

HR
120
50

80

Pulse

79

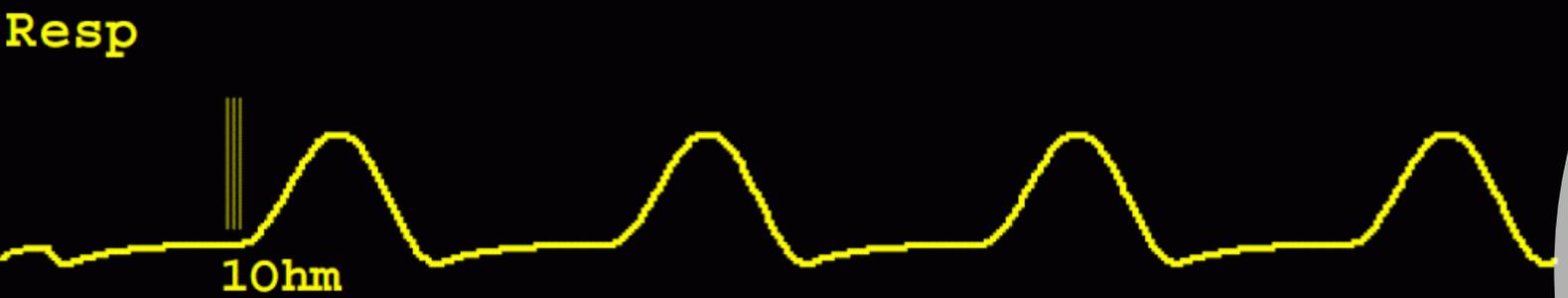


SpO₂
100
90

97

Temp

39.0
36.0 37.2



RR
30
8

15

NSG 3100:
UNIT 3
HEMODYNAMICS

NBP
Sys.
160
90

Auto 10 min

06:40

NBP
mmHg

122/80 (89)

Angela Mueller, MSN, RN

10:40	121/80(89)
10:48	120/82(90)
10:50	121/80(89)
10:51	122/80(89)



Unit 3 Student Learning Outcomes

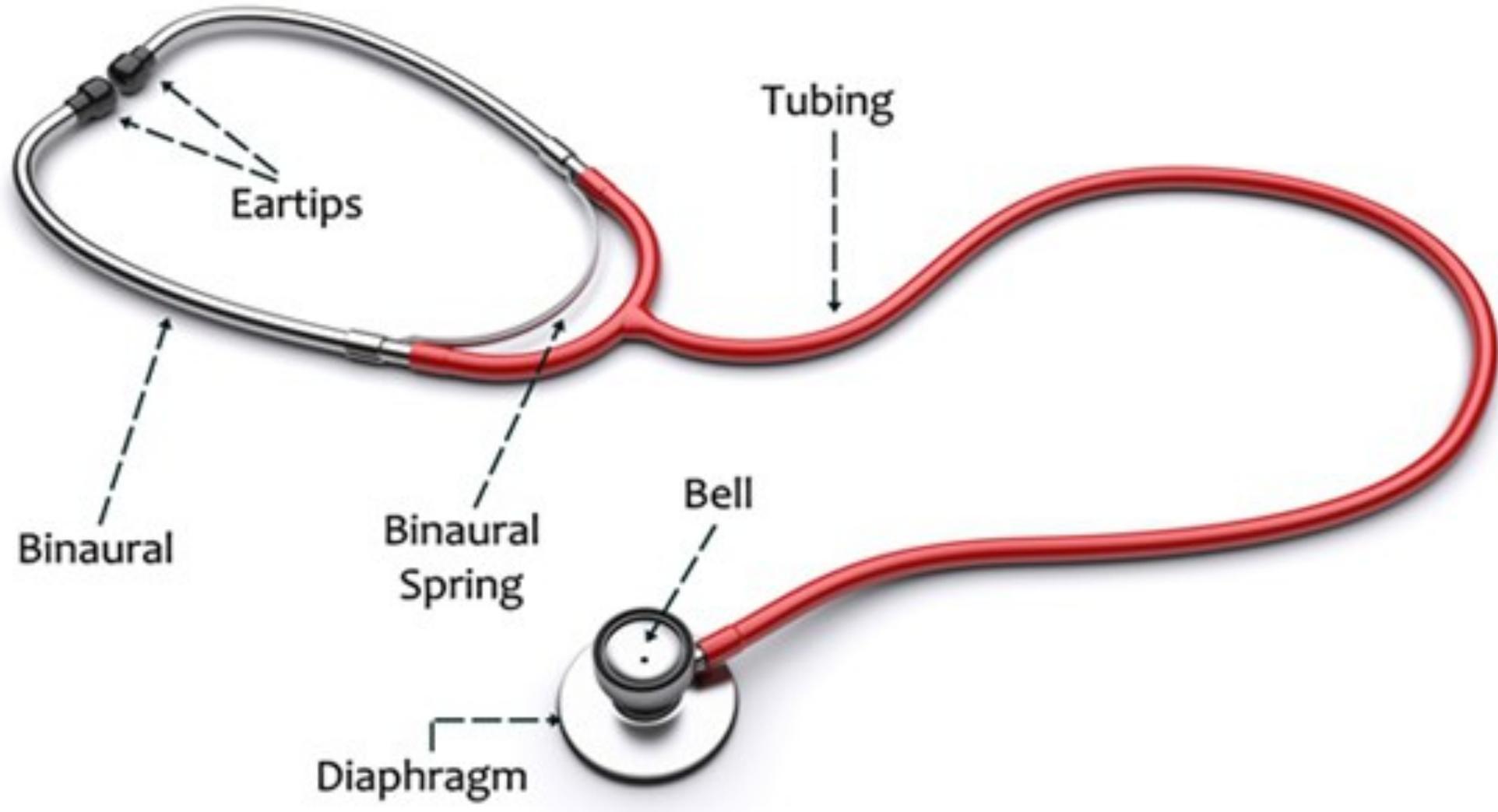
- Describe factors that affect vital signs and accurate measurement (CSLO 1, 4, 2)
 - Define patient-centered nursing care using evidence-based practice for patients when obtaining vital signs (CSLO 4, 2)
 - Identify communication and collaboration skills required to implement care for patients experiencing alterations in vital signs (CSLO 6, 1, 4)
- 

