



SPHCON

EST 1904

NURSING

Coordinating and Improving Care

Professor Kevin Pommenville RN MSN

5

What is Acute... What is Chronic?

CHRONIC = Assessment

Category	Acute	Chronic
Onset	Sudden or recent	Slow or progressive
Pain	Sharp, severe, new	Dull, persistent, managed
Vital Signs	Unstable (e.g., ↑HR, ↓BP, ↑RR, fever)	Often within baseline or compensated
Oxygenation	Sudden desaturation, dyspnea at rest	Dyspnea on exertion, baseline SpO ₂ managed w/ home oxygen
Neuro Status	New confusion, change in LOC, slurred speech	Stable cognitive changes (e.g., dementia baseline)
Skin	Warm, flushed, cyanosis, acute rash, diaphoresis	Chronic ulcers, scarred tissue
Labs	Rapid changes (H&H drop, troponin rise, sudden hyperkalemia)	Mild to moderate ongoing abnormalities (anemia of CKD)
Pain Meds Needed	Immediate, high doses for control	Controlled with routine analgesics
Functional Status	New weakness, falls, inability to perform ADLs	Gradual decline; uses assistive devices
Red Flags	New symptoms, unstable vitals, altered mental status	Longstanding, documented history

What is Acute... What is Chronic?

ACUTE = Interventions

Domain	Acute Interventions	Chronic Interventions
Airway/Breathing	Apply O ₂ , rapid response, suctioning, ventilator support	Maintain oxygen via nasal cannula, teach pursed-lip breathing
Circulation	IV fluids, vasopressors, transfusion	Monitor BP, adjust meds like diuretics or antihypertensives
Pain Management	STAT opioid admin, frequent reassessment	Scheduled non-opioids, chronic pain consult
Neurological	Stroke protocol, neuro checks q1h, seizure precautions	Safety education, orienting cues, maintain baseline cognition
Medications	Hold/review meds for acute decline, titrate drips	Medication adherence, long-term side effect monitoring
Monitoring	Continuous telemetry, labs q4h, hourly vitals	Weekly labs, daily weights, routine checkups
Teaching	Teach on new diagnosis, surgical recovery, red flags	Focus on lifestyle management, med adherence, symptom tracking
Mobility	Bedrest, fall precautions, PT eval	Encourage ambulation, ROM exercises, assistive devices
Nutrition	NPO status, TPN/NG feeding, acute calorie support	Diet education (low Na, diabetic), oral supplements
Discharge Planning	May not be applicable (admitted or critical)	Referrals to home care, chronic disease management programs

NCLEX QUESTION...

A nurse is caring for a 72-year-old male with a history of stable angina who presented to the emergency department with chest pain rated 9/10, described as crushing and radiating to the left arm and jaw, unrelieved. The patient is diaphoretic and anxious.

Vital signs are:

BP: 92/58 mmHg

HR: 118 bpm

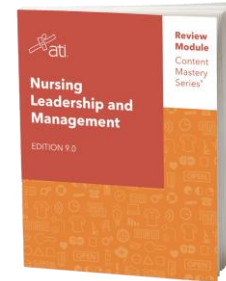
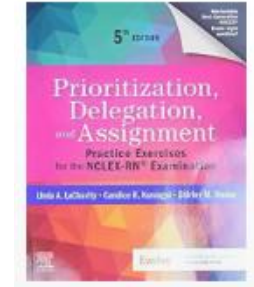
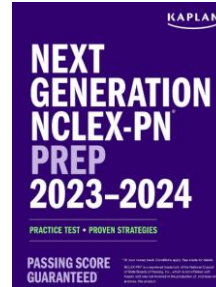
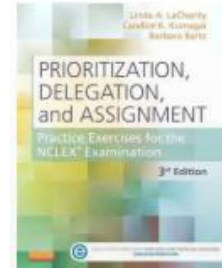
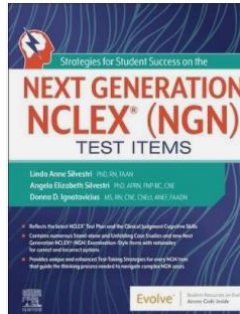
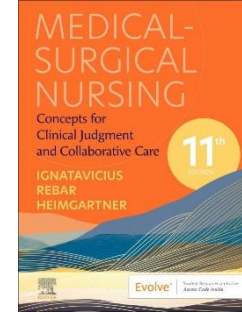
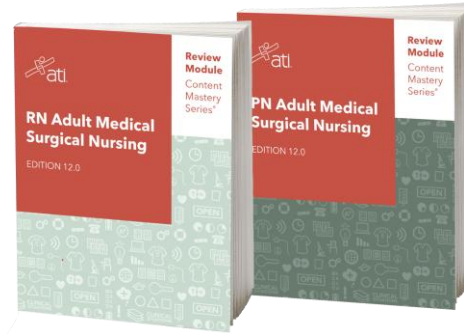
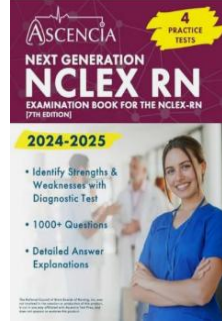
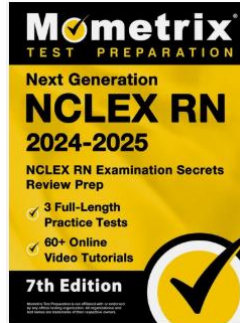
RR: 24/min

SpO₂: 90% on room air

Which of the following is the nurse's **BEST** action?

- A. Administer sublingual nitroglycerin stat
- B. Place the patient in high Fowler's position
- C. Apply oxygen at 4 L/min via nasal cannula
- D. Obtain a 12-lead ECG

But before we start...



NURSING V - CARDIAC UNIT

NCLEX QUESTION...

A nurse is caring for a 72-year-old male (DOESN'T MATTER) with a history of stable angina (USES NITRO PRN) who presented to the emergency department (ACUTE) with chest pain rated 9/10, described as crushing and radiating to the left arm and jaw, unrelieved. (MI) The patient is diaphoretic and anxious.

TOPIC
MI- NO PERFUSION
ACUTE
NOW

Vital signs are:

BP: 92/58 mmHg (BAD NO PERFUSION)

HR: 118 bpm ((BAD COMPENSATING)

RR: 24/min

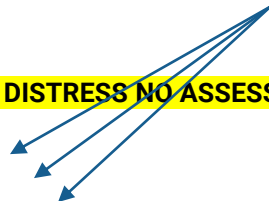
SpO₂: 90% on room air (NOT OXYGENATING)

3 Implements what changes and supports patient now!

Which of the following is the nurse's BEST action? (ACUTE DISTRESS NO ASSESS)

OXYGEN are they on it? Nope give it then high fowlers then nitro

- A. Administer sublingual nitroglycerin stat IMPLEMENT
- B. Place the patient in high Fowler's position IMPLEMENT
- C. Apply oxygen at 4 L/min via nasal cannula IMPLEMENT
- D. Obtain a 12-lead ECG – ASSESS REMOVE



When there is Time in the QUESTION...

Order of Priority

Fresh Post Op always First & Harmful Beats everything

<24- Looking for complication – New admits, Transfers

24-72- Generally stable patients inflammatory state not acute

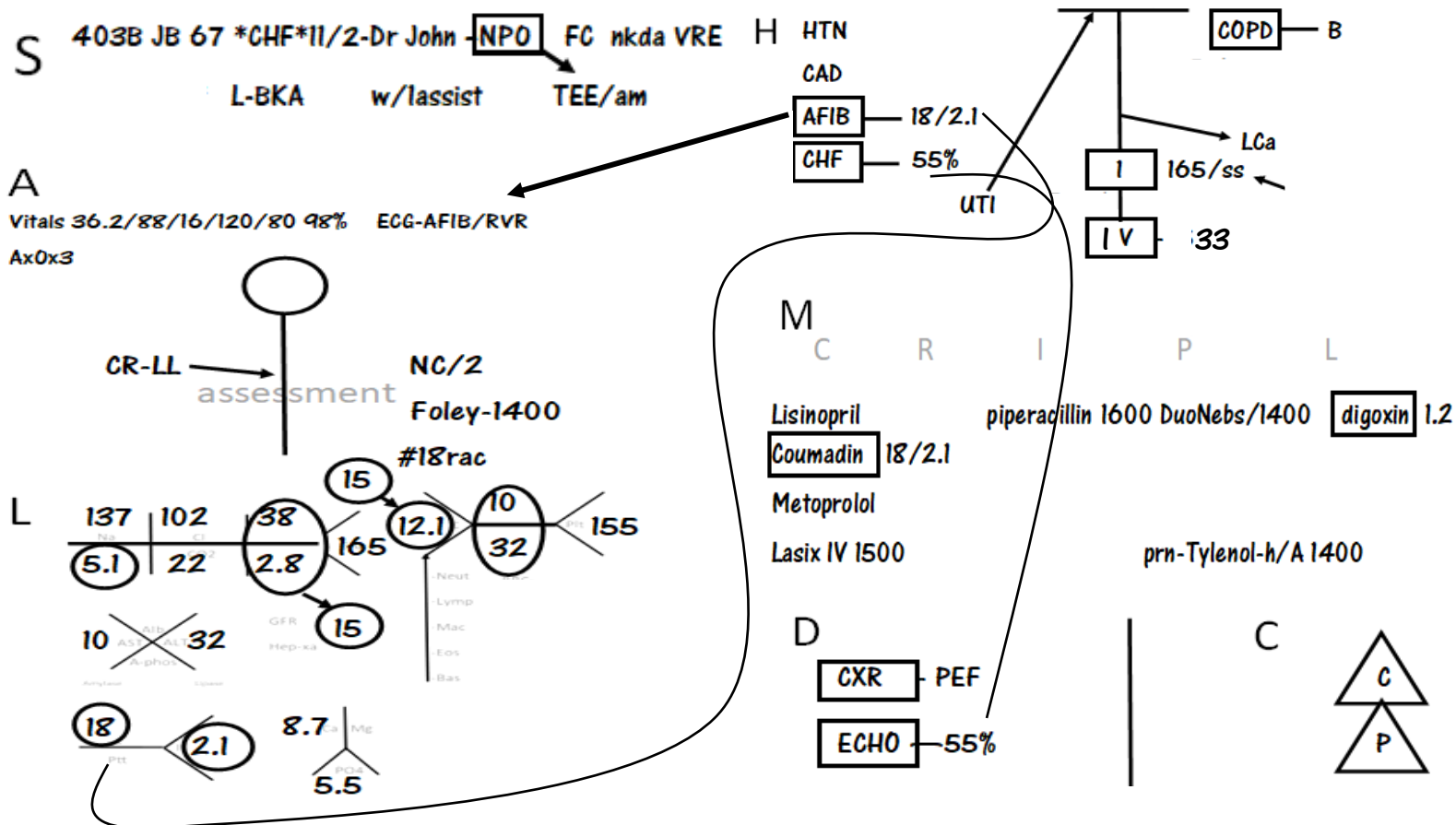
>72 – Infection states start

The Art of the Patient Information

SHAMLCD3

THIS IS THE DIALOGUE
Not the Task but the Why

The Language





10 CREDITS

Class 1030-100 Tue – Wed
Clinical 200-1000 W & Th
700-300 Th & F

PERSPECTIVE

A&P 1(4 Credits)

800-12 Tue

800-1030 LAB WED

Chem 3 (3 Credits)

200-430 Tue

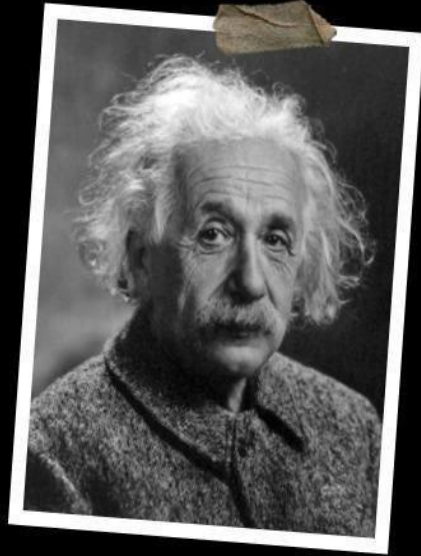
800-10 Lab

Abn Psy (3 Credits)

800-915 Mon

800-915 Fri

**"Education is not
the learning of
facts, but the
training of the mind
to think."
-Albert Einstein**



Education is not received. It is achieved

WEEK	Lecture Tues	Lecture Wed	Clinical Wed EVE	Clinical Thurs Eve	Clinical Thurs Day	Clinical Friday Day
1	CARDIAC	CARDIAC	LAB	LAB	LAB	LAB
2	CARDIAC	CARDIAC	CLINICAL	CLINICAL	CLINICAL	CLINICAL
3	CARDIAC	CARDIAC	CLINICAL	CLINICAL	CLINICAL	CLINICAL
4	EXAM	ECG	CLINICAL	CLINICAL	CLINICAL	CLINICAL
5	ECG EXAM PULMONARY	PULMONARY	CLINICAL	CLINICAL	CLINICAL	CLINICAL
6	PULMONARY	PULMONARY	CLINICAL	CLINICAL	CLINICAL	CLINICAL
7	PULMONARY EXAM	RENAL	CLINICAL	CLINICAL	CLINICAL	CLINICAL
8	RENAL	RENAL/ENDO	CLINICAL	CLINICAL	CLINICAL	CLINICAL
9	RENAL EXAM	MIDTERM	CLINICAL	CLINICAL	CLINICAL	CLINICAL
10	NEURO	NEURO	CLINICAL	CLINICAL	CLINICAL	CLINICAL
11	NEURO EXAM	SHOCK	CLINICAL	CLINICAL	CLINICAL	CLINICAL
12	SHOCK	TRAUMA BLOOD	CLINICAL	CLINICAL	CLINICAL	CLINICAL
13	SHOCK EXAM	PHARM PRESENTATIONS Leadership	CLINICAL	LAST CLINICAL	CLINICAL	LAST CLINICAL
14	B R E A K					
15	PHARM 900am	MED SURG 900am			COMP PREDICTOR 9am	
16	FINAL MONDAY		LIVE ATI	LIVE ATI	LIVE ATI	

600 COURSE POINTS

5 Unit Exams 75 Points Each

1 ECG quiz 20 Points

ATI Test Proctored 60

40 Non-Testing Points

1+4

5 POINTS

ATI

ATI Practice Assignment

5 Points Each

Medical Surgical

Pharmacology

Comprehensive Predictor

>70 No remediation <70 Remediate
TBD

Presentation Assignment

Top 100 Medications

5 Points

PPT -10 Slides

5 NCLEX Questions

5 Meds AWHALES- 3 Things

NCLEX ATI- Assignment

5 Points Each

Orange- WEEK 6

Blue Week 9

Green December 1

>65

Total Points 600

480

Every point matters

HOW TO STUDY PROCESS BURN LIST

4 SQUARE

STUDY GROUP PROCESS

CONTENT

MEDS/LABS

**25 PER
NURSE= 30
MINUTES
15 REVIEW**

**50 PER
NURSE= 1
HOUR
30 REVIEW**

**DIETS
ISOLATION
PRECAUTIONS**

WOW

**APPS
BOOKS
NURSING
KAMP**

**WEBSITES
BOOKS
ATI**

Question Analysis

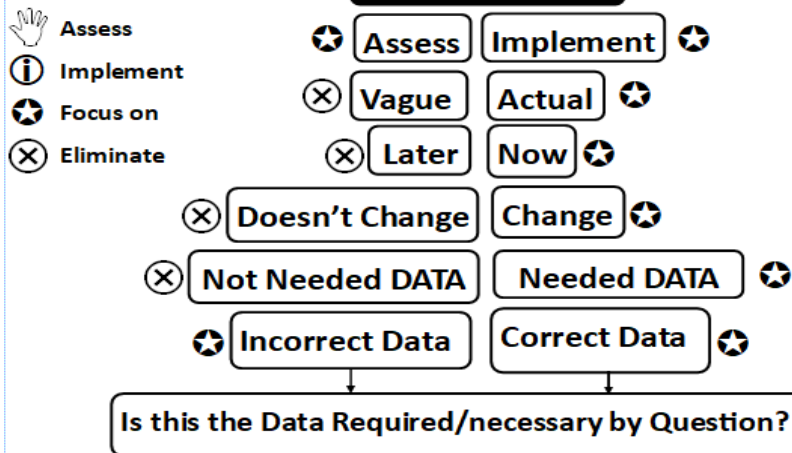
NURSINGKAMP

QUESTION ANALYSIS CRITICAL THINKING DIAGRAM

What is the Topic?



Answers Analysis



Burn List in Action

CONTENT	MEDS
DIPL	WOW

A nurse is receiving report on a 68-year-old client with hypertension and heart failure who received **enalapril 10 mg PO** one hour ago. The client is now awake, alert, and seated in bed. The nurse reviews the following assessment data:

BP: 118/70 mmHg (previously 136/82 mmHg)

HR: 88 bpm

SpO₂: 96% on room air

Reports: mild dizziness when standing, occasional dry cough

Labs: Potassium: **5.3 mEq/L**, Creatinine: 1.3 mg/dL

Which finding is the **nurse's PRIORITY** to report to the healthcare provider?

- A. Orthostatic dizziness during morning ambulation
- B. Development of a persistent nonproductive cough
- C. Decrease in systolic blood pressure greater than 25
- D. Elevated serum potassium level of 5.8 mEq/L

Burn List in Action

CONTENT HTN	MEDS Enalapril
DIPL Potassium lvl	WOW

A nurse is receiving report on a 68-year-old client with hypertension and heart failure who received **enalapril 10 mg PO MED IN QUESTION**

QUESTION ABOUT MED one hour ago. The client is now awake, alert, and seated in bed. The nurse reviews the following assessment data:

BP: 110/70 mmHg (previously 136/82 mmHg)

HR: 88 bpm

SpO₂: 96% on room air

Reports: mild dizziness when standing, occasional dry cough

Labs: **Potassium: 5.3 mEq/L**, Creatinine: 1.3 mg/dL

Which finding is the **nurse's PRIORITY** to report to the healthcare provider?

A. Orthostatic dizziness during morning ambulation **Potential**

B. Development of a persistent nonproductive cough – **IMPORTANT Assess**

C. Decrease in systolic blood pressure greater than 25 ?

D. Elevated serum potassium level of 5.3 mEq/L **IMPORTANT REPORT**

Lecture Notes

Med List

NURSINGKAMP *Med & Burn List!*

Each School lecture should be broken down to units or perspectives this is identified in lecture and question sets. Building a burn list helps understand what the main concepts of the unit entails. Comparison with fellow students evaluates if your unit burn list is complete. A unit burn list is separated by the four square in lecture and defined by test. After an exam a new unit burn list should be constructed.

Med List!

Main Arching Concept

<i>Diets</i>	<i>Procedure, Precautions, Labs</i>		

Lecture Notes

Each School lecture should be broken down to units or perspectives this is identified in lecture and question sets. Building a burn list helps understand what the main concepts of the unit entails. Comparison with fellow students evaluates if your unit burn list is complete. A unit burn list is separated by the four square in lecture and defined by test. After an exam a new unit burn list should be constructed.

Main Arching Concept

[illegible]

The Question Cards

P R E S E N T A T I O N



SYMPTOMS-3

Precipitating!

Anticipate!



