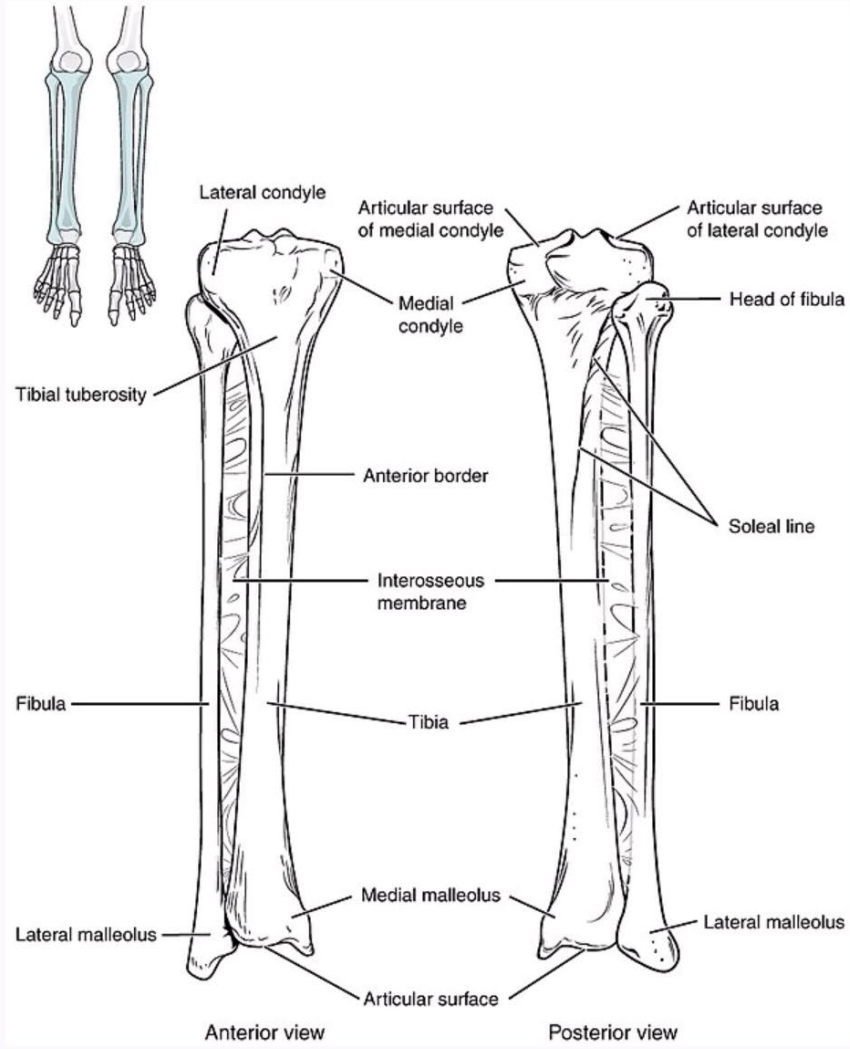
Figure 24.11 Transparent adhesive provides stability and visibility at venipuncture site (Tegaderm).

Intraosseous Infusion

- Provides access to the bloodstream by inserting a needle directly into the bone marrow

- Most common site – just below the medial condyle of the medial tibia

Intraosseous infusion



The tibia IO insertion site is just below the medial condyle, labeled in this picture.

REF DIN1518X X1

Illinois Bone Marrow Aspiration/ Intraosseous Infusion Needle

en Disposable Illinois Bone Marrow Aspiration/Intraosseous Infusion Needle. 18 G Adjustable Length 9/16" (14 mm) - 1 1/2" (38 mm)

fr Aiguille à usage unique Illinois pour aspiration de moelle osseuse/perfusion intra-osseuse 18 G longueur ajustable 14 mm - 38