Guiding Principle

Don't treat the number, treat the patient!



Stethoscope



BOX 29-1

Times to Assess Vital Signs

- On admission to a health care agency to obtain baseline data
- When a client has a change in health status or reports symptoms such as chest pain or feeling hot or faint
- Before and after surgery or an invasive procedure
- Before and/or after the administration of a medication that could affect the respiratory or cardiovascular systems; for example, before giving a digitalis preparation
- Before and after any nursing intervention that could affect the vital signs (e.g., ambulating a client who has been on bed rest)



Temperature
(96.8-99.5°F)



Factors Affecting Temperature

1. Age- very young & very old have issues with extreme changes
 2. Diurnal variations (circadian rhythms)- temp varies during the day with the highest temp between 4-6pm and the lowest temp between 4-6am.
 3. Exercise- can increase temp up to 101-104 degrees rectally
 4. Hormones-progesterone secretion at time of ovulation raises body temp by 0.5-1 degree above baseline
 5. Stress- elevation in temp d/t sympathetic nervous system activation
 6. Environment- appropriate dress
- 

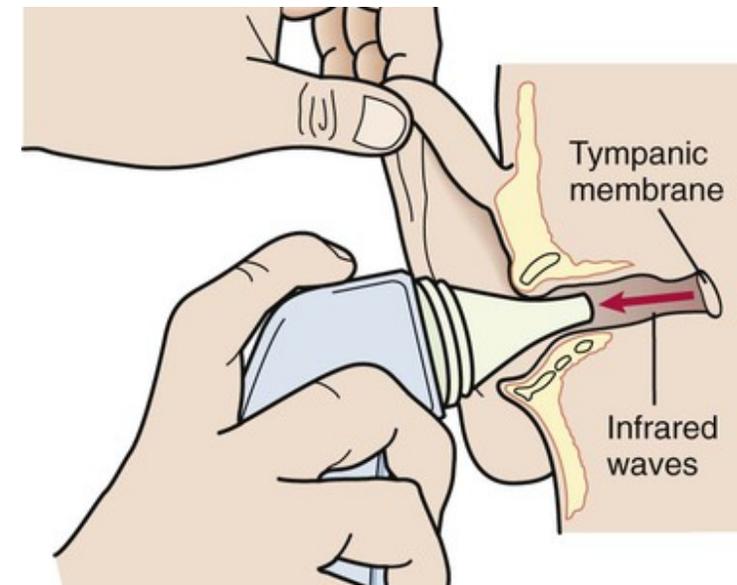


Temperature Regulation

- When the body becomes too cold:
 1. Shivering increases heat production
 2. Sweating is inhibited to decrease heat loss
 3. Vasoconstriction decreases heat loss
- When the body becomes too hot:
 4. Sweating is initiated
 5. Vasodilation occurs

Routes

- Oral
- Rectal
- Axillary
- Tympanic
- Temporal



Clinical Manifestations

Hyperthermia

Onset (Chill): ↑HR, ↑RR, Shivering, Cold skin Complaints of feeling cold, Cyanotic nail beds, "Gooseflesh" appearance, Cessation of Sweating
Course (Plateau): absence of chills, skin that feels warm, photosensitivity, glassy-eye appearance, ↑HR, RR, thirst, mild to severe dehydration, drowsiness, restlessness, delirium, lesions of the mouth, loss of appetite, malaise, weakness, aching muscles
Defervescence (Flush): skin is flushed and warm, sweating, decreased shivering, possible dehydration