MAIN CONCEPT CONDITION

Main Complication Condition

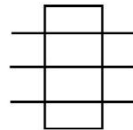
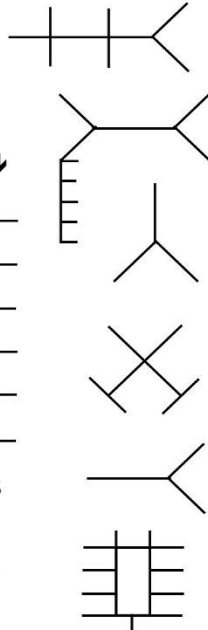


THE ACUTE 3

The Nursing 7

TEMP	
PULSE	
RESP	
BP	
MAP	
PULSE OX	

FLUID STATUS PULSES



COMPLICATION



CONCEPTUAL KAMP © 2018

Before we start....

Nursing V Course Content Concept List - This is the \

Week 1-3

- Cardiac Medications
- Symptomology
- LABS
- Perfusion
- Heart
- CAD
- HTN
- ANGINA
- MI
- SHOCK
- CHF
- Cardiomyopathy
- Cardiac Tamponade
- AAA/Thoracic

Week 4 Electrophysiology

- Cardiac Medications
- Symptomology
- LABS
- Normal Electrophysiology
- Atrial Rhythms
- Ventricular Rhythms
- Defibrillation
- Pacing

Week 5-6

- Pulmonary Medications
- Symptomology
- LABS
- Oxygenation
- Ventilation
- Acid Base Balances
- Lungs
- COPD
- BRONCHITIS
- EMPHYSEMA
- PNEUMONIA
- ARDS
- VENTS TRACHS

Week 7-8

- Renal Medications
- Symptomology
- LABS
- Perfusion
- RENAL
- ARF
- CRF
- Pre Renal
- Intra Renal
- Post Renal
- Hemodialysis
- Peritoneal Dialysis
- Pancreatitis
- Liver Disease/Endocrine

Week 9-12

- Neuro Medications
- Symptomology
- Assessment
- Cranial Nerves
- LABS
- Guillain Barre
- Myasthenia Gravis
- Spinal Injury
- Neurogenic Shock
- Spinal Shock
- Autonomic Dysreflexia

Week 13-14

- Shock Medications
- Symptomology
- Assessment
- Blood
- LABS
- Trauma
- Spinal Injury

Week 15-16

- NCLEX
- BURNS
- ATI
- PRESENTATIONS



Where is the boat?

Top 100 Medications Highlight the Cardiac

“There is nothing so useless as doing efficiently that which should not be done at all.” – Peter F. Drucker

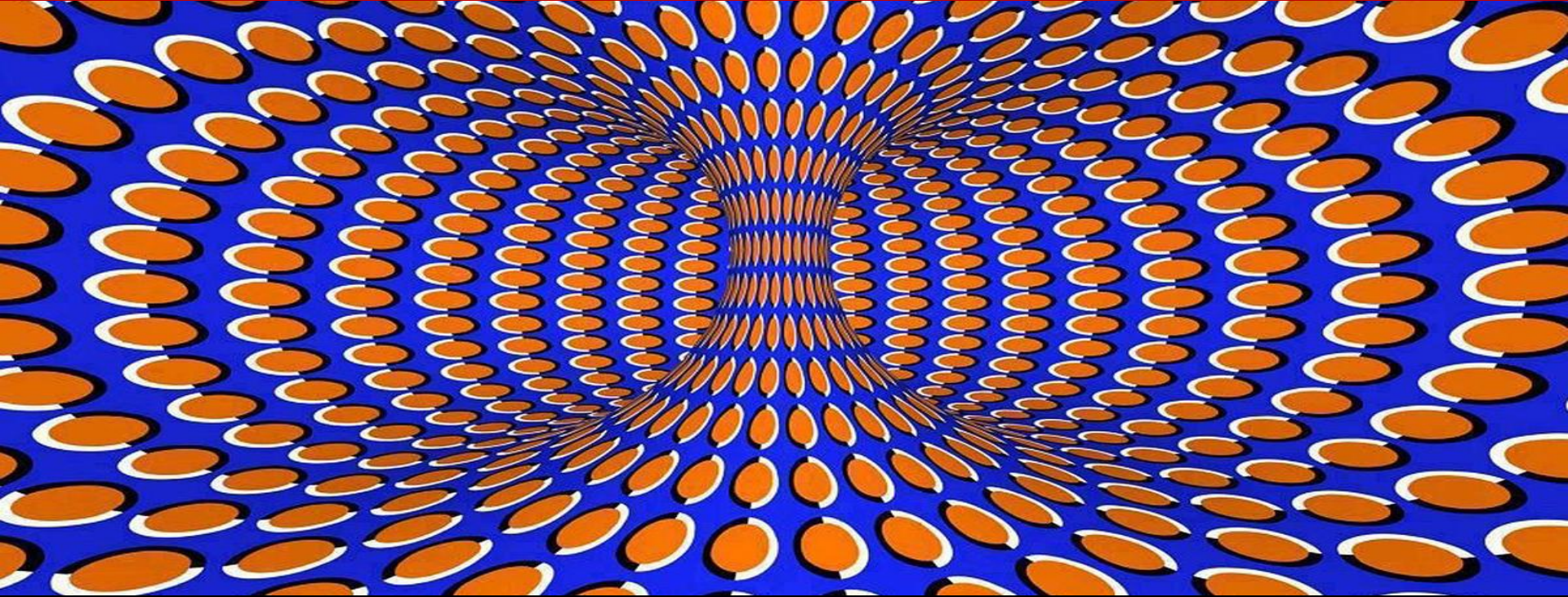
SPHCON MEDICATION CROSS_WALK				
acetaminophen	bronchodilators	Defuroxamine	Fluoxetine	Ivermectin
Acetylcysteine	Budesonide	deoxycorticosteroneacetate	Fluphenazine	IVF-ACUTY
acutevschronic	bupropion	depakene	FluticasoneBumetanide	IVIG
Adalimumab	butamedide	Desmopressin	Fluvoxamine	IVIG
ADEK	caffeine	Dexamethasone	folicacid	Kayexalate
adenosine	calcitonin	dextran	Forteo/Teriparatide	Ketoconazole
Albendazole	Calcium/VITD	Dextroamphetamine	Furosemide	labetalol,sotalol
Albumin	Calciumcarbonate	diazepam	Gabapentin	Lactulose
Albuterol	calcium/luconate	Digoxin	gardasil	lamictal
Alendronate/Fosamax	captopril	diltiazem	gentamycin	lamotrigine
Allopurinol	carbamazepine	Diphenhydramine	ginseng	Lanolincream
alprazolam	Carbidopa/levodopa	Ditropan	Glargine	lanoxin
Aluminumhydroxide	CDCchart-immunizations	Docusatesodium	Glipizide	Lansoprazole
amiodarone	ceftriaxone	dolasetron	Glucagon	Leftunomide
Amitriptyline	Celecoxib	Doxorubicin	Gonadotropin	leucovorin
amlodipine	Cephalexin	Duloxetine	Juanafacine	Leuprolorine
Amoxicillin	ceftiazone	EDTA-calciumdisodiumedentate	Haloperidol	Levofloxacin
Apixiban	Chlordiazepoxide	efibatide	hCG	Levofthyroxine
aripiprazole	Chlorpromazine	Empagliflozin	HCTZ	Lipids
Aspirin	chromolynsodium	Endorphonium	Heparin	Lisinopril
Ativan	cimetidine	Enoxaparin	Hydrocortisone	Lispro
atomezetine	Ciprofloxacin	epinephrine	Hydromorphone	lithiumcarbonate
Azithromycin	Cisplatin	Epogen	Hydroxychloroquine	Lofenalacformula
bactofenpump	Citalopram	Ertropoetin	hydroxyzine	Lorazepam
BAL-Britishanti-lewisite	clomid/clomiphene	Escitalopram	ibandronate/Boniva	Losartan
Benztropine	clonazepam	Evista/Raloxifene	Ibuprofen	Lurasidone
betamethasone	clonidine	FactorVIII	Inderal	madevalaugh
Bictegravir	clopidogrel	Famotidine	Infliximab	Maghydroxide
biphosphonates	Clozapine	Fecso/Ferguson	Insulin	magnesiumsulfate
Bisacodyl	Colace	Fer-in-sol	Interferon-beta	mannitol
BLOODProducts	Colchicine	FFP	Ipecac	MAOI(asclass)
botulism	Darunavir	Flagastim	Ipratropium	Mebendazole
Brexiprazole	Decadron	Finasteride	isoniazid	meperidine

Highlight the high Alert Cardiac Medications?

“There is nothing so useless as doing efficiently that which should not be done at all.” – Peter F. Drucker

Aldesleukin	cetuximab	ertifibatide	labetalol	pentazocine potassium
alemtuzumab	chloralhydrate	erlotinib	lapatinib	phosphates potassium
alitretinoin	Chlorambucil	esmolol	lepirudin	supplements pramlintide
amiodarone	Cisplatin	etoposides	lidocaine	procarbazine promethazine
amphotericin B	cladribine	fentanyl	Magnesium sulfate	(IV) propofol
argatroban	clofarabine	fentanyl (transdermal)	mechlorethamine melphalan	propranolol repaglinide
arsenic trioxide	codeine	fludarabine	meperidine	rituximab
asparaginase	colchicine (IV)	fluorouracil	methadone	sodium chloride (hypertonic)
azacitidine	cyclophosphamide	fondaparinux	methotrexate	sunitinib temsirolimus
bendamustine	cytarabine	gefitinib	metoprolol	thalidomide thioguanine
bevacizumab	dacarbazine	gemcitabine	midazolam milrinone	thrombolytic agents tirofiban
bivalirudin	DAUNOrubicin	gemtuzumab	mitomycin	topotecan trastuzumab
bleomycin	decitabine	heparin	mitoxantrone morphine	vinBLASTine vinCRISTine
bortezomib	digoxin	idarubicin	nalbuphine nateglinide	vinorelbine
buprenorphine	DOBUTamine	ifosfamide	nesiritide	warfarin
busulfan	docetaxel	imatinib	nilotinib	
butorphanol	dOPamine	insulin mixtures	nitroprusside	
capecitabine	DOXOrubicin	insulins (intermediate-acting)	norepinephrine oxaliplatin	
carboplatin	epinephrine	insulins (long-acting)	oxycodone compound	
carmustine	epirubicin	insulins (rapid-acting)	oxymorphone oxytocin	
cetuximab		insulins (short-acting)	paclitaxel pancuronium	
		irinotecan	panitumumab pazopanib	
		ixabepilone	pegaspargase pemetrexed	

NCLEX WORDS



BORBORYGMUS

NCLEX TIP

- Sterile Dressings
- Differentiate between normal abnormal
- Monitoring findings (as input to the RN's ongoing assessment)
- Reinforcing client teaching from a standard care plan
- Performing tracheostomy care Suctioning
- Checking NG tube patency
- Administering enteral feedings
- Inserting a urinary catheter
- Administering medication (excluding IV medication in some states)

RIGHT PERSON: Delegate a PN to administer enteral feedings to a client who has a head injury.

WRONG PERSON: Delegate an AP to administer enteral feedings to a client who has a head injury.

Delegation to LPN/PN

NCLEX ...

You Need to Know what everyone else knows!



Vilfredo Pareto

If you're Noah, and your ark is about to sink, look for the elephants first, because you can throw over a bunch of cats, dogs, squirrels, and everything else that is just a small animal and your ark will keep sinking. But if you can find one elephant to get overboard, you're in much better shape.

GTK- 
NTK- 
NTK- 

cardiac conditions to know...

A CAD-Angina Myocardial Infarction

C HTN- CAD- Congestive Heart Failure

A CAD- Angina- MI

C CHF- MI – Hemodynamics SHOCK

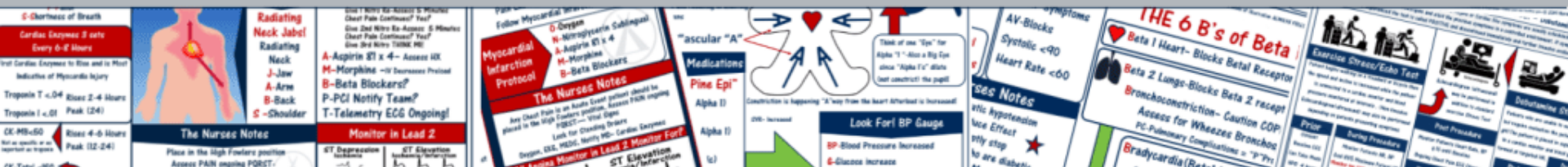
A Endocarditis/Pericarditis Myocarditis

C DVT – AAA

A MI-Cardiac Tamponade



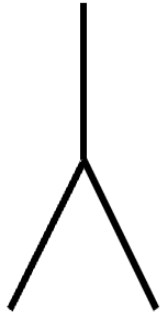
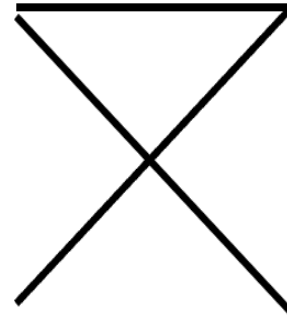
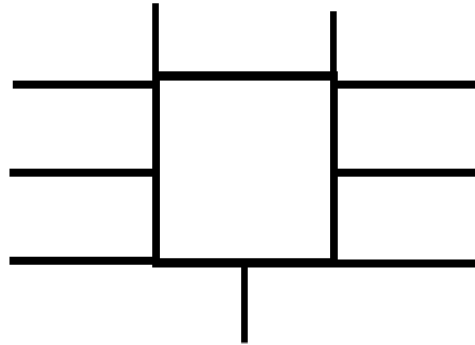
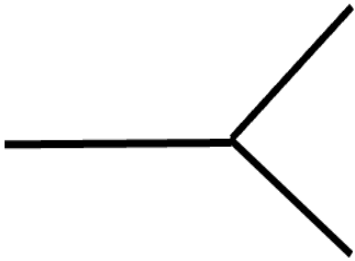
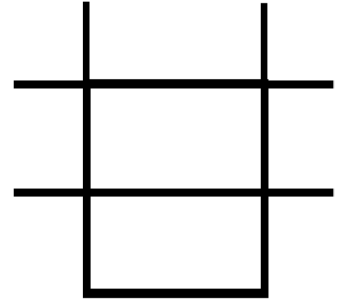
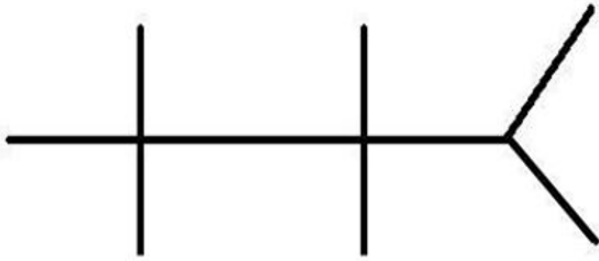
CARDIAC



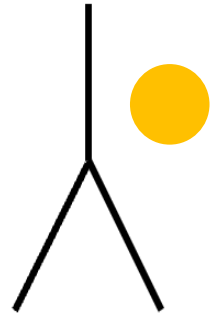
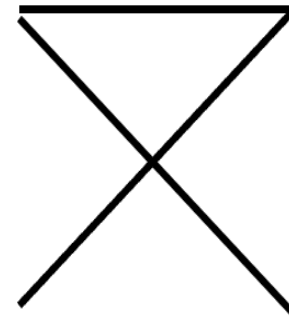
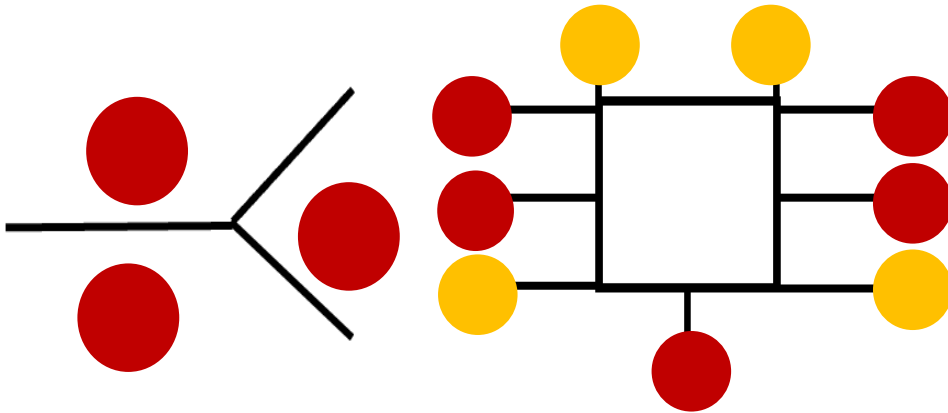
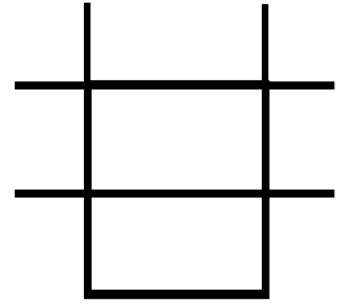
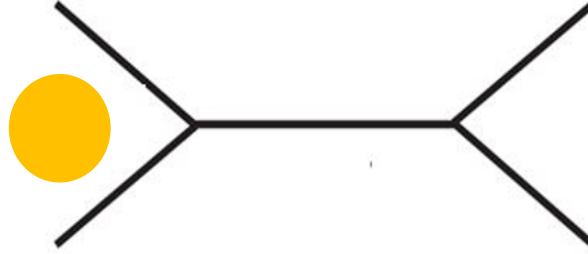
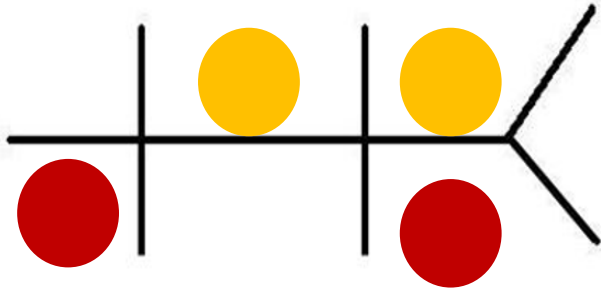
WEEKS 1-3 HAVE A HEART What do you know????

- | | | |
|---|---------------------------------|---|
| ☐ Cardiac Medications | ☐ CAD | ☐ CHF |
| ☐ Symptomology | ☐ HTN | ☐ Cardiomyopathy Tissue |
| ☐ LABS | ☐ ANGINA | ☐ Cardiac Tamponade |
| ☐ Perfusion Hemodynamics | ☐ MI | ☐ AAA/Thoracic |
| ☐ Heart | ☐ SHOCK | ☐ Cardiac Tissue Issues. |

Let's talk about labs...



Let's talk about labs...



diagnostic assessment to know...



Stress Test



Calcium Study

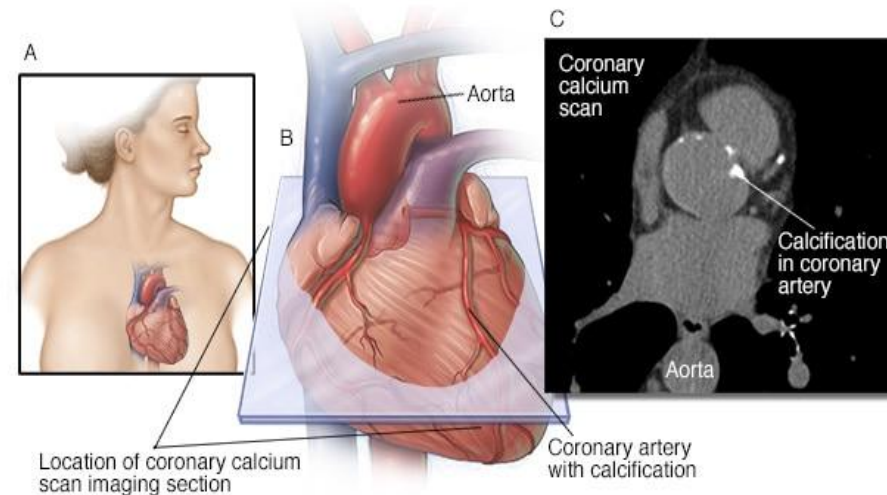
Nursing KAMP Cardiac ECG Exercise Stress Test – Dobutamine Stress Echocardiogram

Patients with a Significant Cardiac History or presenting with Angina or Cardiac like symptoms are usually scheduled for a cardiac stress test. The purpose of this test is to validate or further investigate and elicit the previous symptoms in a controlled environment. If symptoms are replicated or other cardiac symptoms are experienced the test is called POSITIVE and discontinued immediately and further invasive evaluation like a CABG is warranted.