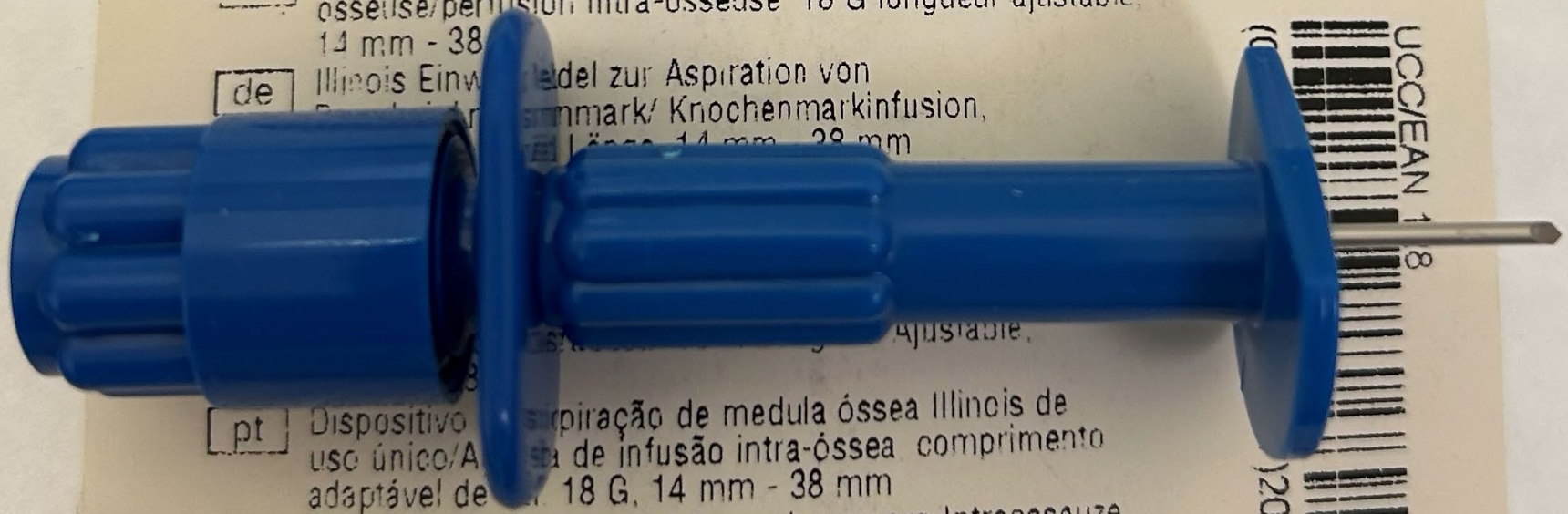
de Illinois Einw del zur Aspiration von mmark/ Knochenmarkinfusion, Länge 14 mm - 38 mm

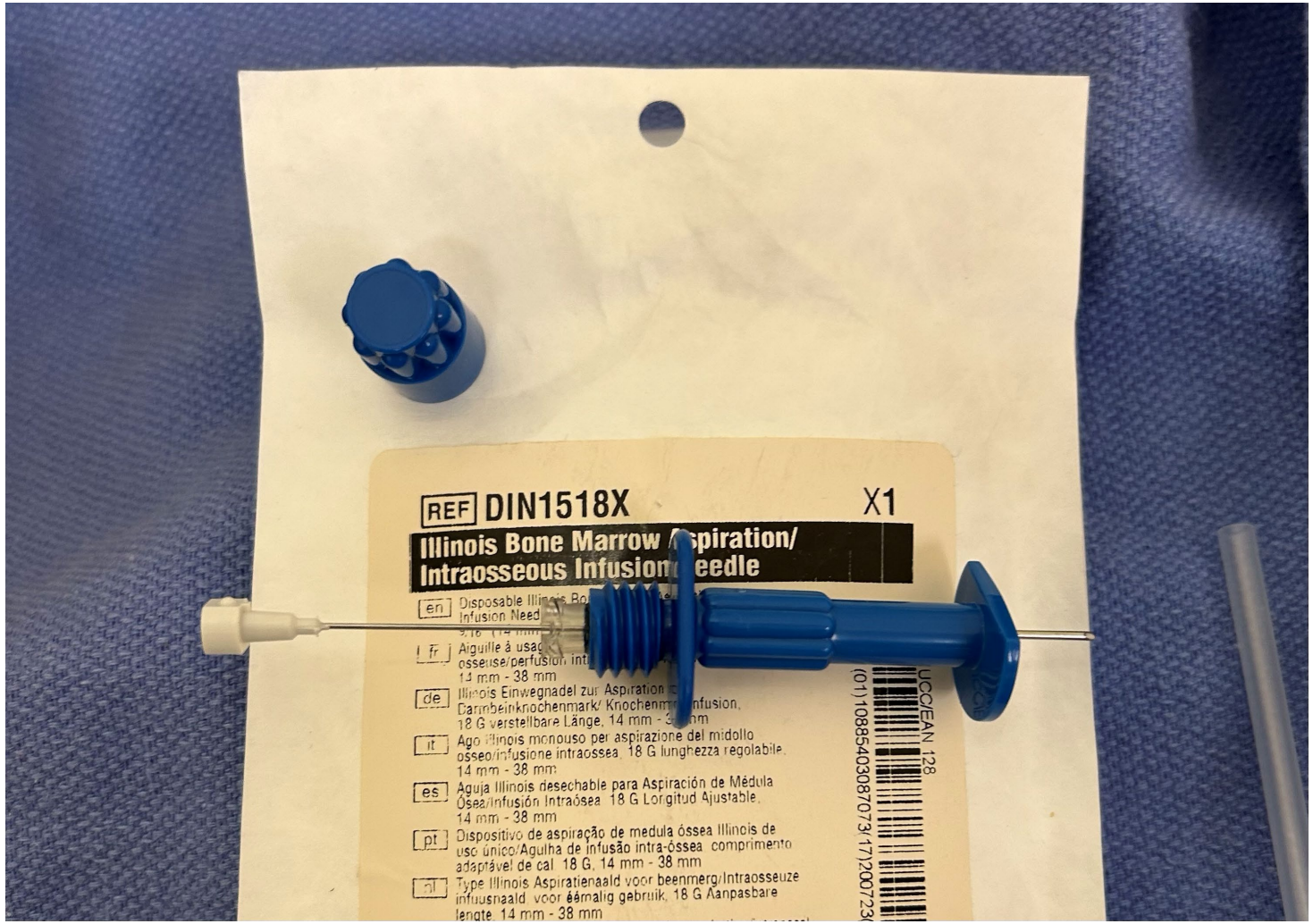
Ajustable.