Hypothermia

↓temp. pulse, respirations, UO
Severe shivering (initially)
Feels of cold and chills
Pale, cool, waxy skin
Frostbite
Hypotension
Lack of muscle coordination
Disorientation
Drowsiness progressing to coma

Nursing Interventions

Hyperthermia

Hypothermia

- Remove excess blankets
- Adequate nutrition and fluids to meet increase metabolic demand
- Reduce physical activity to limit heat production
- Administer antipyretics
- Provide oral hygiene to keep mucous membranes moist
- Provide a tepid sponge bath

- Warm environment
- Warm blankets
- Keep limbs close to body
- Cover head and feet
- Warm oral or IV fluids
- Warming pads/devices

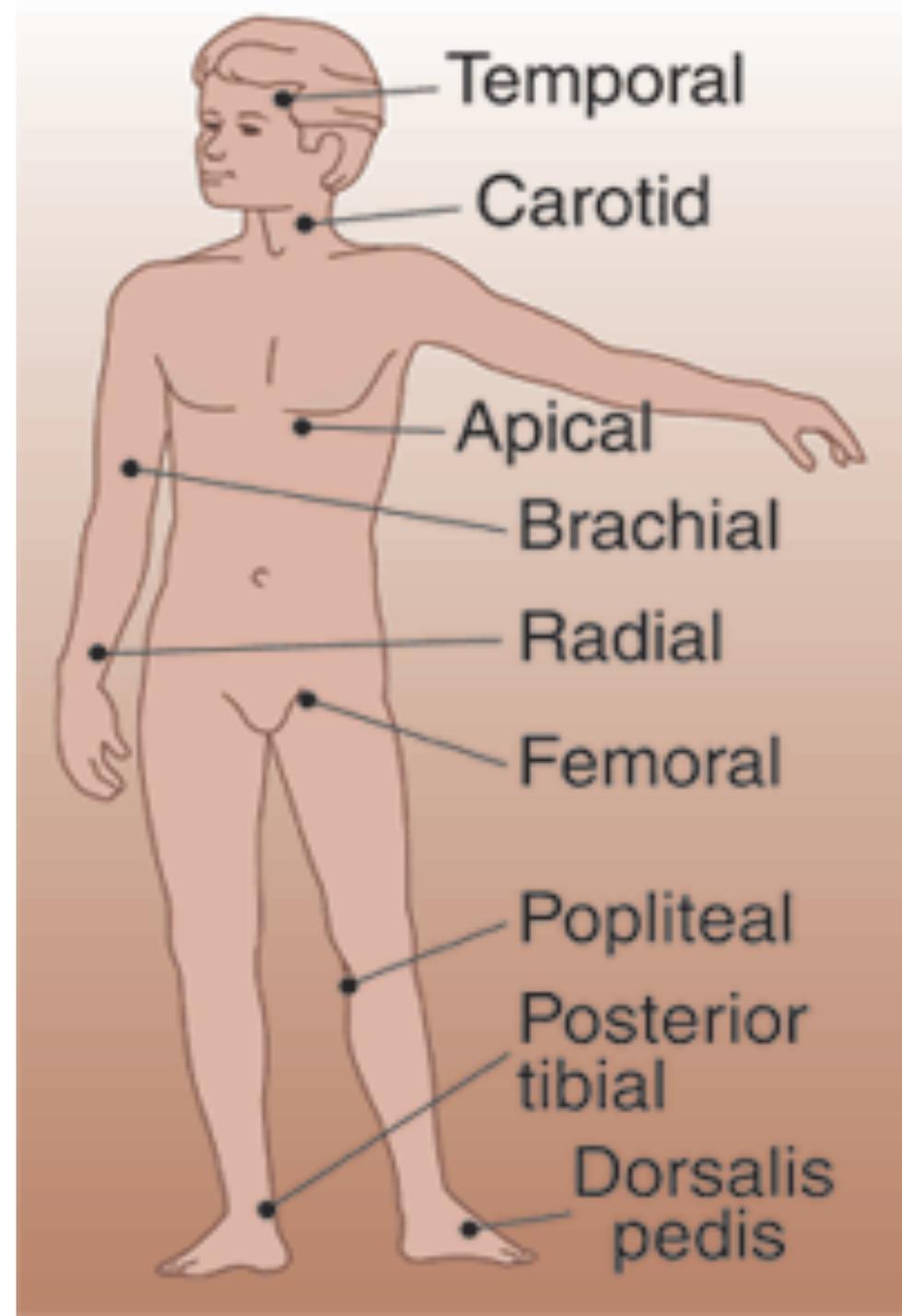


Factors Affecting Pulse

- Age: HR decreases with age
- Sex: males have lower HR after puberty
- Exercise: HR increases with activity
- Fever: HR increases with fever
- Medications: Digoxin
- Hypovolemia/dehydration: HR increases
- Stress: HR increases
- Position: HR increases with standing
- Pathology: heart conditions and those that impair oxygenation