Exercise Stress/Echo Test	Echocardiogram (ultrasound)	Dobutamine Stress/Echo Test
Patient begins walking on a treadmill or bicycle then the speed and incline is increased while the patient is connected to a cardiac monitor and blood pressure monitored at intervals. (Non-Invasive Echocardiogram/ultrasound) may also be performed depending on patient presenting symptoms	may be performed in addition to standard exercise Stress Test	Patients who are unable to walk on a treadmill or bicycle but require evaluation the patient is given Dobutamine (IV gtt) The patient is placed in supine position and connected to a cardiac monitor and blood pressure then echo performed at targeted HR.
Prior	Post Procedure	During Procedure
Consent Baseline ECG Can Take Meds NPO 4 hours Comfortable Shoes Assess Physical Ability	Monitor Patients Heart Rate, BP q 15 until Baseline Ongoing Chest Pain ECG Changes	May Feel palpitations, SOB, Fatigue (Dobutamine) Monitor Patients HR, BP Goal 85% Maximum Patient HR Monitor for ECG Changes (stop) Monitor for Chest Pain? (Stop) Monitor ST & T Wave Changes New Bundle Branch Blocks May Take 60-90 Minutes
During Procedure	The Nurses Notes	Prior
Monitor Patients HR, BP Goal 85% Maximum Patient HR Monitor for ECG Changes (stop) Monitor for Chest Pain? (Stop) Monitor ST & T Wave Changes New Bundle Branch Blocks Takes 30 Minutes	Atropine may have to be given to patient if heart rate doesn't come back to baseline! Be ready for potential MI and transport to CABG if Necessary!	Consent Baseline ECG Can Take Meds NPO 4 hours Patients Contraindicated? 10 Day Previous MI Aortic Mitral Stenosis

Nursing KAMP—All Procedures are different per organization consider all resources and always follow your agency policy.

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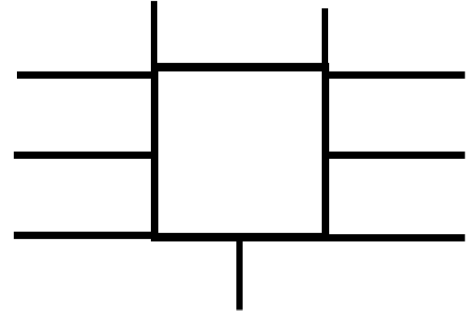
Lab to know...

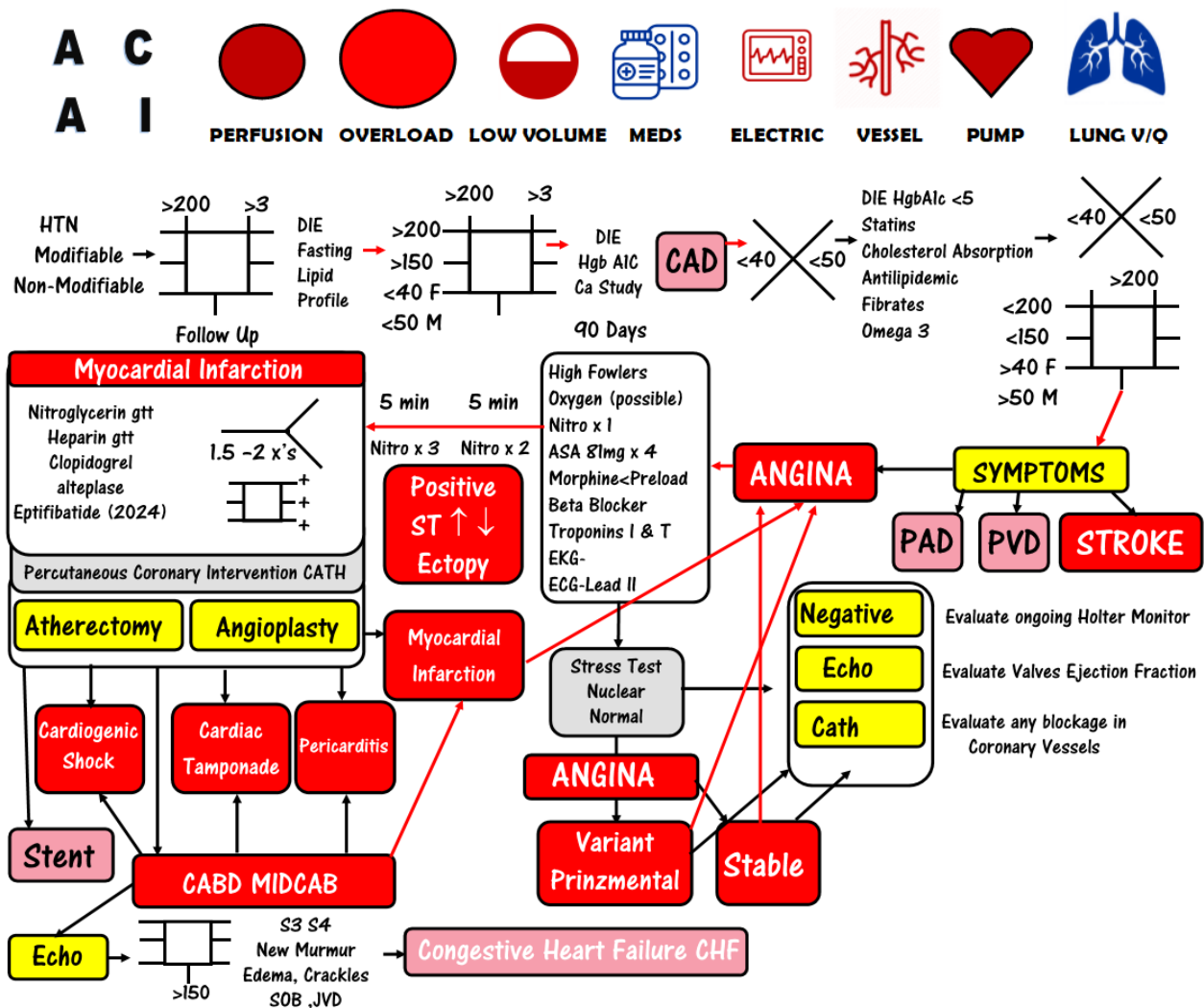


Troponin

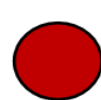


BNP (Brain Natriuretic Peptide)

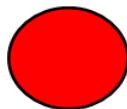




A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL

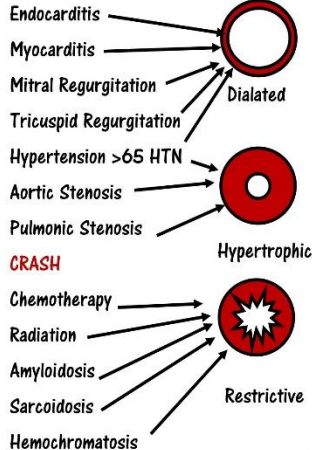


PUMP

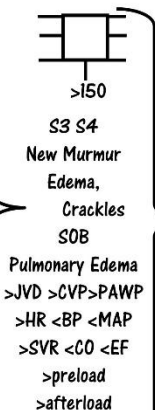


LUNG V/Q

Myocardial Infarction Depending on Injury



PUMP Problem



Congestive Heart Failure CHF

Valve Replacement

TAVR

ECHO < 60

Lasix, Bumex
Ace Inhibitors
ARB's
Thiazides
Ca Blockers

ECHO < 30 — Symptomatic

**Digoxin
ivabradine**

LVAD

Heart Transplant

Cardiogenic Shock

Vented

Arterial Line

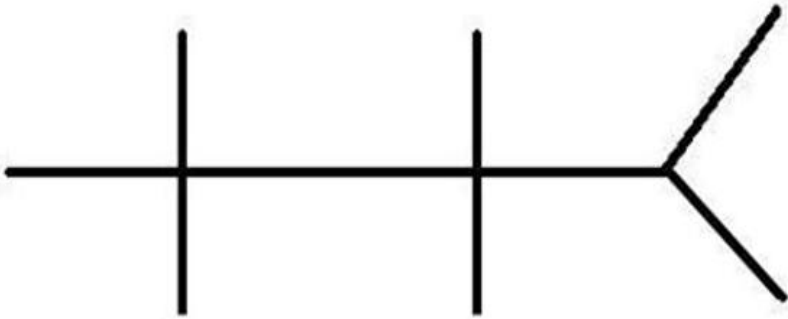
SWANN- Vigileo

Impella

Baloon Pump

Lasix, Bumex gtt
Dobutamine gtt
Dopamine gtr
Norepinephrine gtt

ADA What are your labs...



a nurse walks into the room...

A

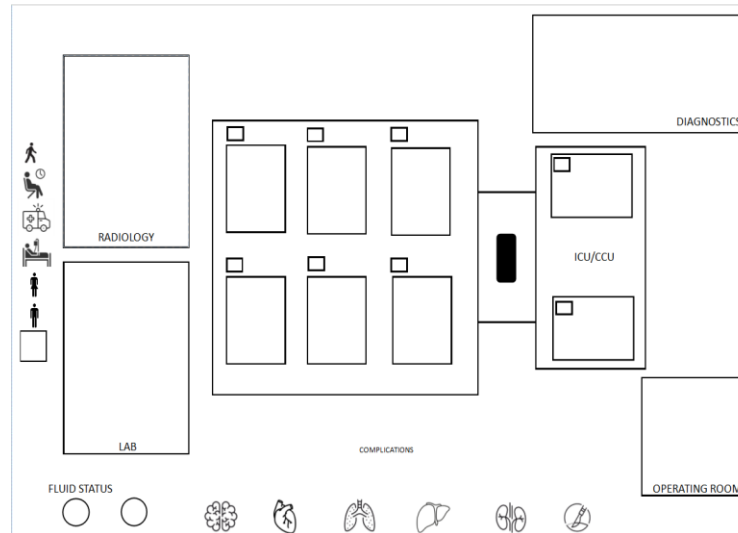
implement

C

assessment



- ☐ Cardiac Medications
- ☐ Symptomology
- ☐ LABS
- ☐ Perfusion
- ☐ Heart
- ☐ Hemodynamics
- ☐ Arterial Lines
- ☐ Tissue Injuries
- ☐ DVT



- ☐ CAD
- ☐ HTN
- ☐ ANGINA
- ☐ MI
- ☐ SHOCK
- ☐ CHF
- ☐ Cardiomyopathy
- ☐ Cardiac Tamponade
- ☐ AAA/Thoracic

NURSING V - CARDIAC UNIT



**This is your
Journey, it is mine,
What is Your Why?**

ARE YOU MEDIOCRE?

ACUITY GAME/CONCEPT KAMP

Abdominal distention
Abdominal mass
Abdominal pain
Abdominal rigidity
Accessory muscle use
Agitation
Alopecia
Amenorrhea
Amnesia
Analgesia
Anhidrosis
Anorexia
Anosmia
Anuria
Anxiety
Aphasia (dysphasia)
Apnea
Apneustic respirations
Apraxia
Arm pain
Nipple discharge
Nipple retraction
Nocturia
Nasal flaring
Nasal obstruction

Acuity Rating/Symptomology **CARDIOLOGY** Perfusion or not?

- 1- Stay in the room Urgent-Notify Provider
- 2- Intervention Needed
- 3- Assess Patient gather more Data
- 4- Anticipate Medication Being Ordered
- 5- Non-Urgent

From the Concept Book

Where is the boat...



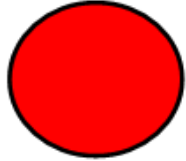
Symptoms are the boat!

Lets Break it Down...

A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



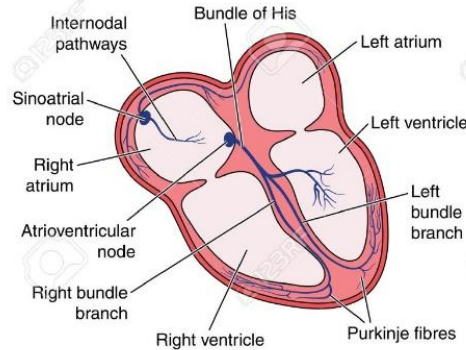
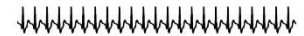
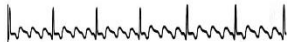
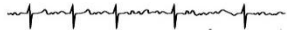
PUMP



LUNG V/Q

Where is the boat...

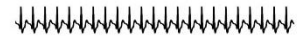
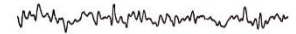
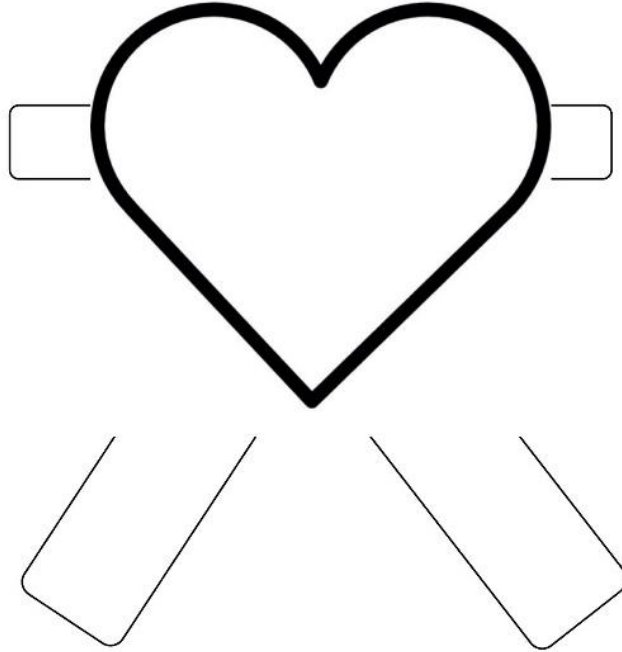
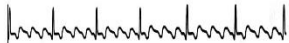
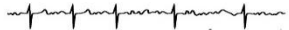
ELECTRIC



What is Acute or Chronic? What is Electric – What is shockable?

Where is the boat...

ELECTRIC



This is a Heart Problem is it or Fluid or Vessel or Pump?

MEDS Process Med Burn?

Medications in questions are important indicators of understanding of the nursing process. Whenever there is a medication in the question the med should be analyzed using “AHAPC”. Utilizing the 5 step method when attempting to answer the question gives a critical thinking and insight into the presenting question.

AHAPC – Rules for Medication Presenting in Nursing Questions.

1. Medications that are in the question are questions about the medication don't overlook them
2. Medications that are in the answers are generally distractors see rule 3 for other indicators
3. If the question indicates anticipated order, or to prepare for, or prescribed interventions the med in the answer may be correct. Think if this med is given does the patient get better or am I treating just the symptom. Generally meds are not given in priority action for symptom management in NCLEX questions leading to Nursing Interventions as priority.

AHAPC is Completed in the following Priority Order

A	ACUTE or CHRONIC: Define the medication as acute or chronic. Acute means it requires immediate action, assessment or monitoring. Chronic meds are either looking for what is an Acute finding or requiring higher maslow approach or teaching. For example: Lisinopril is chronic medication that presents with angioedema in a question this is an “acute” situation Chronic aspects of medications would be on teaching the patient to notify HCP if the experience any swelling of the face.
H	HOLD MEDICATION: Do you recognize there is a problem in the question that requires you to hold it. Is it an acute situation being presented in the patient or if you gave this medication is there further harm that could be caused if so HOLD .
A	ASSESS FOR COMPLICATIONS: Before or after– Does the medication require the patient to be assessed before giving the medication. For example you would assess potassium levels, prior to giving potassium not after. Does the patient require further assessment for example INR is elevated assess for signs of bleeding.
P	PREPARE TO ADMINISTER/ PREPARE FOR: If the option allows for preparation of a medication this is the next step. For Example a patient that is briskly bleeding from heparin infusion a nurse would prepare Protamine Sulfate.
C	C - Call or notify provider– If the previous steps were not options or the patient is acute distress the last step of the process is to call or notify the health care provider.

Cardiac Meds...

CARDIAC MEDS 1												
	A	C	B-Bloc	Ca-BI	Ca Glyc	Dis – Ace Arb's	Every	LABS	BP	HR	Bleed	ECG
Lisinopril												
Atorvastatin												
Simvastatin												
Clopidogrel												
Rosuvastatin												
Metoprolol												
Hydrochlorothiazide												
Furosemide												
Valsartan												
Warfarin												
Amlodipine												
Benazepril												
Carvedilol												

This is a Heart Problem is it or Fluid or Vessel or Pump?

2am?



Position to KNOW...

NURSINGKAMP Patient Positioning

Supine Position—Flat

Procedures/Conditions

The Nurses Notes



Post Cardiac Cath
Post Cerebral
Angiography
Liver—Lung Biopsy,
Puncture
Shock—Spinal Injuries

Think, Procedural since this position is used for surgical procedures of the abdomen, face, and extremities. Also for suspected Spinal/ neck injury and when immobilization is necessary. Good for SHOCK patients, and post Cath Procedure is to prevent bleeding usually 6 hours may raise up to 30° Post Lumbar puncture 4-12 Hours

cardia vitals to know...



98.6



60-100



14-20



120/80



96-100 %

PAIN

Vital Signs broken down with perfusion...

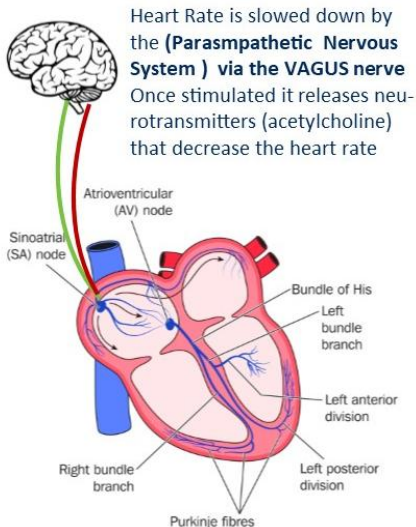
Heart Rate Classification

Bradycardiac– Less than 60 bpm

Normal Heart Rate– 60bpm- 100bpm

Tachycardia– Greater than 100bpm

Heart Rate is controlled by the **Sympathetic Nervous System** which controls the **SA- Node (Accelerator Nerve)** Once stimulated it releases neurotransmitters (ACH- Nicotinic, Nor-epinephrine) that increase the hear rate, also contractility in the ventricles



Peripheral Pulses

Rate: Number per Minute—60-100

Rhythm: Regular or Irregular

Symmetry: Even Uneven

Amplitude:

4 = Bounding

3 = Increased

2 = Normal

1 = Weak

0 = Absent or No palpable

Capillary Refill: <3 Seconds Normal

Underlying Causes of Tachycardia

M–Medications-Albuterol

O-Oxygen Complications

S– Stress

T– Trauma

P– Pain

T– Thyroid (hyper)

S-Sepsis

D– Dehydration

O– Orthostatic Hypotension

W-Withdrawal

I-Infection

S-Sympathetic Nervous System

H– Hemorrhage

Regular Irregular Fast Slow



Vital Signs broken down with perfusion...