pt Dispositivo piração de medula óssea Illinois de uso único/A de infusão intra-óssea comprimento adaptável de 18 G, 14 mm - 38 mm

nl Type Illinois Aspiratienaald voor beenmerg/Intraosseuze infuusnaald, voor éémalig gebruik, 18 G Aanpasbare lengte, 14 mm - 38 mm

sv Illinoisnål av engångstyp för benmärgsaspiration/intraossal infusion, 18 G Justerbar längd, 14 - 38 mm

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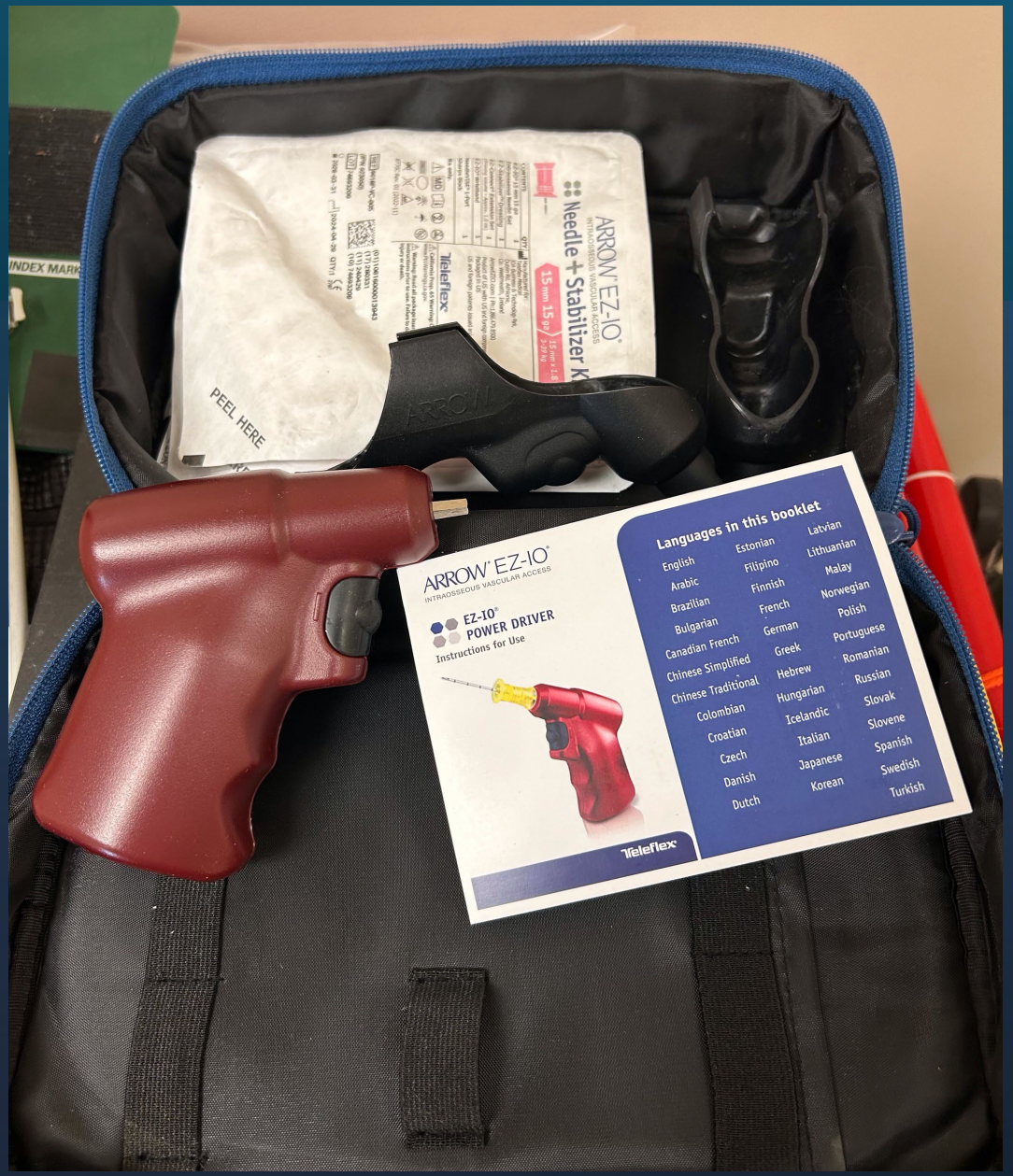
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