Sites

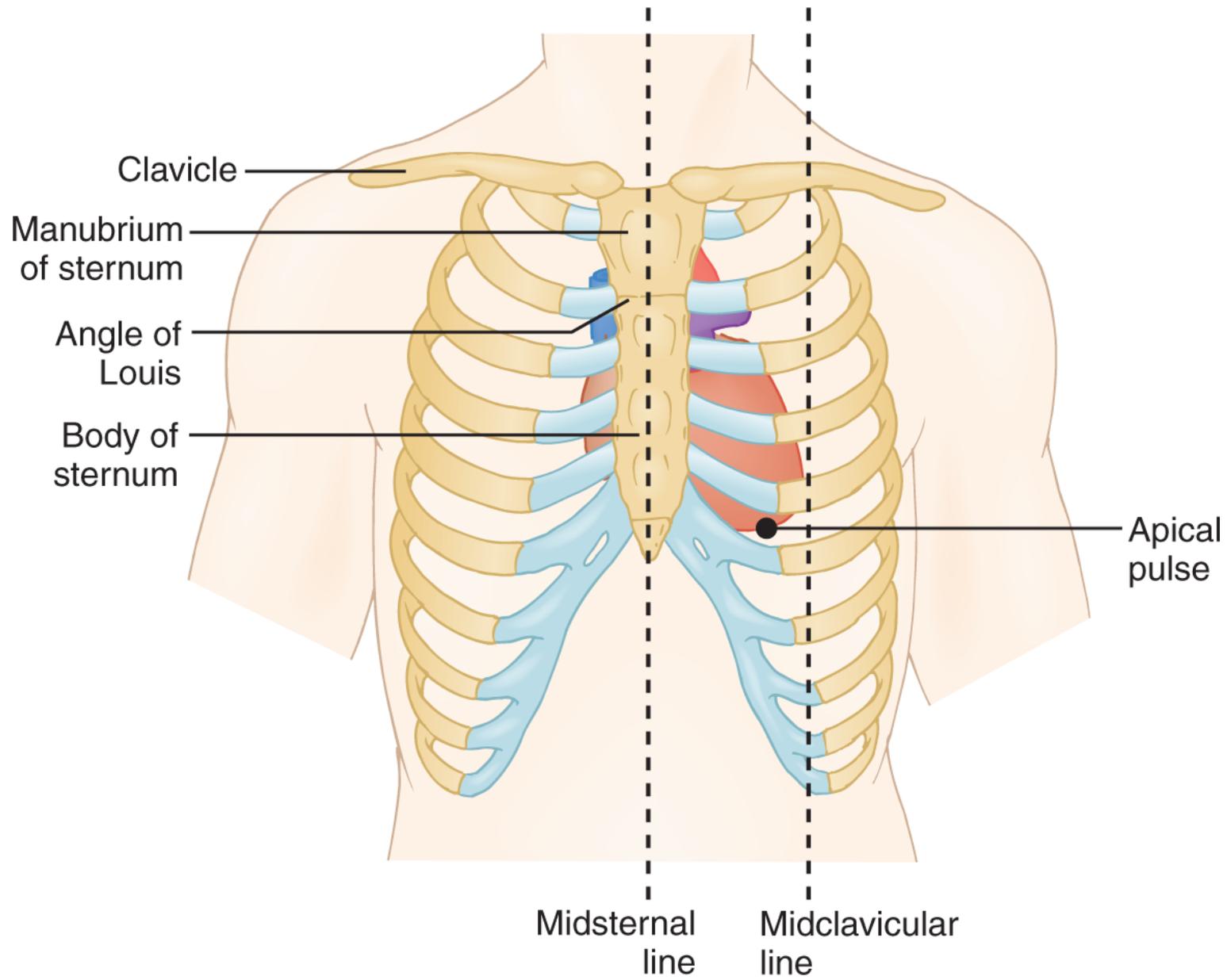
- Temporal-head
- Carotid-neck
- Apical-chest
- Brachial-arm
- Radial-wrist
- Femoral-thigh/groin
- Popliteal-knee
- Posterior Tibial-ankle
- Dorsalis Pedis-foot



Pulse Assessment

- If you can't feel a pulse, move up and assess one more proximal to the one you were trying to feel or use a Doppler to locate it.
- If pulse is irregular or this is your first time assessing, count for 1 full minute
- Tachycardia is a pulse >100
- Bradycardia is a pulse <60
- Always use fingers, not thumb to assess pulse
- Keep fingers in independent position when feeling for pulse so you don't accidentally mistake your pulse for the client's.