Heart Rate Classification

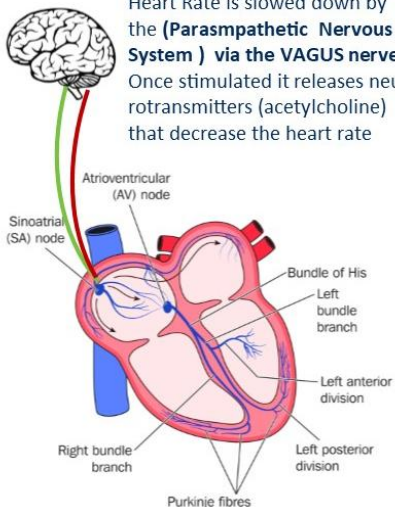
Bradycardiac– Less than 60 bpm

Normal Heart Rate– 60bpm- 100bpm

Tachycardia– Greater than 100bpm

Heart Rate is controlled by the **Sympathetic Nervous System** which controls the **SA- Node (Accelerator Nerve)** Once stimulated it releases neurotransmitters (ACH- Nicotinic, Nor-epinephrine) that increase the hear rate, also contractility in the ventricles

Heart Rate is slowed down by the **(Parasympathetic Nervous System)** via the **VAGUS nerve** Once stimulated it releases neurotransmitters (acetylcholine) that decrease the heart rate



Heart Rate 60-100

Less than 60 = Bradycardia

Causes of Bradycardia Black 3D Glass

B-Beta Blockers

L-LOW (trigger K)

A-Amiodarone(slowderone)

C-Ca Blockers (diltiazem, verapamil)

K-Potassium Low

3-3rd Degree Blocks

D-Digoxin

G-Glucose

L-Low

A-Athlete

S-Sick

S-Sinus

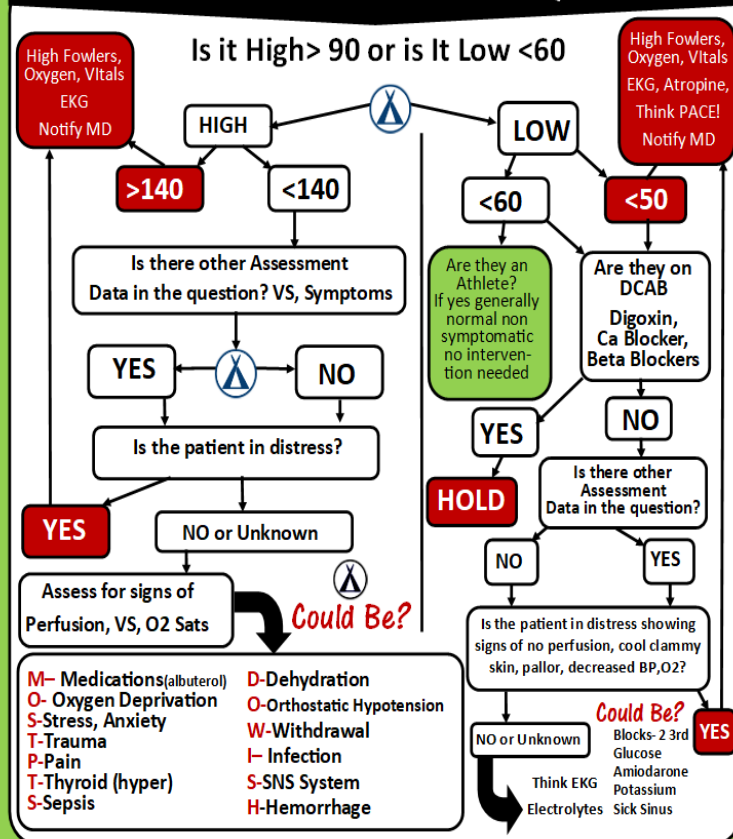
NCLEX FOCUS

Missing Underlying Cause! Assess

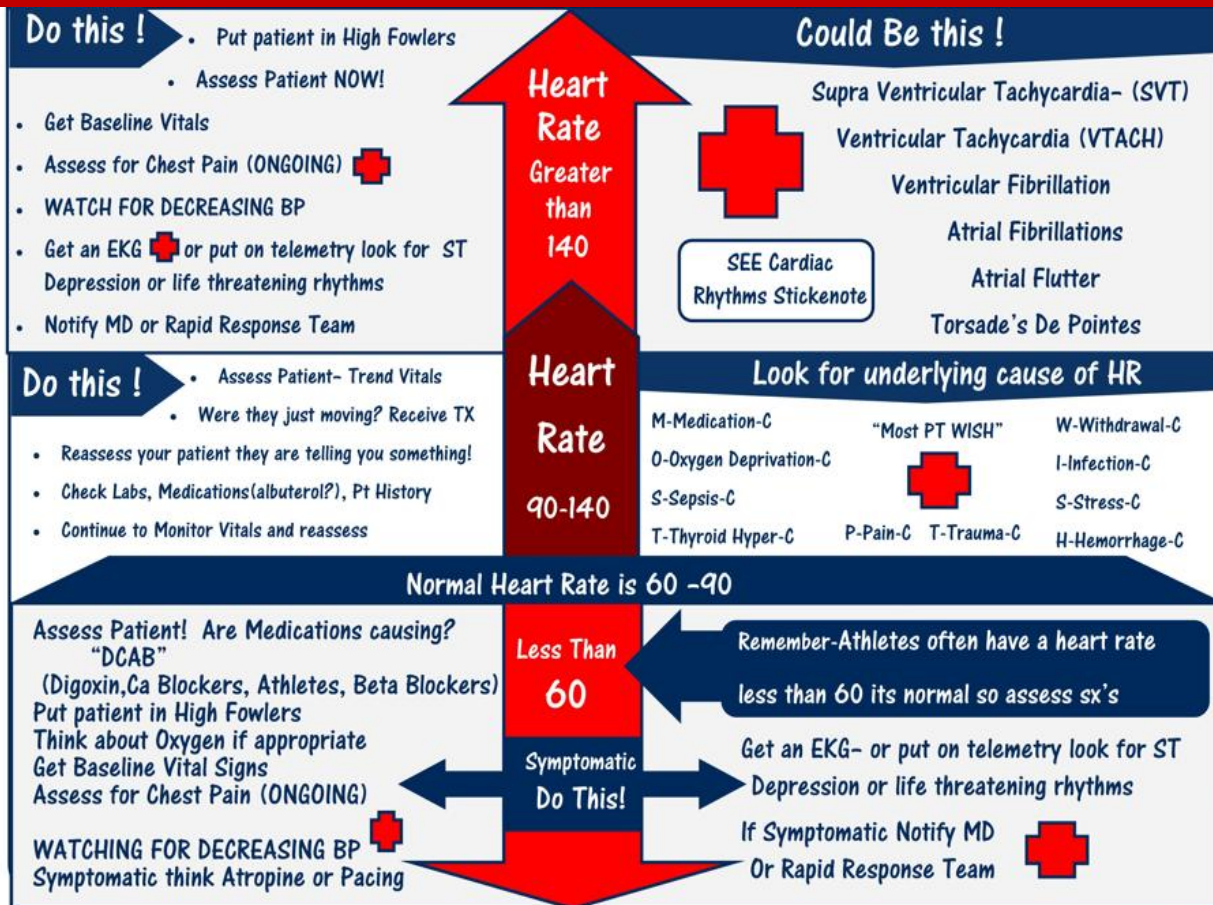


Vital Signs broken down with perfusion...

When Heart Rate is in Question



Vital Signs broken down with perfusion...



Meds Acute Chronic ...

CARDIAC MED SET 2

	A	C	B	CaBl	CaG	DI-AC-AR	E	LABS	BP	HR	Bleed	ECG
Losartan + HCTZ												
Tamsulosin												
Triamterene + HCTZ												
Enalapril												
Lovastatin												
Pravastatin												
Rivaroxaban												
Ezetimibe												
Clonidine												
Diltiazem												
Insulin Glargine												
Lisinopril + HCTZ												
Gemfibrozil												

Vital Signs broken down with perfusion...

A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



PUMP



LUNG V/Q

Hypotension

Hypertension

Mean Arterial Pressure 3 D+D+S/3

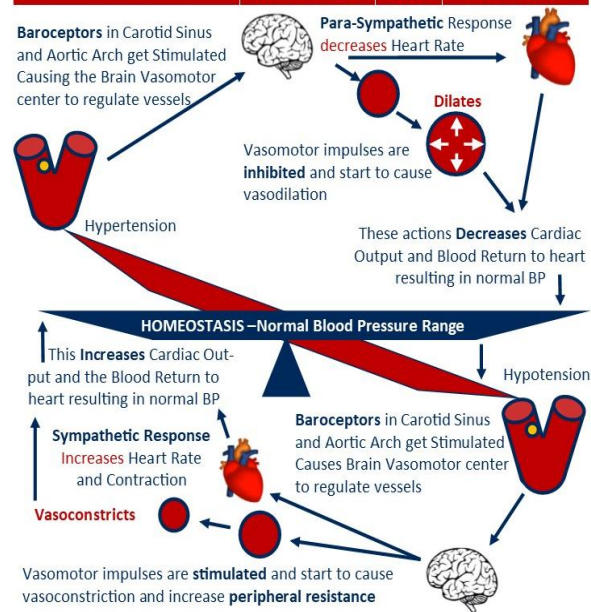
132/84

96/44

112/40

120/ 80

Blood Pressure Classification			
CLASSIFICATION	SYSTOLIC-mm hg		DIASTOLIC mmHg
Hypotension	Less than 100	or	Less than 60
NORMAL	100-120	and	60-80
ELEVATED	120-129	and	Less than 80
Hypertension Stage 1	130-139	an	80-89
Hypertension Stage 2	140 or Higher	OR	90 or Higher
HYPERTENSIVE CRISIS	More than 180	and/or	120 or Higher



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Vital Signs broken down with perfusion...

Pulses
Radial
Femoral-Pop
Pedal
Carotid

Peripheral Pulses

Rate: Number per Minute—60-90

Rhythm: Regular or Irregular **Symmetry:** Even Uneven

Amplitude:

4 = Bounding (fluid, thyroid, CRD, CHF)

3 = Increased (MOST PT WISH)

2 = Normal (Stable)

1 = Weak (Dehydration, Occlusion)

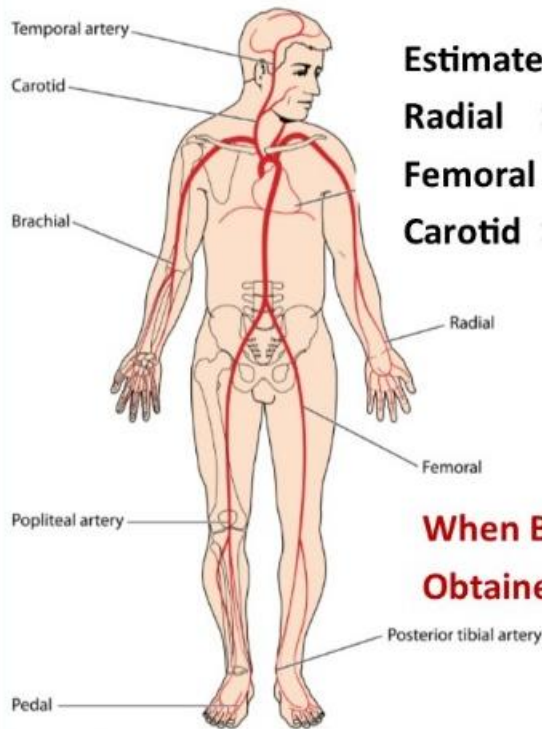
0 = Absent or No palpable (Acute)

If unable to assess pulse Doppler (US)

Capillary Refill: <3 Seconds Normal



Palpable Pulse & Systolic Blood Pressure



Estimate Systolic

Radial >80 mm/Hg

Femoral >70 mm/Hg

Carotid >60 mm/Hg

**When BP can't Be
Obtained!**

Medications broken down with perfusion...

CARDIAC MED SET 3												
	A	C	B	CaBl	CaG	DI-AC-AR	E	LABS	BP	HR	Bleed	ECG
Enoxaparin												
Ramipril												
Apixaban												
Doxazosin												
Ethacrynic-Acid												
Spironolactone												
Vardenafil												
Dutasteride												
Nebivolol												
Nifedipine												
Travaprost												
Propranolol												
Verapamil												

Vital Signs broken down with perfusion...



1_(STM)

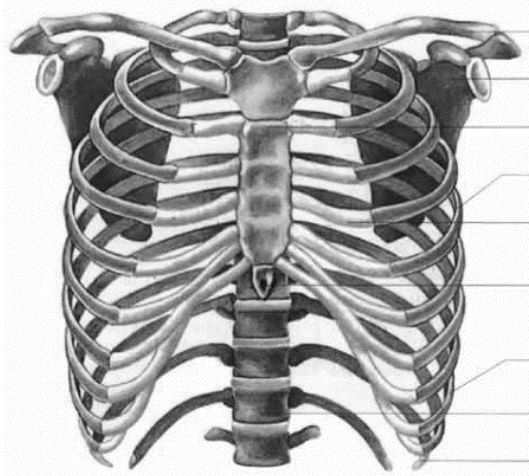
2_(SAP)



3_{ERB}

4-T

5-M



NURSINGKAMP HEART SOUNDS

The purpose of the heart sound assessment is to isolate any abnormalities in or outside the heart. The initial assessment listens to the valves closing which are **S1** (lub) and **S2** (dub). The assessment should begin with auscultation at the apex of the heart located in the 5th intercostal space and midclavicular line. Auscultation is achieved by placing the diaphragm at this location for one minute. If any abnormal extra heart sound are identified a complete 5 location assessment (**APetoMan**) should be complete with the Bell of the Stethoscope listening individually

HEART VALVE SOUNDS

S1: Mitral & Tricuspid Valves
(BS MiT) AV Valves Heard Before systolic it is the sound of the **Mitral** and **Tricuspid** valves Closing (lub)

S2: Aortic & Pulmonic Valves
(BaD P) Heard Before Diastolic it is the sound of the **Aortic** and **Pulmonic** valves Closing (dub)

Murmur Classifications

Murmurs are abnormal swishing sounds made by turbulent blood flow through valves

Grade 1: Barely Hear Valsalva Clearer

Grade 2: Hear with the Stethoscope

Grade 3: Moderate Loud

Grade 4: Loud Hear & Thrill Vibration

Grade 5: Very Loud Hear & Thrill with Stethoscope slight off

Grade 6: Very Loud Hear & Thrill without Stethoscope touching



Intercostal Spaces

2— **Aortic** Pulmonic

3— **ERB's** Point

4— **Tricuspid**

5— **Mitral**

Aortic Valve

2nd Intercostal

ERB's

Point

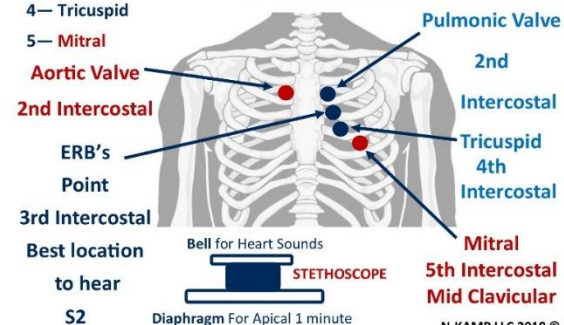
3rd Intercostal

Best location

to hear

S2

Heart Valve Locations

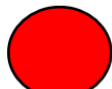


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A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



PUMP



LUNG V/Q

the flow of oxygen...



A

NC-NRB- BVM

C

nasal canular

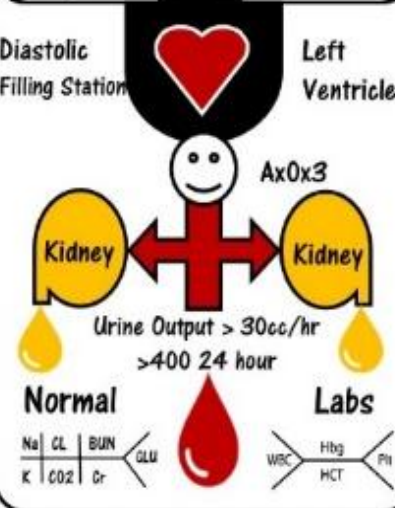


NURSING V - PULMONARY UNIT

Normal Preload

Preload is how much the heart is filling during Diastole- Once filled it ejects (Ejection Fraction (EF) , Cardiac Output (CO) to Systems Organs

CVP-4-8
CO-4-8
Wedge -8-12
EF>-60
MAP>60
HR 60-90
SV -40

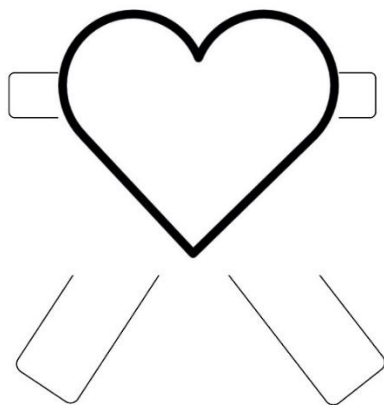


Decreased-Treat Underlying Cause
Increased- Get rid of fluid or vasodilate or prevent potential future problems!

Terms to know...

Preload CVP

Afterload SVR



Pulse Pressure

NURSING V - PULMONARY UNIT

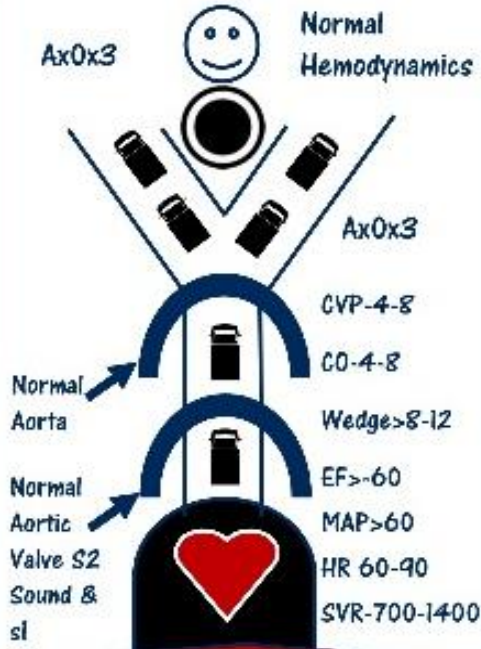
Might Treat with These Medications

DECREASED AFTERLOAD

V-Vasopressors
E-Epinephrine
N-Neosynphrine
D-Dopamine>10mcg/kg

INCREASED AFTERLOAD

Nitroprusside
Vasodilators
Nitrates



Normal Afterload

Scopes of Practice...

Scope of practice		
RN	LPN/LVN	UAP
• Clinical assessment • Initial client education • Discharge education • Clinical judgment • Initiating blood transfusion	• Monitoring RN findings • Reinforcing education • Routine procedures • Most medication administrations • Ostomy care • Tube patency & enteral feeding • Specific assessments*	• Activities of daily living • Hygiene • Linen change • Routine, stable vital signs • Documenting input/output • Positioning
*Limited assessments (eg, lung sounds, bowel sounds, neurovascular checks). LPN = licensed practical nurse; LVN = licensed vocational nurse; RN = registered nurse; UAP = unlicensed assistive personnel.		

Assessment Practice...