Respirations (12-20 BPM)



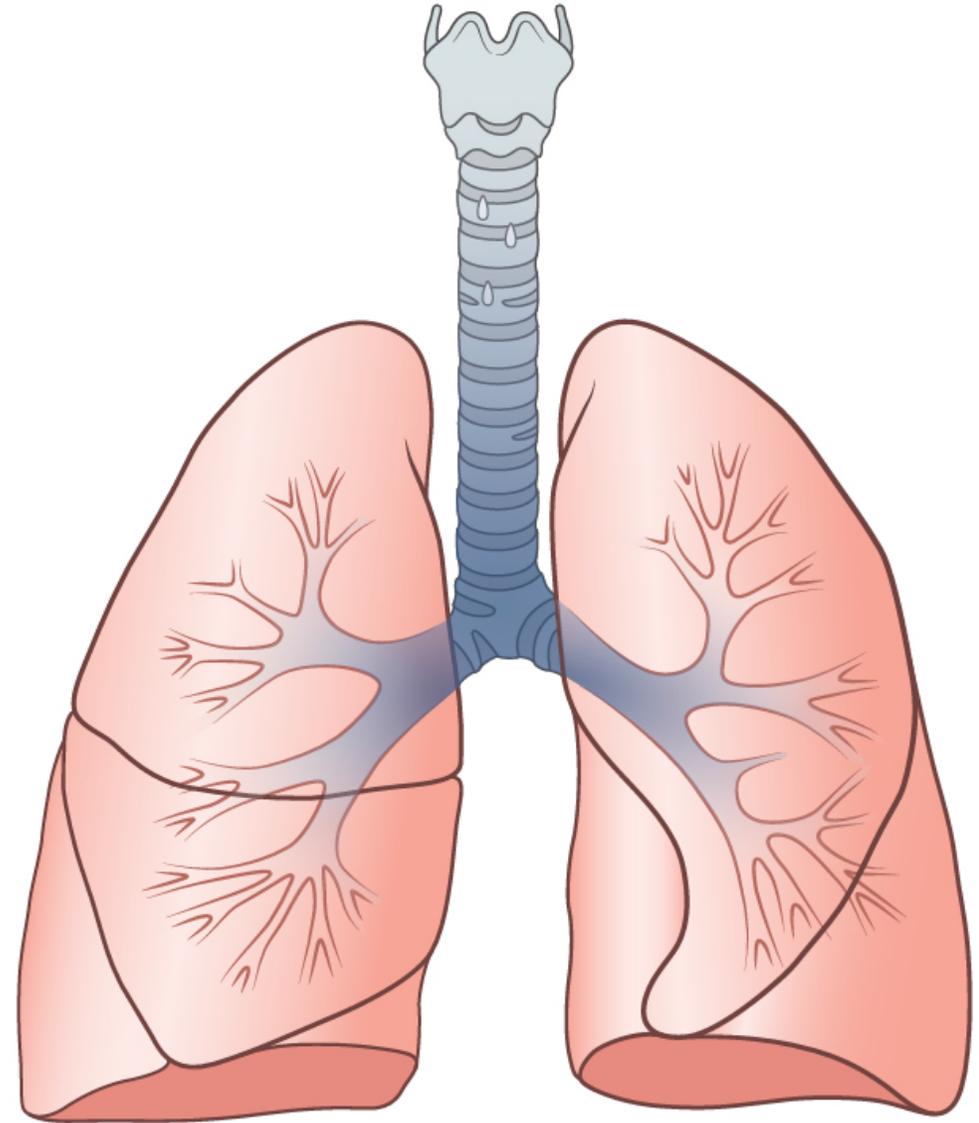
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Assessing Respirations

1. Rate
 - Recorded in breaths per minute
 - Bradypnea=slow breathing
 - Tachypnea=fast breathing
2. Depth
 - Deep vs Shallow
3. Rhythm
 - Regular vs Irregular
4. Quality
 - Labored vs unlabored
 - Any adventitious breath sounds
5. Effectiveness
 - Pulse ox reading
 - ABG's
 - HGB

Adventitious Breath Sounds & Abnormal Airway Findings

- Stridor
- Rhonchi
- Wheeze
- Crackles
- Friction rub
- Retractions
- Grunting
- Nasal Flaring
- Head Bobbing



Tripod Position

Tripod position suggests distress, resting weight on knees helps with chest expansion



Blood pressure
SBP (90-120)/ DBP (60-80)

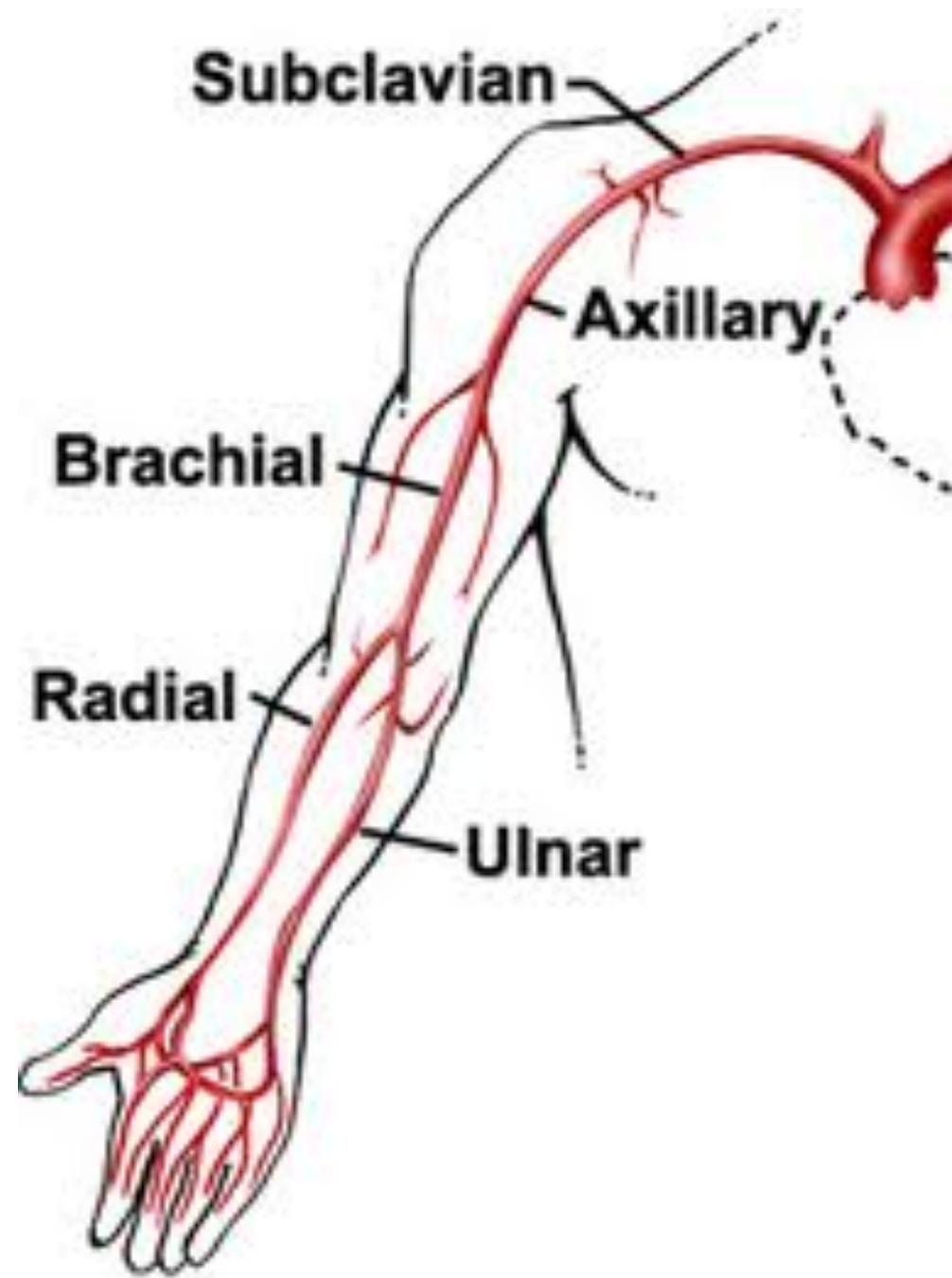


Factors Affecting BP

- Age- rises with age
- Exercise- increases CO and causes increase in BP
- Stress- Sympathetic nervous system increase CO and causes vasoconstriction which increase BP
- Race- African Americans have higher BP's
- Sex- after puberty females have lower BP's but after menopause they have higher
- Medications- caffeine increases BP
- Obesity- predisposes a person to increase BP
- Diurnal variations- BP lowest early in the morning, and highest late in the afternoon
- Medical Conditions- Heart Failure, atherosclerosis, valve issues, ventricle hypertrophy
- Temperature- vasodilation vs vasoconstriction

Assessing BP

- The bladder cuff is measured according to patient size, not age
 - If the cuff is too small, your reading will be falsely high
 - If the cuff is too big, your reading will be falsely low
 - Width should be 40% of arm circumference
 - Length should cover at least 2/3 of the limb circumference
- Do not measure BP in the following areas:
 - Shoulder, arm, or hand is injured
 - Cast or bulky bandage is on the limb
 - Surgical removal or breast or axillary lymph nodes on that side
 - IV infusion on that side
 - AV fistula for dialysis in that limb
- When taking a manual BP, your systolic is the point at which you first hear a tapping sound, and your diastolic is the point at which sounds become inaudible
- Position client sitting with feet on the floor, legs uncrossed, elbow slightly flexed, palm facing up.