T	M
P	A

The Heart Box is a Method to document your valve abnormalities by writing a letter like R in the box of the specific valve location and if it is Regurgitation or a valve or stenosis-examples

	R
	S

→ Mitral "R" Regurgitation

→ Aortic "S" Stenosis

V	→
S	→

Tricuspid Valve "V"

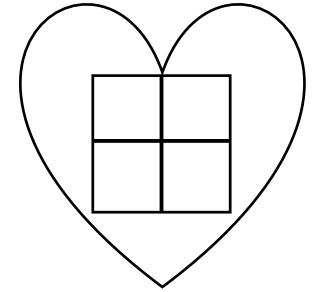
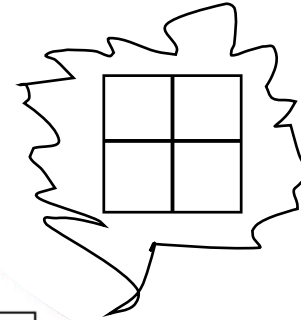
Pulmonic "S" Stenosis

Mitral "V" Valve

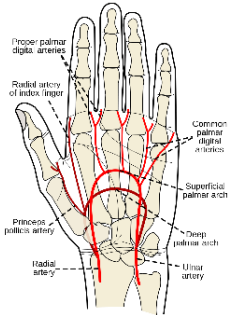
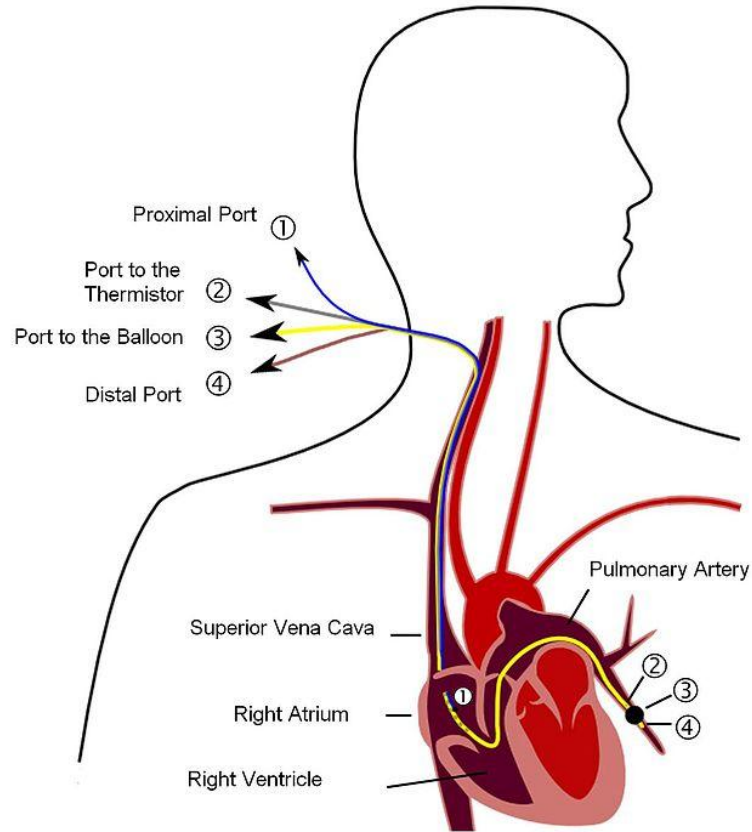
	V

450 (Left CHF)

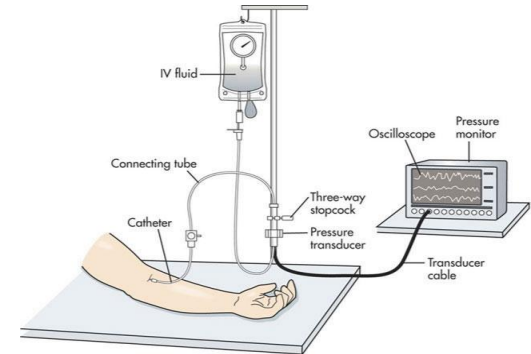
Arrow points to either
right or left sided CHF with BNP
450 (right sided heart failure)



Beyond Vitals - HEMODYNAMICS...



RUFUR10

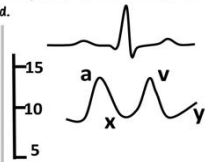
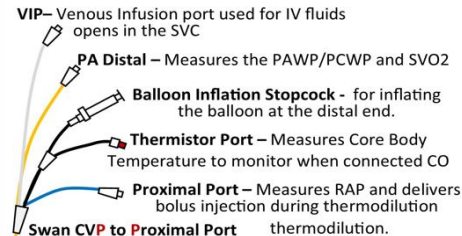


From Sanders, M.J. (2007). Mosby's Paramedic Textbook, 3rd Ed. (Revised). St. Louis: Mosby/JEMS.

Beyond Vitals...Perspective

NURSINGKAMP Swan-Ganz Waveform Pressure Monitoring

A pulmonary artery catheter (PAC), also known as a Swan-Ganz catheter or right heart catheter, is a balloon-tipped catheter that is inserted into a pulmonary artery. PAC's are useful in the measures of the overall functioning of the heart particularly in those with complications from heart failure, heart attack, arrhythmias or pulmonary embolism. procedure can also be used to measure pressures in the heart chambers. This is achieved by floating the balloon tip catheter into the pulmonary artery and placing the balloon at the distal tip called a "wedge pressure" that shows LAP & LVEDP/left heart preload LV,DPI/left heart preload.



a = atrial systole
x = atrial diastole
v = ventricle systole (passive atrial filling)
y = atrial emptying

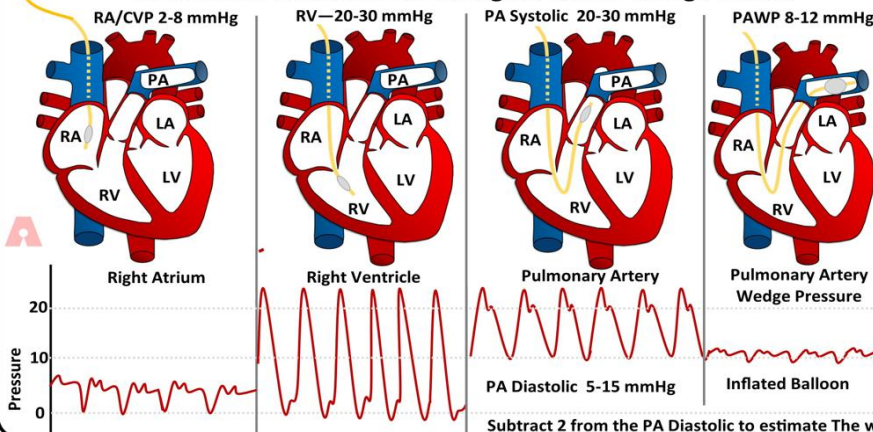
Large "a" Waves

LV Diastolic Dysfunction, Mitral stenosis, Volume overload, MI with decreased LV compliance



Large "v" Waves
Increased LA volume, Mitral Regurgitation

Waveforms Encountered During PA Catheter Wedge Transit



Good to Know about PAWP!

While the catheter is passing through the Right Ventricle; PVCs can occur.

Before & After every waveform reading: unlock and disconnect balloon syringe; this will release air and prevent balloon rupture from over distention.

Once the balloon is in the PA it will be inflated until the wedge waveform is seen.

Once verified deflate the balloon to ensure it rests in the Pulmonary Artery: [PAS / PAD waveform]

Then Re-inflate balloon again to make sure the wedge pressure waveform is obtained with 1.5 mL air

Do not lock syringe with balloon inflated: potential for occlusion & pulmonary infarct.

Once catheter is in place: the balloon should never be inflated for more than 15 secs.

PA catheters will soften overtime; this can cause the catheter to Wedge in the capillary without balloon inflation. The catheter must be repositioned.

Disconnect & deflate balloon before & after each use. Never lock syringe with balloon inflated.

Notify MD immediately if they are not in a position to see the waveform.

Decreased Wedge Pressures

Septic, Neurogenic Shock, Hypovolemic Shock, Vasodilation, and hypovolemia states

Increased Wedge Pressures

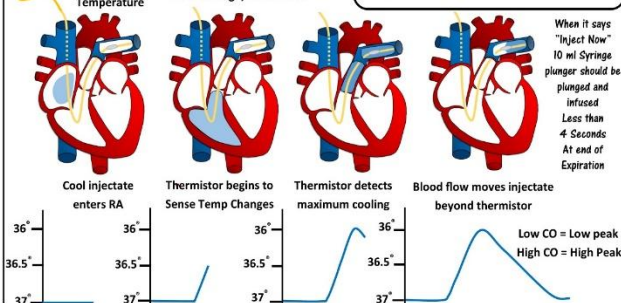
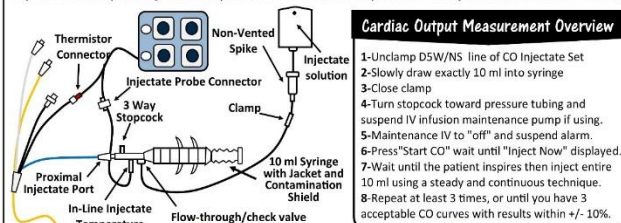
Impedance to LA emptying, Fluid overload states, LV failure, cardiogenic shock, MI, mitral & aortic stenosis, Pericardial tamponade, Increased Intrapleural Pressure due to PEEP, tension pneumothorax or intra-abdominal pressure

NURSING V - CARDIAC UNIT

Beyond Vitals...

NURSINGKAMP Cardiac Output Measurement - Cardiac Output 4-8 LPM

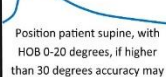
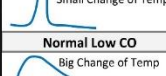
Cardiac Output determines the blood pressure and oxygen delivery to the tissue and is used to evaluate other hemodynamic interventions and plans of care. Cardiac output measurements may be intermittent or continuous and they are performed using the thermodilution technique. A known volume of blood (10 mL), at a known temperature is injected into the right atrium. Blood temperature is measured at the distal end of the pulmonary artery catheter and injectate temperature is measured as it enters the right atrial lumen. Cardiac output is determined by the change in blood temperature over time. Both room temperature and iced injectate methods are used to determine results. Cardiac Output is 4-8 LPM.



Always Follow your facility policy this is only an overview and does not supersede your practice or facility policy © Disclaimer ARPNS PLLC 2024

Abnormal Wave Forms

Prolonged Injection Time



Position patient supine, with HOB 0-20 degrees, if higher than 30 degrees accuracy may be lower.

ICUKAMP Intra-Cardiac & Hemodynamic Wave Forms

Right Atrium RAP/CVP

2-8 mmHg



Right atrial pressure (RAP) is the blood pressure in the right atrium of the heart. RAP reflects the amount of blood returning to the heart and the ability of the heart to pump the blood into the arterial system. Think Fluid Hypervolemia is increased and Hypovolemia is decreased. Problems with the Tricuspid valve, along with tamponade and pericarditis will increase this value.

Right Ventricle Pressure (RVSP/RVDP)

Systolic 15-30 mmHg Diastolic 2-8 mmHg



Right Ventricular Pressure or "RV" is further broken down to RVSP/RVDP generally measured during the advancement of the SWAN PA catheter. RVEDP is an indication of left ventricular functions.

Pulmonary Artery Pressure (PAP)

Systolic 15-25 mmHg Diastolic 8-15 mmHg



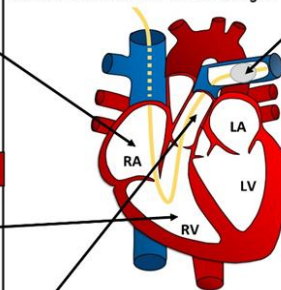
Floating the SWANN into the Pulmonary artery will increase the Diastolic pressure that can be seen when the pulmonic valve is opened in the upstroke of the PA waveform. When the valve closes the dicrotic notch is evident marking the beginning of diastole.

Pulmonary Artery Wedge Pressure (PAWP)

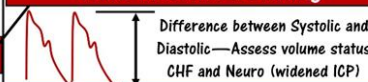
PAWP 8-12 mmHg



Left Atrial Pressure assesses fluid status requiring PA catheter and inflation of balloon (wedge).



Pulse Pressure 40 mmHg



Stroke Volume 40-60 ml/beat

Calculation of the Amount of Blood Ejected from the Ventricle in one beat = mL/beat Related to Cardiac Output factors influencing are afterload, preload and contractility



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Ejection Fraction 65-85 %



Percent of blood ejected from ventricle. <60 Symptomatic

Cardiac Output 4-8 LPM



Amount of Blood pumped in One Minute in direct relationship with HR x SV = mL/Min Factors influencing, CHF, SVR, HR, SV

End Diastolic Volume (EDV)



50-120 ml Volume of blood left in R or Left ventricle at end of filling in diastole—Factoring in BSA

End Systolic Volume (ESV)



50ml Volume of blood left in left or right ventricle at end of filling in systole Factoring in BSA

Beyond Vitals What you need to know...

BROKEN HEART

Cardiac Out HRxSV CO: 4-8 LPM
Ejection Fraction % EF: 60%

Sx's of Broken Heart

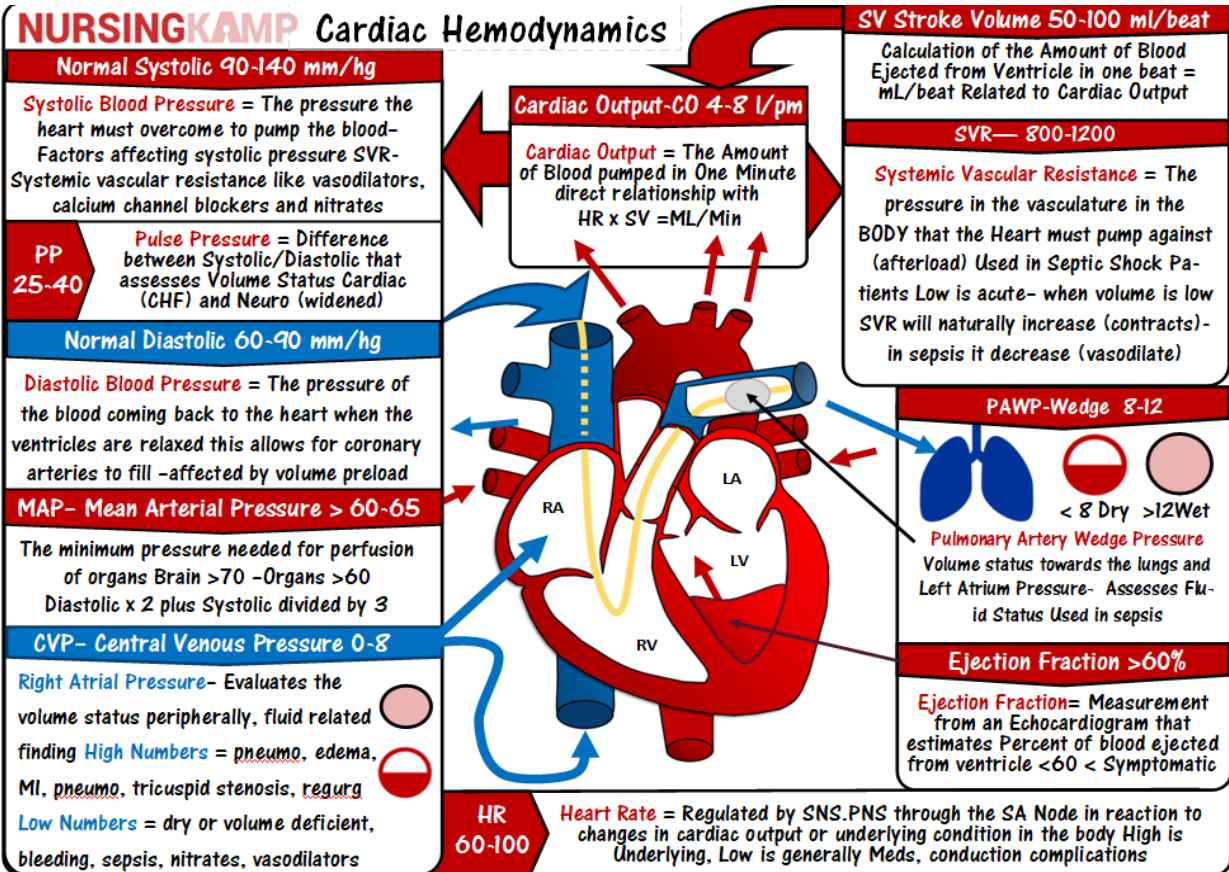
CHF

(Right Think Edema) JVD <4
CVP 4-8

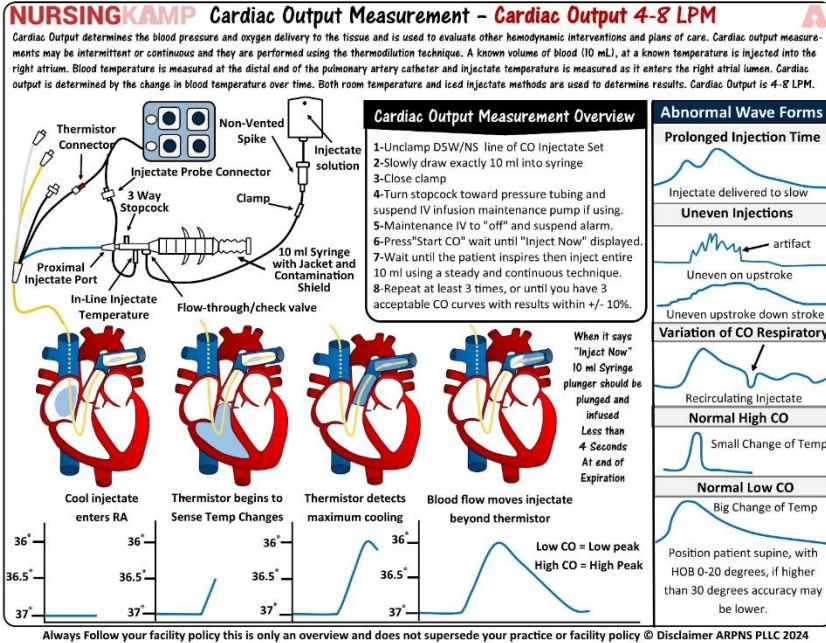
Left Think Crackles PAWP 8-12
(Effusions)

PP <40 Think Neuro Bleeding

SVR ACUTE Peripheral 800-1400



Beyond Vitals...CVP - Nuts to know!



Beyond Vitals What you need to know...

BROKEN HEART

Cardiac Out HRxSV CO: 4-8 LPM
Ejection Fraction % EF: 60%

Sx's of Broken Heart

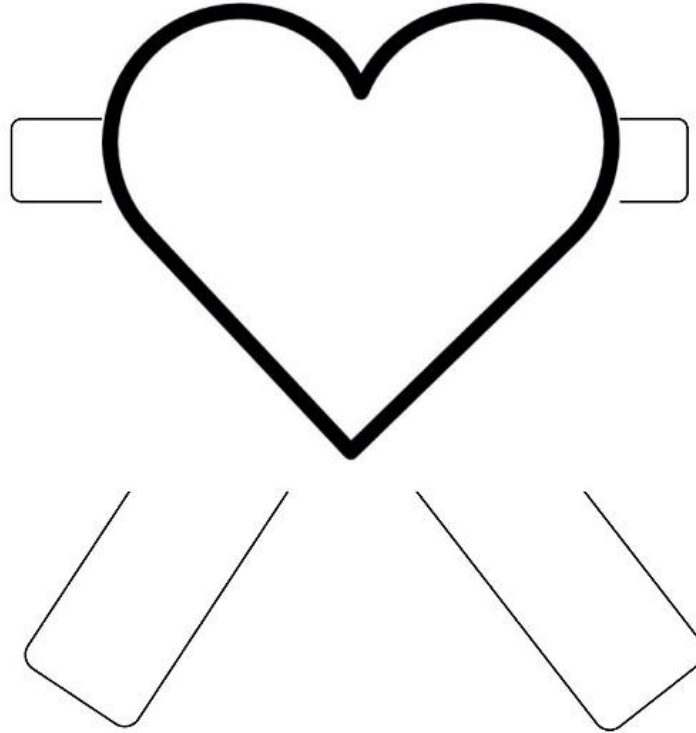
CHF

(Right Think Edema) JVD <4
CVP 4-8

Left Think Crackles PAWP 8-12
(Effusions)

PP <40 Think Neuro Bleeding

SVR ACUTE Peripheral 800-1400



Recall...What do you know?