Variations in BP

Hypertension

BP above the normal limits for at least 2 readings at 2 different times
HTN= systolic BP is higher than 140 or diastolic is higher than 90
“Silent Killer”

Only s/s sometimes is a headache

Hypotension

A systolic reading consistently between 85-110 in a adult whose normal pressure is higher than this
Orthostatic Hypotension: BP decreases when the client sits or stands as a result of peripheral vasodilation. Causes person to feel faint.

How to assess for orthostatic hypotension

1. Lay the patient supine for 10min
2. Record BP
3. Assist the client to slowly sit and/or stand
4. Immediately recheck in the same site
5. Repeat the HR and BP after 3min
6. Record the results. A drop in BP of 20 systolic or 10 diastolic indicates orthostatic hypotension



Oxygen
Saturation
($>95\%$)



Pulse Oximetry

- Normal O₂ sats are 95-100%
- Below 70% is life-threatening
- Rotate signs of the adhesive ones every 4 hrs and the spring-tension ones every 2hrs to prevent tissue irritation
- May need to cover area with a blanket to prevent excessive light from interfering with the reading
- Choose a warm finger or toe to get your reading
- Factors Affecting the Reading:
 - Hemoglobin
 - Circulation
 - Activity
 - CO poisoning
 - Nail polish



Pulse Oximeter Waveform



Normal Signal



Low Perfusion



Noise Artifact



Motion Artifact

PAIN

Mnemonics for pain assessment

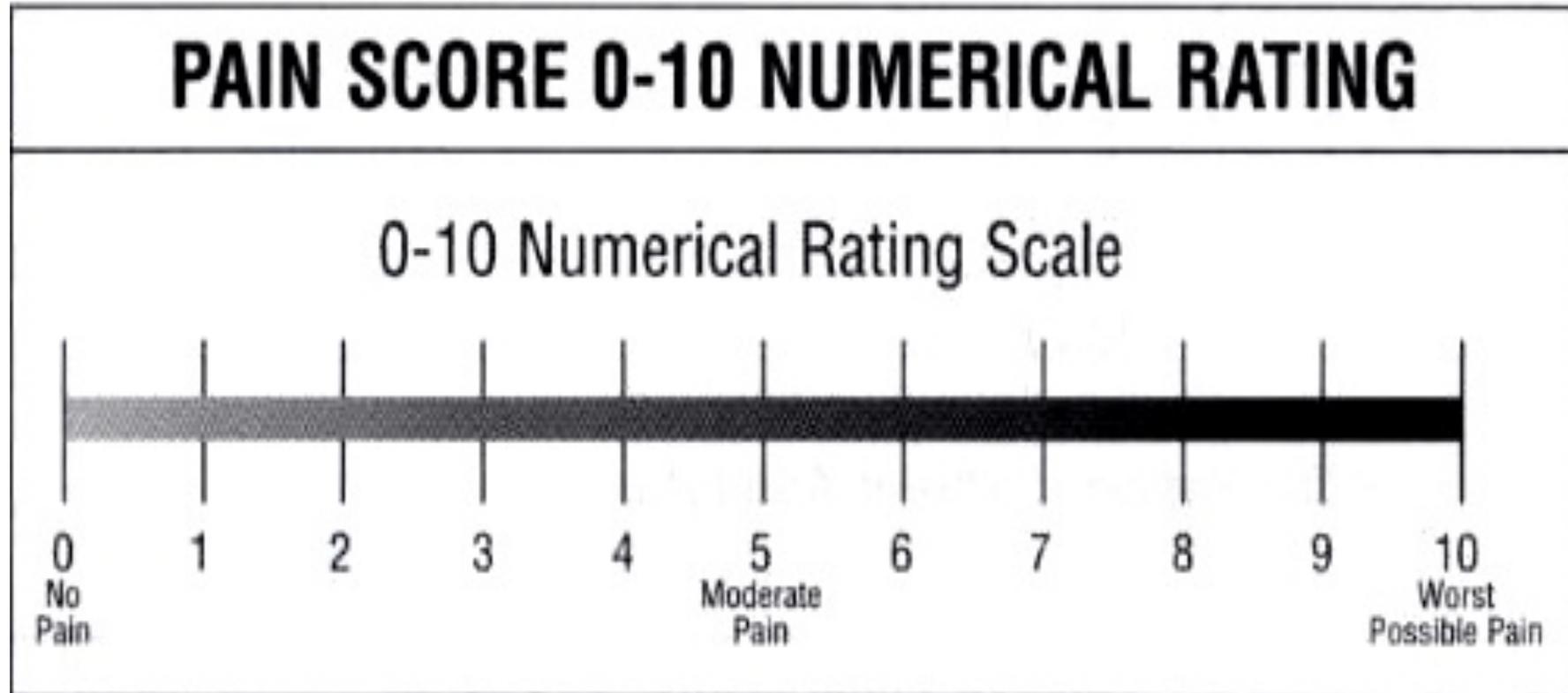
OLD CART

- O- Onset
- L- Location
- D- Duration
- C- Characteristics
- A- Aggravating factors
- R- Radiation
- T- Treatment

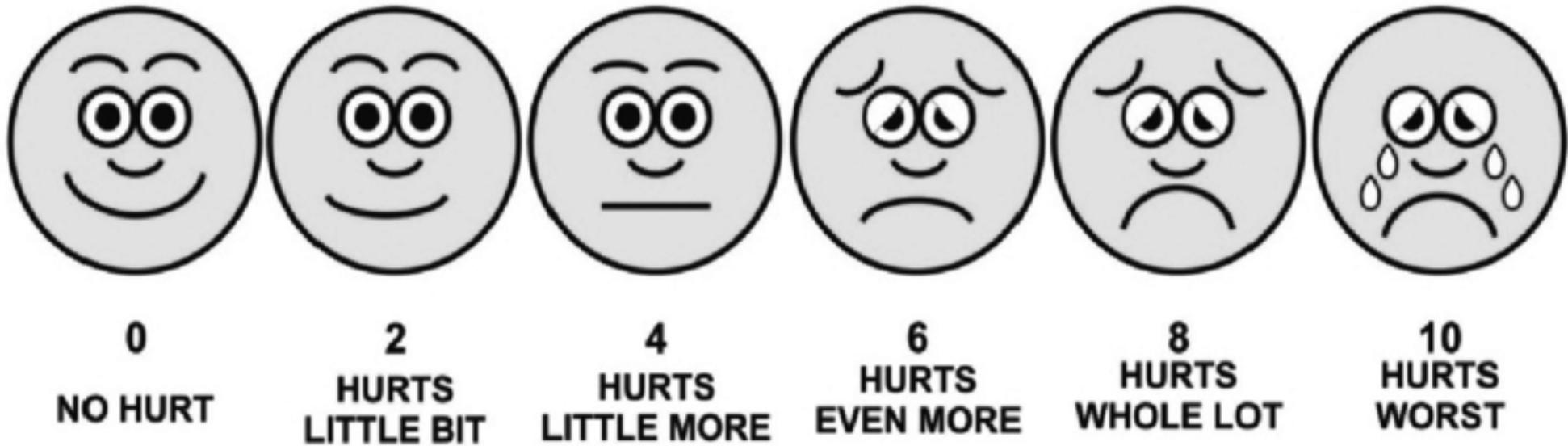
PQRST

- P- Provoked
- Q- Quality
- R- Region/Radiation
- Severity
- Timing

Pain Scales-Numeric



Pain Scales-Wong-Baker Faces



Pain Scales-FLACC

Categories	Scoring		
	0	1	2
Face	No particular expression or smile.	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to; distractable	Difficult to console or comfort

Note: Each of the five categories Face (F), Legs (L), Activity (A), Cry (C), and Consolability (C) is scored from 0-2, which results in a total score between 0 and 10. From Merkel, Voepel-Lewis, Shayevitz, & Malviya (1997). The FLACC: A behavioral scale for scoring postoperative pain in young children. *Pediatric Nursing*, 23 (3) 293-297.

Pain Scales-NIPS

Neonatal Infant Pain Scale (NIPS)

Variable	Finding	Points
Facial expression	Relaxed (Restful face, neutral expression)	0
	Grimace (Tight facial muscles. Furrowed brow, chin, jaw)	1
Cry	No cry (Quiet, not crying)	0
	Whimper(Mild moaning, intermittent)	1
	Vigorous crying (loud scream, shrill, continuous). If Infant is intubated, score silent cry based on facial movement.	2
Breathing pattern	Relaxed (Usual pattern for this infant)	0
	Change in breathing (Irregular, faster than usual , gagging, breath holding)	1
Arms	Relaxed (No muscular rigidity, occasional random movements of arms)	0
	Flexed/extended (Tense, straight arms, rigid and /or rapid extension, flexion)	1
Legs	Relaxed(No muscular rigidity, occasional random movements)	0
	Flexed/Extended (Tense, Straight legs, rigid and/or rapid extension, flexion)	1
State of Arousal	Sleeping/Awake (Quiet, peaceful, sleeping or alert and settled)	0
	Fussy (Alert, restless and thrashing)	1
Heart Rate	Within 10% of baseline	0
	11-20% of baseline	1
	>20% of baseline	2
O₂ Saturation	No additional O ₂ needed to maintain O ₂ saturation	0
	Additional O ₂ required to maintain O ₂ saturation	1

Limitations: A falsely low score may be seen in an infant who is too ill to respond or who is receiving a paralyzing agent.

(A score greater than 3 indicates pain)