CVP

PAWP

CO

EF

SV

HR

BP

MAP

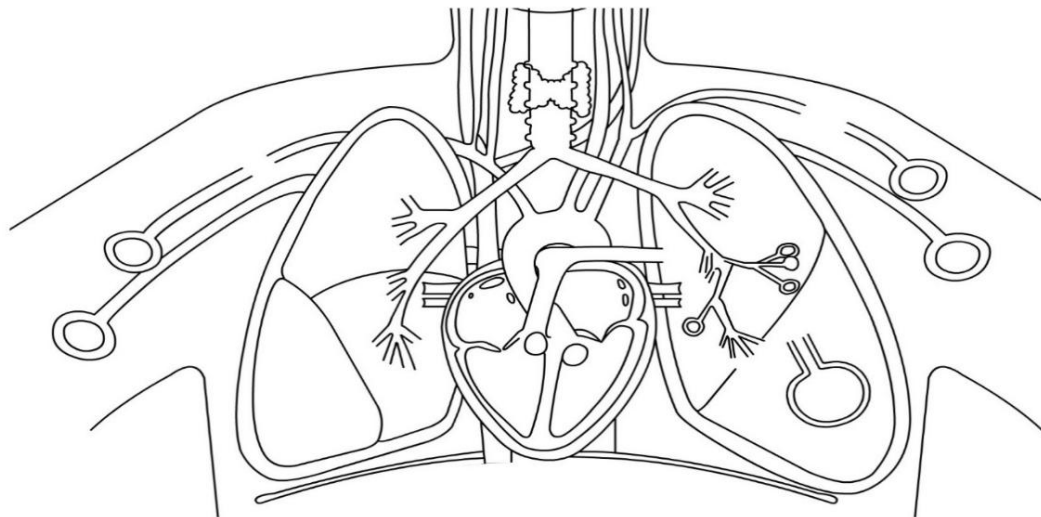
S1

S2

AV Valves

S3

S4



These are the meds you should know...

CARDIAC MED SET 4												
	A	C	B	CaBl	CaG	DI-AC-AR	E	LABS	BP	HR	Bleed	ECG
Ticagrelor												
Ezetimibe												
Doxaban												
Adenosine												
Atropine												
Amiodarone												
Heparin												
Ranolazine												
Clonidine												
Phenylephrine												
Dopamine												
Sacubitril/Valsartan												
Alteplase												

Let's Talk about Labs you should know...

Chronic Labs are used to identify risk for CAD initially a total cholesterol is drawn then if that is >200 a fasting lipid panel is completed-the results of that lipid panel will dictate further action based on modifiable vs non-modifiable factors.

Total Cholesterol

First Screening for CAD or Risk if it is greater than 200 Lipid Panel is usually recommended

"Fasting" LIPID PANEL

Triglycerides Want Low
Bad Fats in the Bloodstream circulatory Risk for CAD
LDL "Lousy want them Low"
Bad Cholesterol
HDL—"Happy want it High"
Good Cholesterol removes LDL

TRG <200
LDL <150
HDL $>50M$
 $>40F$

BNP-Brain Natriuretic Peptide

Patient's suspected of having Congestive Heart Failure (CHF) anticipate a "BNP" being drawn if it is positive then there is a likelihood the patient has CHF.
(Chronic CHF patients may be lower)

<150 No - Congested Heart Failure
 >150 -500 Probable CHF
 >500 Indicative of CHF

T	M
P	A

R	→ Mitral "R" Regurgitation
S	→ Aortic "S" Stenosis
V	→ Tricuspid Valve "V"
S	→ Pulmonic "S" Stenosis

NURSINGKAMP

Cardiac Labs

Inflammation Risk for CAD

Total Cholesterol <200
C-Reactive Protein CRP <3

BNP <150

The Heart Box is a Method to document your valve abnormalities by writing a letter like R in the box of the specific valve location and if it is Regurgitation or a valve or stenosis-examples

Mitral "V" Valve

V	

Acute Labs are used to identify risk or actual cardiac injury as a result of Myocardial Ischemia leading to Infarction. Generally, they are drawn in 3 sets 6-8 hours apart though policy may be different at your facility. If the enzymes keep rising further evaluation telemetry monitoring is necessary.

Cardiac Enzymes 3 sets -Every 6-8 Hours

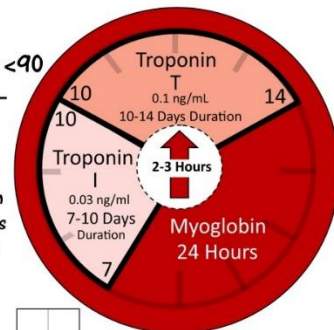
All Cardiac Enzymes begin to rise within 2-3 hours of injury Troponin T is First to Rise then Troponin I-
Total CK % has a duration of 2-3 days

Troponin T <0.1

Troponin I <0.03

Myoglobin <90

Duration of Cardiac enzymes vary making timing of the patient imperative



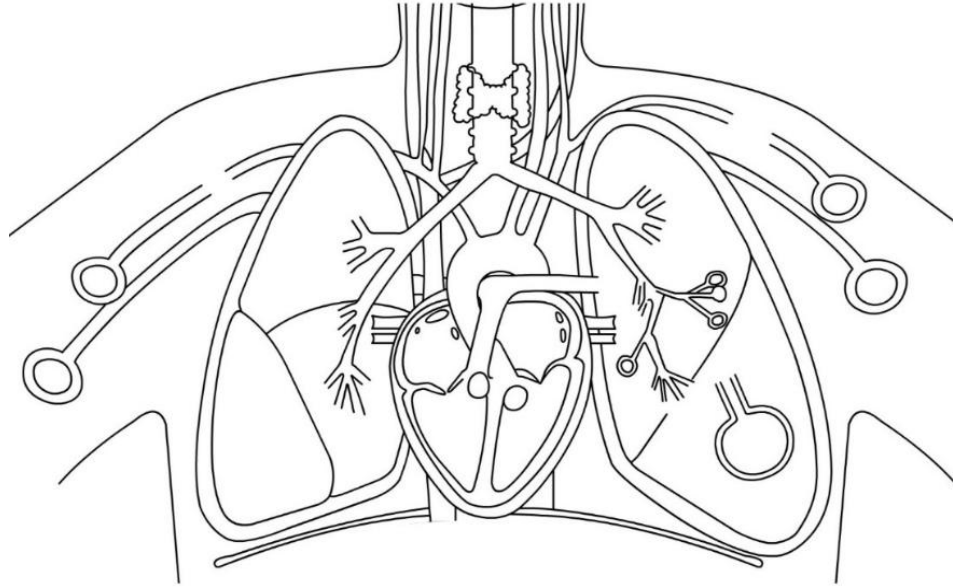
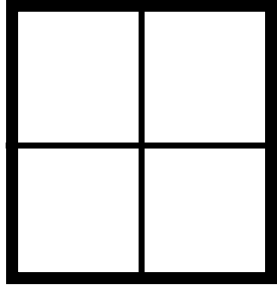
Arrow points to either right or left sided CHF with BNP
450 (Left CHF) 450 (right sided heart failure)

Nursing Kamp—All laboratory values are different per organization consult other resources follow your own agency policies

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NURSING V - CARDIAC UNIT

Recall...



SVR
Tricuspid
Mitral
Pulmonic
Aortic
Aorta
Pulmonary
Arteries
Carotids
Sa Node
AV Node
PP

Cardiac medications you should know...

CARDIAC MED SET 5												
	A	C	B	CaBl	CaG	DI-AC-AR	E	LABS	BP	HR	Bleed	ECG
Norepinephrine												
Epinephrine												
Atenelol												
Losartan												
Hydralazine												
Streptokinase												
Dobutamine												
Sotalol												
Lanaoxin												
Irebesartan												
Terazosin												
Bivalirudin												
Eptifibatide												
tirofiban												
Angiotensin II (giapreza)												

Medications and what are High Alert...

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Cardiac Medications
You Should Know!

TOP 200 CARDIAC MEDICATIONS

Lisinopril	Bivalirudin	Enoxaparin	Propranolol	Alteplase
Atorvastatin	Tamsulosin	Ramipril	Verapamil	<u>Levophed</u>
Simvastatin	Triamterene + HCTZ	Quinapril	Fenofibrate	Epinephrine
Clopidogrel	Enalapril	Dabigatran	Ticagrelor	Atenolol
Rosuvastatin	Lovastatin	Doxazosin	Ezetimibe + Simvastatin	Losartan
Metoprolol	Pravastatin	Finasteride	Adenosine	Hydralazine
Hydrochlorothiazide	Rivaroxaban	Spironolactone	Atropine	Streptokinase
Furosemide	eptifibatide	Vardenafil	Amiodarone	Dobutamine
Valsartan	Clonidine	Dutasteride	Heparin	Digoxin
Warfarin	Diltiazem	Nebivolol	Nitro	Irbesartan
Amlodipine	Benazepril	Nifedipine	Aspirin	Terazosin
Carvedilol	Gemfibrozil	<u>Travoprost</u>	Dopamine	Neo

acetaminophen and codeine	diclofenac sodium	hydrocodone	paroxetine
Adenosine	diphenhydramine	ibuprofen	pioglitazone
albuterol HFA	Dobutamine	ipratropium	Piperacillin
alendronate	Dopamine	isosorbide mononitrate	prednisone
allopurinol	doxycycline	lansoprazole	pregabalin
Amiodarone	escitalopram	Lantus (insulin glargine)	promethazine
amitriptyline	enalapril	Levodopa	ranitidine
amlodipine	Enoxaparin	levofloxacin	Salmeterol
amoxicillin	Epinephrine	levothyroxine sodium	sertraline HCl
Amphetamine/ dextroamphetamine	escitalopram	Lithium	simvastatin
atenolol	etanercept	losartan	spironolactone
Atropine	ezetimibe	meloxicam	tamsulosin
azithromycin	fenofibrate	metformin HCl	tamsulosin
carisoprodol	fexofenadine	methotrexate	Tiotropium
carvedilol	fluconazole	methylprednisolone	tramadol
cefdinir	fluoxetine HCl	Methylprednisolone	trazodone HCl
celecoxib	fluticasone	metoprolol tartrate	triamterene
cephalexin	furosemide	mometasone	valaciclovir
cetirizine	glimepiride	montelukast	valsartan
ciprofloxacin	glipizide	naproxen	Vancomycin
citalopram	glyburide	Nitroglycerine	venlafaxine XR
Clindamycin	Haldol	Nitroprusside	verapamil SR
clonidine HCl	Heparin	omeprazole	Warfarin
clopidogrel	Hydralazine	oxycodone	zolpidem
cyclobenzaprine	hydrochlorothiazide	pantoprazole	Regular Insulin

cardiac conditions to know...

Ⓐ CAD-Angina Myocardial Infarction

Ⓒ HTN- CAD- Congestive Heart Failure

Ⓐ CAD- Angina- MI

Ⓒ CHF- MI - Hemodynamics

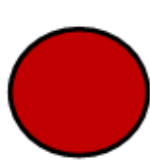
Ⓐ Endocarditis/Pericarditis Myocarditis

Ⓒ DVT – AAA

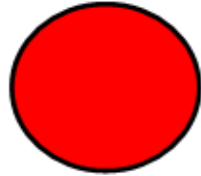
Ⓐ MI-Cardiac Tamponade

Stop reflect...

A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



PUMP

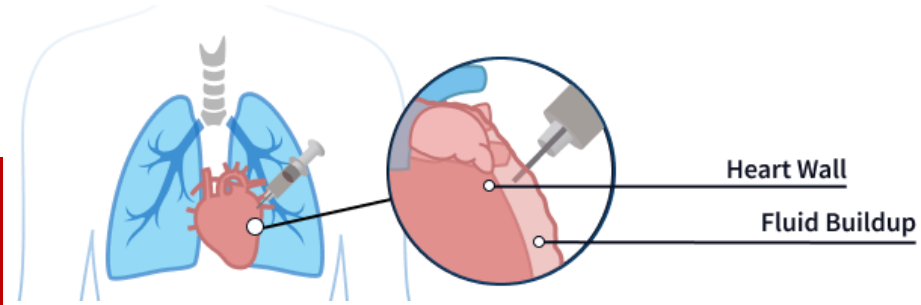


LUNG V/Q

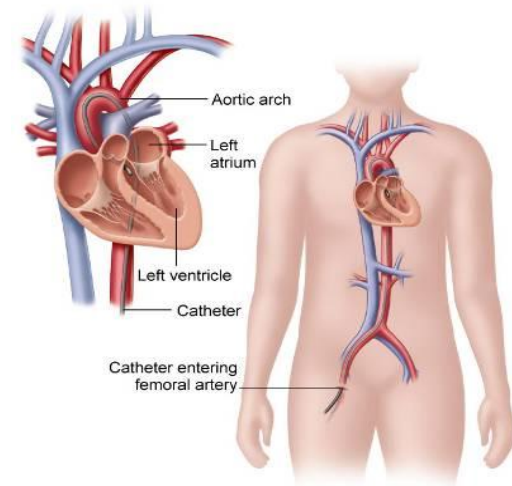
procedures to know...



Pericardiocentesis



PCI- Percutaneous Coronary Intervention



CRP- C Reactive Protein

"Stroke So Chard"

Stroke-Risk

Sleep Apnea

Obstructive

Crohn's

Heart Disease

Atherosclerosis

Rheumatoid Arthritis

Diabetes

Sign of Inflammation!

Low <1.0 mg/l

Moderate 1.0-3.0 mg/l

High >3.0 mg/l

CRP is produced in the liver and its level is measured by testing the blood. CRP levels will rise in response to inflammation.

Statins aren't Stat! No Stat Grapefruit!

Give For!

LDL High

When Diet doesn't work
CAD

Patient History

Look For!

Total Cholesterol <200

Triglycerides <200

LDL to go down <150

Hold For or ?

Grapefruit

Liver Disease

AST/ALT Elevated

The Nurses Notes!

Works In liver inhibits

HMC-CoA Reductase

(makes cholesterol)

Can Cause muscle pain

Stops after Stopping Med

Liver Diagram

BAD ☹️

Good 😊

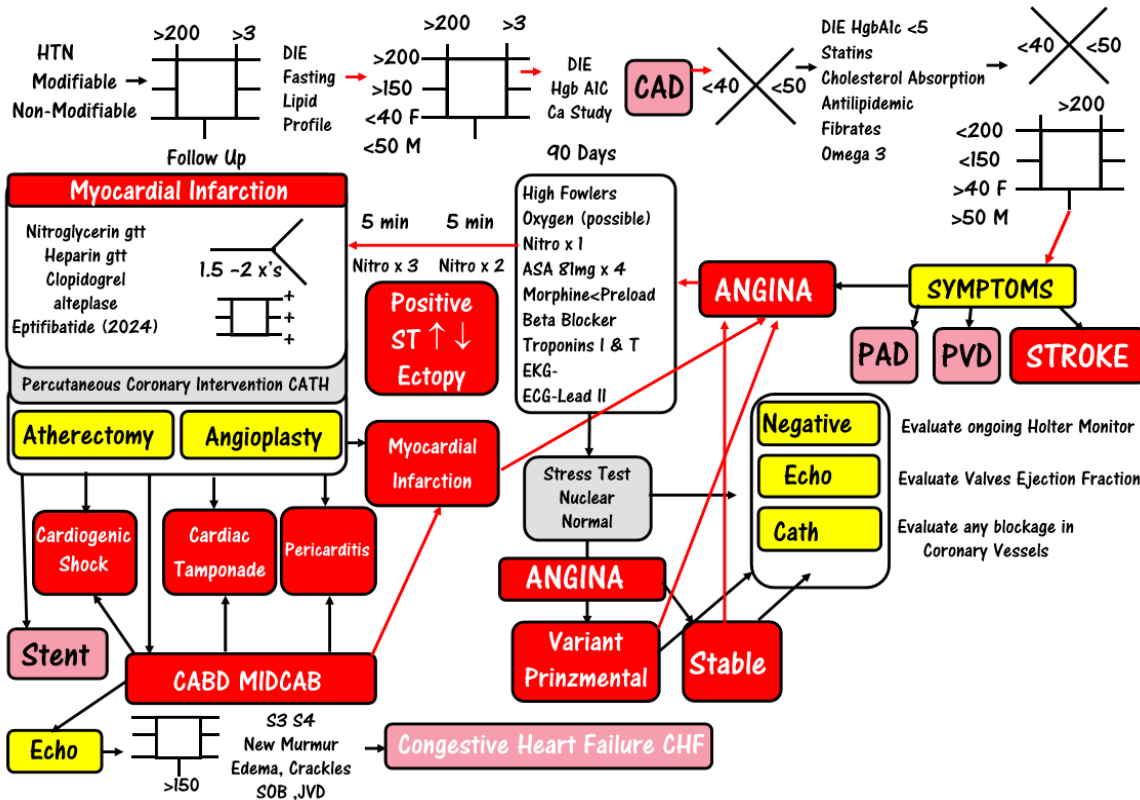
<200

>200 = Total Cholesterol

Elevated Total Cholesterol
>200 does not indicate
need for treatment-
Further Fasting
Lipid Profile is necessary

Flow of vessels to cad-angina...

Vessel Problem



Let's Talk about CAD...

Coronary Artery Disease

Arcus senilis, an opaque ring in the periphery of the cornea, is a sign of systemic fat deposits



Arcus Senilis

yellowish plaques about the eyelids, is a sign of lipid accumulation



Xanthelasma

A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



PUMP



LUNG V/Q

Let's Talk about CAD...PVD PAD ANGINA MI

NURSINGKAMP Cardiac Complications Atherosclerosis vs Arteriosclerosis

Coronary Artery Disease (CAD) is a "generic" term describing the narrowing of the coronary arteries. These arteries are responsible for carrying oxygenated blood to the heart. Atherosclerosis and Arteriosclerosis are the specific terms describing the cause of CAD.

Atherosclerosis

Atherosclerosis (problem "at the Wall") where there is a build up plaques on the wall that can result in them breaking off and lodging into the coronary artery resulting in angina leading to a Myocardial Infarction or Acute Coronary Syndrome.

Anticipate This

Treat Hypertension with Ace Inhibitors, ARB's, Beta-blockers, Calcium Channel Blockers- Treat Cholesterol with Statins

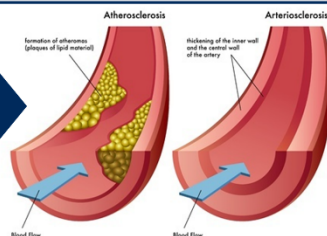
Look for?

Developing Plaque's breaking off mobilizing and blocking coronary arteries resulting in

Chest Pain, Risk of Rupturing

Do This?

CHEST PAIN is acute notify MD-Stay With Pt, EKG, Vitals, Think Oxygen -HONAMB



Both Risk?

Smoking, Stress, Diabetes, Obesity, Alcohol, Hypertension, Hereditary

Encourage Lifestyle Changes

Anticipate?

Calcium Study- Identifies Start of CAD

Triglycerides <200 Want Low

LDL <150 (LOW dl) Want Low

HDL >40 Female Male >50 Want High

CRP <3 (Inflammation Marker) Want Low

HgbA1c <7 Diabetes Marker Want Low

Arteriosclerosis

Arteriosclerosis the problem is in the wall causing the inability of the vessels to dilate or react to the increase of oxygen demand. This results in angina if not treated leading to a Myocardial Infarction or Acute Coronary Syndrome.

Anticipate This

Treat Hypertension with Ace Inhibitors, ARB's, Beta-blockers, Calcium Channel Blockers- Treat Cholesterol with Statins

Look for?

Coronary Arteries are unable to Vasodilate due to hardening of the arteries resulting in Angina symptoms still at Risk for Rupturing, **Chest Pain**

Do This?

CHEST PAIN is acute notify MD-Stay With Pt, EKG, Vitals, Think Oxygen -HONAMB

Nursing Kan

A C
A I



PERFUSION



OVERLOAD



LOW VOLUME



MEDS



ELECTRIC



VESSEL



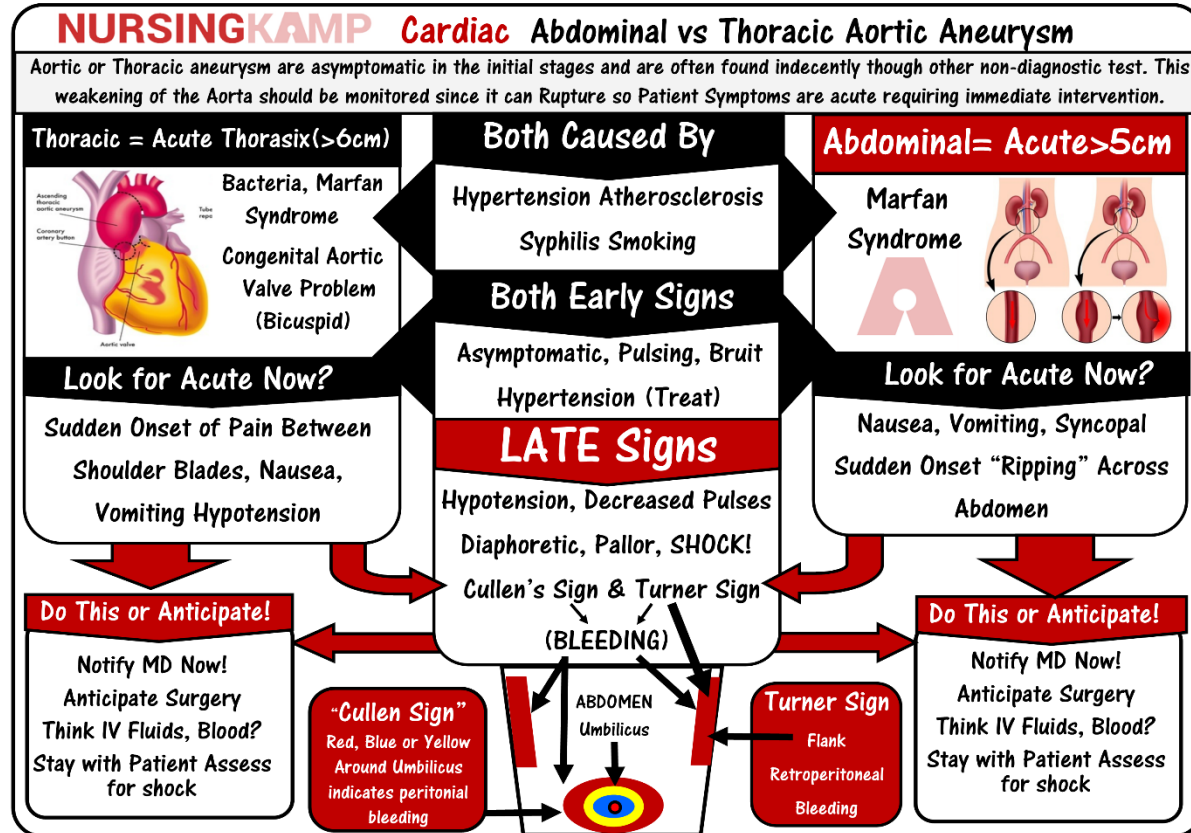
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LUNG V/O

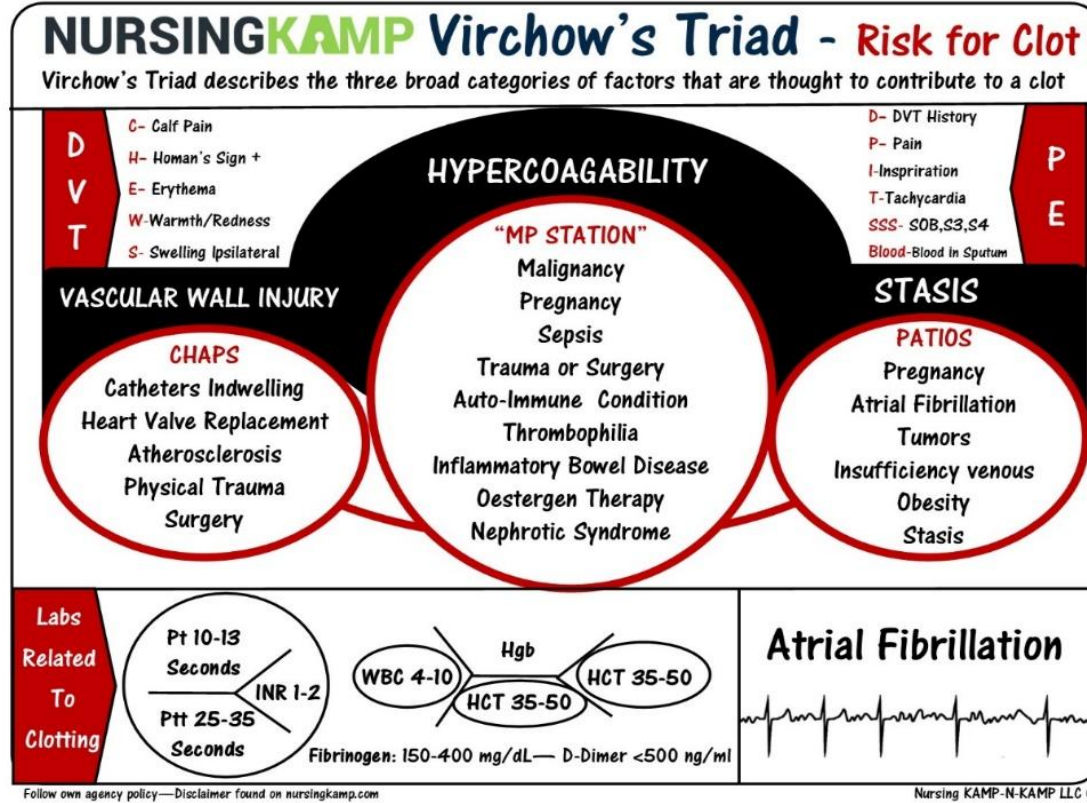
of Illustration ALWAYS FOLLOW POLICY— © nursingkamp.com

Let's Talk about CAD...HTN AAA TAA



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Let's Talk about clots...



NURSING V - CARDIAC UNIT

Lets talk about clots...

Nursing KAMP Cardiac Complications Deep Vein Thrombosis vs Pulmonary Embolus

DVT & PE are the leading cause of preventable deaths in hospitalized patients. Understanding the underlying cause of Virchow's Triad is the key to preventing complications. If you Suspect PE/DVT Treatment should be immediate and MD should be notified.

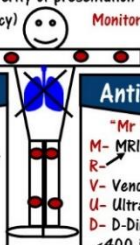
DVT Deep Vein Thrombosis

If new suspected DVT is observed NOTIFY MD.
Expect Diagnostic testing to confirm DVT. Depending on location and severity of presentation treatments vary. (follow policy) **Monitor for PE!**

NOT in Lungs

Look For!

C- Calf Pain
H- Homan's Sign +
E- Erythema
W- Warmth
S- Swelling



Anticipate!

"Mr Vud 400"
M- MRI
R-
V- Venography
U- Ultrasound
D- D-Dimer
<400 is Negative

Might Expect This!

Warm- Warm area
B- Bed
R- Rest?
E- Elevate Extremity
A- Anticoagulants
T- Tylenol/NSAIDS
H- Heparin/Lovenox
S- SCD's Preventative

Monitor the 4 P's
Pt- Prothrombin Time
Ptt- Partial Prothrombin Time
PLT- Platelets
P- Pulses

ALWAYS MONITOR PATIENTS WITH DVT's FOR SIGNS AND SYMPTOMS OF PULMONARY EMBOLISM

Virchow's Triad
3 Reasons a patient will develop a clot!

Help PEDS Stop IF The VATS Clot!

Help = Hypercoagulability

"Help PEDS"

P- Pregnancy
E- Estrogen Therapy
D- Dehydration
S- Sepsis

Stop = Stasis

"Stop IF"

I- Immobility
F- Fibrillation

The = Trauma

"The VATS CLOT"

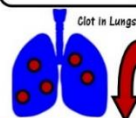
V- Valve-Artificial
A- Atherosclerosis
T- TLC's -IV Lines
S- Surgeries

PE Pulmonary Embolism

This results from a clot being lodged in the Pulmonary artery or branch partially obstructing it
If new suspected PE is observed NOTIFY MD immediately and assess patient.
(Thrombus (caught in vein) Embolus is moving)

Look For!

D- DVT History
P- Pain
I- Inspiration
T- Tachycardia
SSS- SOB, S3, S4
Blood- Blood in Sputum



Anticipate!

Spiral CT- VQ Scan-
XRAY- ECG
CaT- CT Angiography

Do This!

HOVER NOW!
(stay with pt)
H- High Fowlers
O- Oxygen
V- Vitals
E- Evaluate Breathing
R- Rapid Response (notify MD)

Might Anticipate doing This!

Get Baseline Pt-Ptt-PLT-CBC-BMP-
Anticipate Patient to be placed on Heparin gtt
Bleeding Precautions - 2 IV Lines (Evaluate
Contraindications for anticoagulation)

Nursing Kamp—All medical decisions are different per organization these notes are for guidance of methods of illustration ALWAYS FOLLOW POLICY— © nursingkamp.com

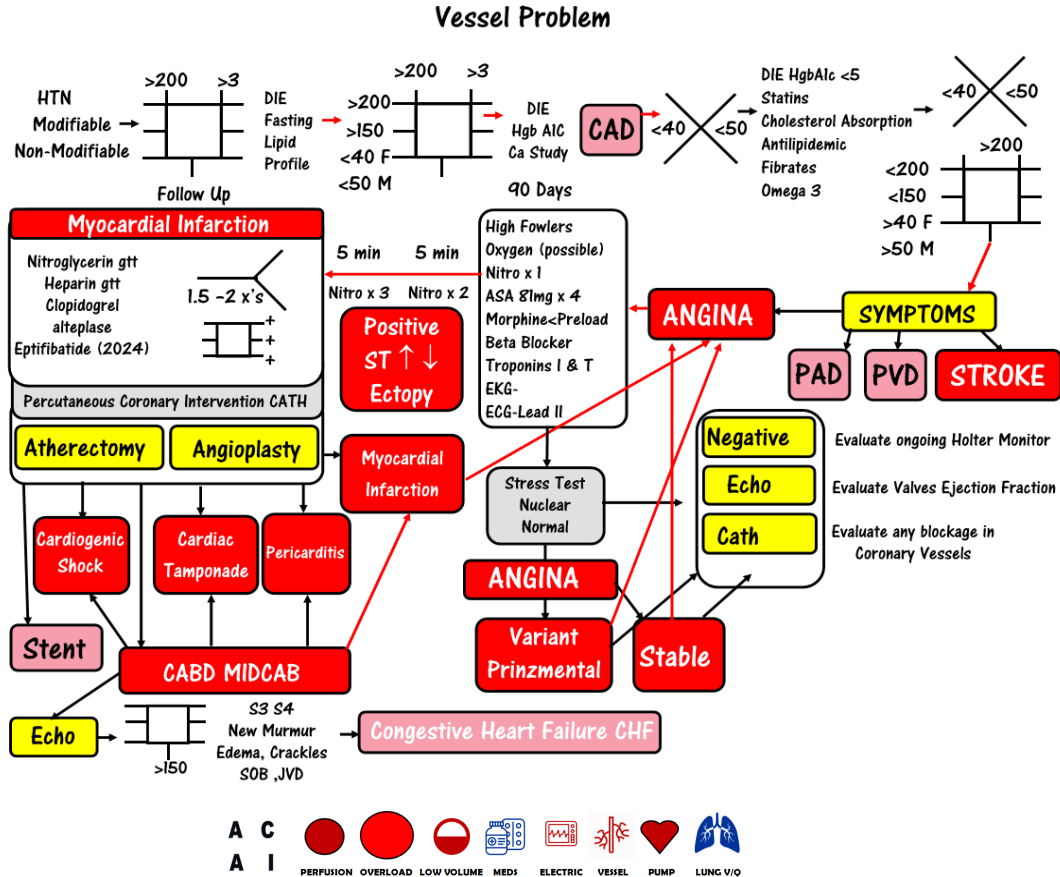
A C
A I



PERFUSION OVERLOAD LOW VOLUME MEDS ELECTRIC VESSEL PUMP LUNG V/O

NURSING V - CARDIAC UNIT

Lets talk about vessels...CAD – ANGINA



Lets talk about vessels...CAD – ANGINA

NURSINGKAMP Cardiac Complications Angina Classifications

Angina Pectoris or chest pain is the result of poor blood flow through the coronary arteries. All Angina types should be viewed as potential warning signs that can result into Myocardial Infarction so MD should be notified & EKG obtained.

Chronic Stable Angina

Chest discomfort that most often occurs with activity or emotional stress. Relieved with Nitro & Rest

Do this! Angina!

Stop Activity- Think EKG?
Oxygen? Stay With Patient!
Assess for Chest pain
Chest Pain Continues? Yes?
Give 1 Nitro Re-Assess

5 Minutes

Chest Pain Continues? Yes?
Give 2nd Nitro Re-Assess

5 Minutes

Chest Pain Continues? Yes?
Give 3rd Nitro
Unrelieved!

Anticipate ?

Myocardial Infarction!

Prinzmetal (metal vibrates) "Variant" Angina

Chest discomfort happens at rest while sleeping at night or same time caused by coronary artery spasm.

Do this! Angina



The Nurses Notes

Chronic Stable angina and Variant are **NOT** associated with

DANDESTE

and relieved with NITRO and last less than 15 Minutes

Diaphoresis

Anxiety

Nausea

Dyspnea

Ecg Changes ST Elevation

Acute Unstable Angina

Chest Pain that Occurs without Cause or Chest Pain Lasting longer than 15 Minutes
Follow Myocardial Infarction Protocol

Myocardial Infarction Protocol

H-High Fowlers

O-Oxygen

N-Nitroglycerin Sublingual

A-Aspirin 81 x 4

M-Morphine

B-Beta Blockers

The Nurses Notes

Any Chest Pain is an Acute Event the patient should be placed in the High Fowlers position, Assess PAIN ongoing
PQRST— Vital Signs

Look for Standing Orders

Oxygen, EKG, MEDS, Notify MD- Cardiac Enzymes

All Angina Monitor in Lead 2 or VI Monitor For?

ST Depression

Ischemia

(oxygen deprived Cells)



ST Elevation -Tissue Death

Nursing Kamp—All medical decisions are different per organization these notes are for guidance of methods of illustration ALWAYS FOLLOW POLICY— nursingkamp.com



NURSING V - CARDIAC UNIT

Lets talk about vessels...CAD – ANGINA

NURSINGKAMP Coagulation Labs PT-Prothrombin Time & Partial Prothrombin Time -HEPXA

If a patient is on Coumadin or Heparin or there is unexplained bleeding these labs are often drawn to evaluate patient status to include heparin drips which would provide a baseline- Some facilities use HEPXA instead of PTT always follow agency policy

HIGH PT CAUSES

"Licked the PT"

- L- Von Willi brand's
- I-Increased Bleeding
- C-Coumadin to HIGH
- K-Vitamin K Antidote
- E-Eating Deficiency
- D-DIC

Affects Extrinsic
Clotting Factor 7

HIGH PTT CAUSES

"Willi DIC Heparin HELPS"

- W- Von Willi brand's
- D-DIC
- Heparin
- H-Hemophilia
- E-Eight (factor deficiency)
- L-Liver Failure
- P-Protamine
- S-Sulfate(Antidote)

Reminder Vitamin K is the
Antidote for Coumadin

If on Coumadin Look at INR
for Therapeutic Range

PT—Prothrombin Time

10-13 seconds

PTT—Partial Prothrombin Time

25-35 seconds

If on Heparin PTT should be 1.5 -2
Times normal

Protamine Sulfate- Antidote

2 IV Lines with Heparin Drips

Affects Clotting Factors 8-9-11-12

Monitoring with the HepXa al-
lows for the ability to achieves
coagulation quicker therefore
is being used more than PTT
(follow agency policy)

FOODS HIGH
IN VITAMIN K

BECKS
Canola
CABS

B-Broccoli
E-Endive
C-Cauliflower
K-KALE
C-Cinacch
Canola-Oil
C-Collard Greens
A-Any Dark Green
B-Brussel Sprouts
C-Cru Bean



1-2

Normal Range
Not on
Coumadin

2-3

Therapeutic
For Being on
Coumadin

3-4

Therapeutic
For Patients
with Valves

>4

ACUTE Think
Vitamin K!
Bleeding!

Meds that Affect Bleeding

No Chance Quadruple G

C-Clopidogrel (Plavix)

H-Heparin

A-ASA

N-NSAIDS

C-Coumadin

(warfarin)

E-Escitalopram

HERBS

G-Garlic

G-Ginger

G-Ginko

G-Ginseng

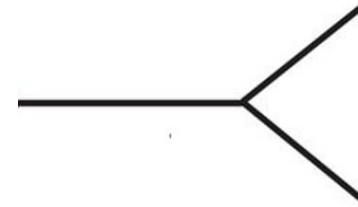
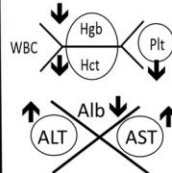
RISK BLEEDING!

Observe and monitor for
Signs and Symptoms of
Bleeding- PPS

Petechiae, Purpura- Stools

⊕ Hemoccult

Look at Other Labs



Hep "X" a = Think HEP 3 letters+7=10

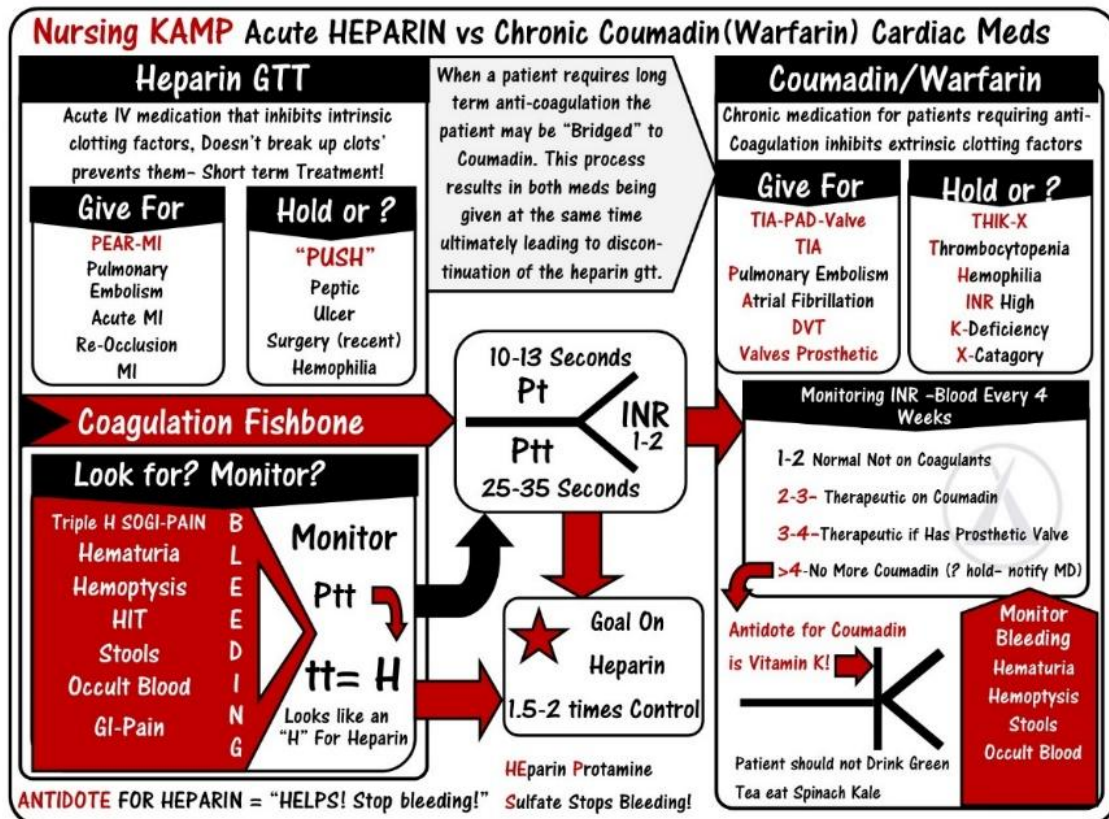
A C
A I



PERFUSION OVERLOAD LOW VOLUME MEDS ELECTRIC VESSEL PUMP LUNG V/O

NURSING V - CARDIAC UNIT

Lets talk about vessels...CAD – ANGINA



Nursing Kamp-All labs, treatments, policies are different per organization this sheet does not supersede your practice consult several resources— nursingkamp.com © N-KAMP LLC

Lets talk about vessels...CAD – ANGINA

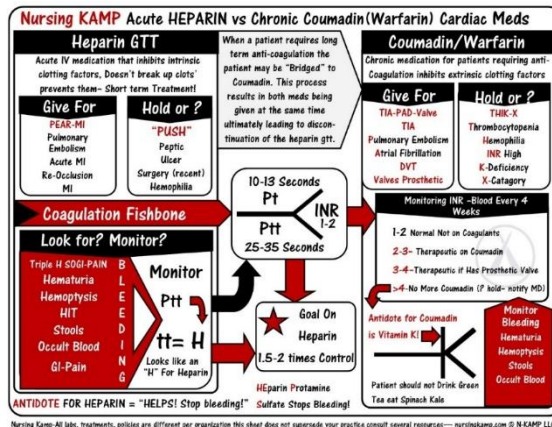
Heparin Drip Order and Titration Protocol (aPTT-Based)

Initial Orders:

- Heparin IV bolus: 80 units/kg IV push (max 5,000 units)
- Start infusion: 18 units/kg/hr IV (rounded to nearest 100 units/hr; max 1,800 units/hr)

Monitoring:

- Check aPTT 6 hours after initiation or any rate change
- Target therapeutic aPTT: 60–80 seconds
- Once 2 consecutive aPTTs are therapeutic, monitor q24h



Initial Orders:

- Heparin IV bolus: 70 units/kg IV push (max 5,000 units)
- Heparin IV infusion: 15 units/kg/hr (rounded to nearest 100 units/hr)

- Target Anti-Xa therapeutic range: 0.3 – 0.7 IU/mL

Monitoring frequency:

- Draw Anti-Xa level 4–6 hours after start or any rate change
- Once therapeutic for 2 consecutive levels, monitor every 24 hours

Let's talk about PCI-CATH...

ALEAPPS-PCI CATH

A -Acute-

L- Invasive to evaluate Unstable angina and ECG changes (T wave inversion, ST segment elevation, depression) Confirm and determine location and extent of heart disease.

E- Maintain the client on NPO status for at least 8 hr (due to the risk for aspiration when lying flat for the procedure).

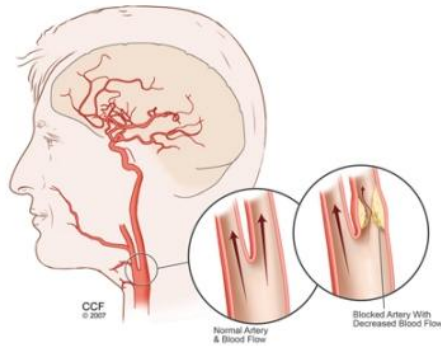
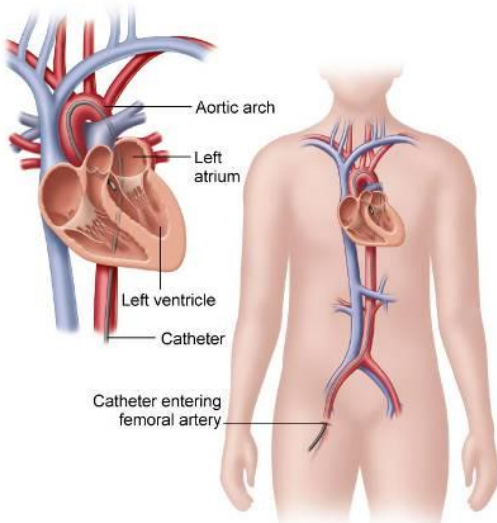
A- Pre Procedure

Ensure that the consent form is signed.

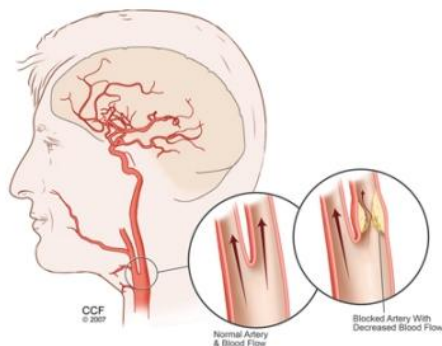
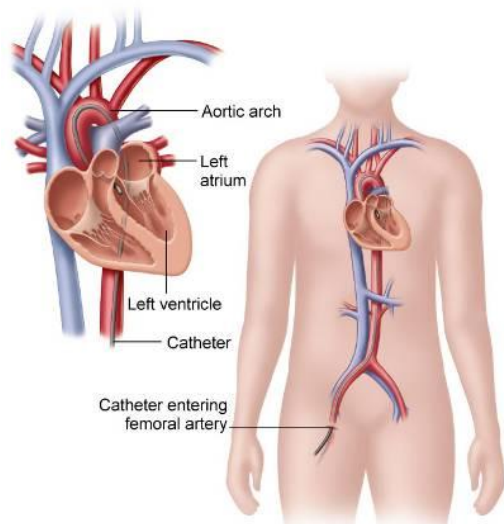
Assess that the client and family understand the procedure.

Assess for iodine/shellfish allergy (contrast media).

Assess renal function prior to introduction of contrast dye.



Let's talk about PCI-CATH...



ALEAPPS-PCI CATH

Intraprocedure

Administer sedatives and analgesia as prescribed.

Continually monitor vital signs and heart rhythm.

Be prepared to intervene for dysrhythmias.

Have resuscitation equipment and emergency medications readily available.

Postprocedure

Assess vital signs every 15 min x 4, every 30 min x 2, every hour x 4, and then every 4 hr

Assess the groin site at the same intervals for:

Bleeding and hematoma formation

Thrombosis; document pedal pulse, color, temperature

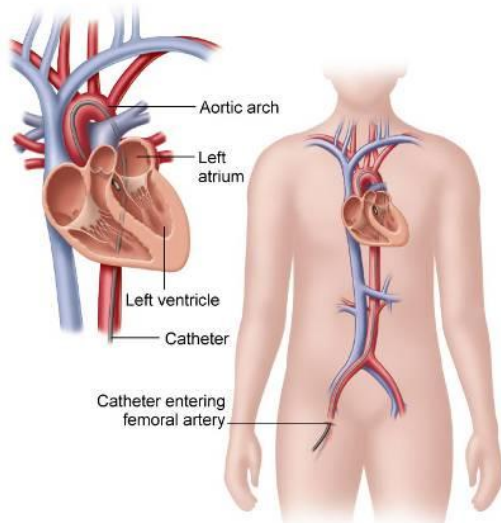
Maintain bed rest in supine position with extremity straight for prescribed time.

A vascular closure device may be used to hasten hemostasis following catheter removal.

Older adult clients can have arthritis, which can make lying in bed for 4 to 6 hr after the procedure painful. The provider can be notified for prescribed medication.

Let's talk about PCI-CATH...

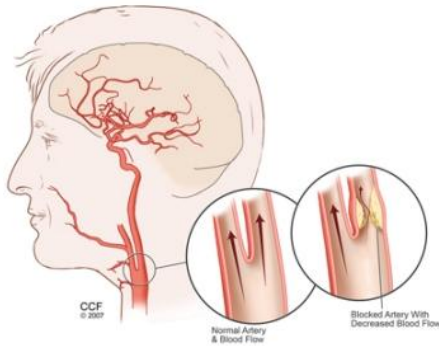
ALEAPPS-PCI CATH



P- Administer premedications as prescribed (methylprednisone [Solu-Medrol], diphenhydramine [Benadryl]).

P- Potential STENT OR IMMEDIATE BYPASS

S- Can be acute if unable to pass catheter or post bleed occlusion



Let's talk about Angina...Stress Test

Nursing KAMP Cardiac ECG Exercise Stress Test – Dobutamine Stress Echocardiogram

Patients with a Significant Cardiac History or presenting with Angina or Cardiac like symptoms are usually scheduled for a cardiac stress test. The purpose of this test is to validate or further investigate and elicit the previous symptoms in a controlled environment. If symptoms are replicated or other cardiac symptoms are experienced the test is called POSITIVE and discontinued immediately and further invasive evaluation like a CABG is warranted.



Exercise Stress/Echo Test

Patient begins walking on a treadmill or bicycle then the speed and incline is increased while the patient is connected to a cardiac monitor and blood pressure monitored at intervals. (Non-Invasive Echocardiogram (ultrasound) may also be performed depending on patients presenting symptoms

Prior

Consent
Baseline ECG
Can Take Meds
NPO 4 hours
Comfortable Shoes
Assess
Physical Ability

During Procedure

Monitor Patients HR, BP
Goal 85% Maximum Patient HR
Monitor for ECG Changes (stop)
Monitor for Chest Pain?(Stop)
Monitor ST & T Wave Changes
New Bundle Branch Blocks
Takes 30 Minutes



Echocardiogram (ultrasound) may be performed in addition to standard exercise Stress Test

Post Procedure

Monitor Patients Heart Rate, BP q 15 until Baseline
Ongoing Chest Pain ECG Changes

The Nurses Notes

Atropine may have to be given to patient if heart rate doesn't come back to baseline!
Be ready for potential MI and transport to CABG if Necessary!



Dobutamine Stress/Echo Test

Patients who are unable to walk on a treadmill or bicycle but require evaluation the patient is given Dobutamine (IV gtt) The patient is placed in supine position and connected to a cardiac monitor and blood pressure then echo performed at targeted HR.

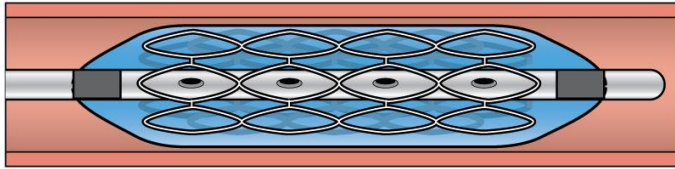
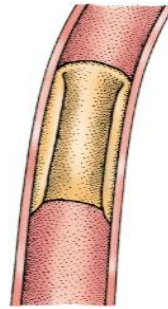
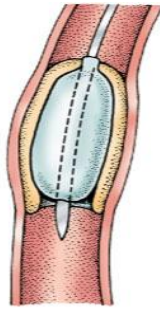
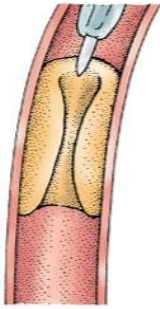
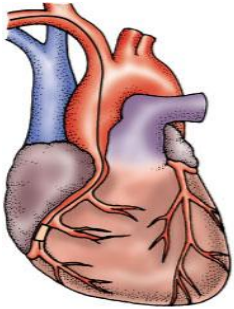
Prior

Consent
Baseline ECG
Can Take Meds
NPO 4 hours
Patients
Contraindicated?
10 Day Previous MI
Aortic Mitral Stenosis

During Procedure

May Feel palpitations, SOB, Fatigue (Dobutamine)
Monitor Patients HR, BP
Goal 85% Maximum Patient HR
Monitor for ECG Changes (stop)
Monitor for Chest Pain?(Stop)
Monitor ST & T Wave Changes
New Bundle Branch Blocks
May Take 60-90 Minutes

Let's talk about PCI-CATH...Stents



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- Cath Complications
- Assess Groin
- Hold Pressure
- Monitor Pulses
- Notify MD



clopidogrel
 ticlopidine

CLASS
 Antiplatelet

PLA"V"(5 days hold)IX -Think X for ~~XXXX~~ Stents
 Ticlid "Tenclid" Hold 10 days before Surgery!

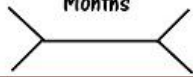
Give For!
CAPS—RISK
 Coronary Thrombosis
 Arterial Thromboembolism
 Peripheral Artery Disease
 Stents

Hold For or ?
 Invasive Procedure
 (Risk bleed) Hold 5 Days
 Active Bleeding
 Peptic Ulcer

Look For!
 Bleeding precautions
 Hemoccult Stools

The Nurses Notes!
 Prolongs Bleeding Time 5 Days!
 Hold NSAID's (Bleeding)
 Ticlid (With FOOD!)
 Ticlopidine "dine"
 with food!

Starting Ticlid Monitor CBC x 3 Months



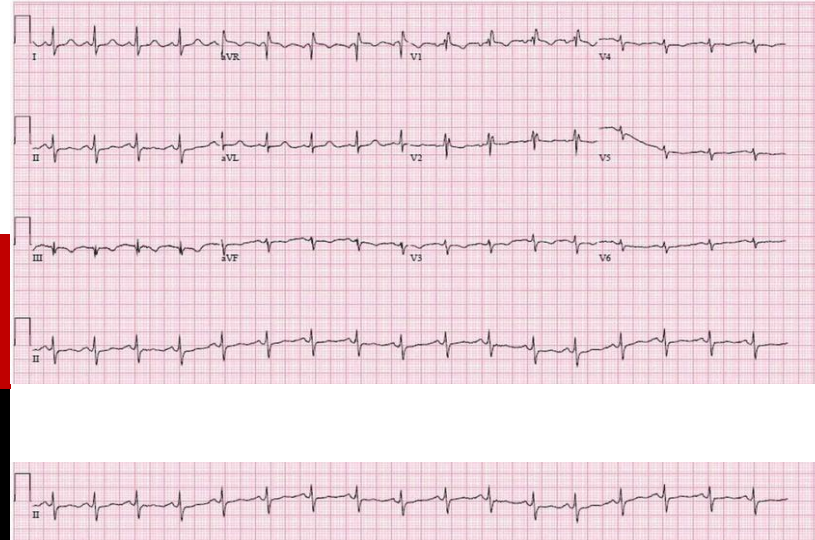
procedures to know...



EKG- 12 Lead



ECG- Telemetry



Medications to know...



Nitro



Ranolazine
Isosorbide

Sublingual Tablet-Nitro-Stat
Translingual Spray-Nitrolingual

RAPID onset- Short Duration is used during an Acute/Chronic Angina Part of "ONAMB"

Do This ?

Stop Activity At first sign of chest pain
Take 1 Tablet let dissolve -Rest 5 minutes
If pain not resolved Call 911 then
Take 2nd Tablet let dissolve rest 5 Minutes
If Pain not resolved

Take 3rd tablet Still Pain think MI!
DO NOT TAKE/GIVE MORE THAN 3 TABLETS

Translingual Spray in Oral Mucosa
Store Tablets in

Dark-Cool Bottle Replace every 3 months
Don't Crush -Chew-Swallow

Nitro Drip

Used for Angina Not Responding to Other Meds

Heart Failure Resulting from Acute MI

Use Tubing Provided- Glass Bottle

Continuous Acute Drip- Put On Monitor

Assess Blood Pressure- ANGINA

Nitrates

Given for Acute & Chronic Chest Pain
Dilates Arteries, Veins decreasing
Preload & Myocardial Oxygen Demand

Look For ?

Dry Mouth—Blurred Eyes

Syncope

Reflex Tachycardia- ? Beta Blocker

Dizzy- Orthostatic Risk

Headache- Tx ASA -Tylenol?

Hold For or ?

"Nitro- C-ICP BAR-DV-Fil"

C-Class ICP Risk (vasodilation)

Beta Blockers

Anemias Severe

Renal Disease

Diltizem Verapamil

Fil- Sildenafil-Vardenafil
(Viagara)

Topical Ointment-Nitro-BID
Transdermal Patch-Nitro-Dur

SLOW Onset-Long term Prophylaxis for angina attacks (chronic stable angina, Variant Prinzmetal angina)

Do This ?

On Skin - Cover with clear plastic wrap
Do not Touch with bare hands!

Rotate Patch -No Patch At Night

Patch on Patch Off 12 hours on 12 hours off

Don't Cut Patch- Look for Tolerance

Imdur-Isosorbide="bide"

"abide the long time &
swallow with water & metal "

Abide= "bide"= Class

Long time=Long Acting

Swallow- Empty stomach with

Water- with water

Metal For Prinzmetal or variant

Lets talk about Myocardial Infarction...

NURSINGKAMP Cardiac Complications Myocardial Infarction—MI

Acute Myocardial Infarction is the result of prolonged decreased oxygen to the heart. Initially ischemia is felt (angina) if left untreated Myocardial Infarction results. Immediate care, interventions and telemetry monitoring are necessary in this acute condition! New guidelines vacillate on Oxygen delivery during in MI Follow your agency policy. Baseline EKG should be obtained immediately.

Looks Like!

"Vomiting SNAPS"
Vomiting
S- Sweating
N-Nausea
A-Angina Pain
P-Pallor
S-Shortness of Breath

Cardiac Enzymes 3 sets
Every 6-8 Hours (Check POLICY)

First Cardiac Enzymes to Rise and is Most Indicative of Myocardia Injury

Feels Like!

IMPENDING DESAT
Impending Doom

WOMEN- presenting with: Unexplained fatigue, Shortness of breath, GI-like symptoms (nausea, epigastric pain) Jaw or back pain- ...especially with risk factors (age >55, diabetes, HTN, family history, smoking), should be evaluated immediately for possible MI, even if no chest pain is present.

Myocardial Infarction Protocol

"HONAMB PT order of Priority"
H- High Fowlers
O-Oxygen-2-3 Liters NC(policy?)
N-Nitroglycerin Sublingual
Give 1 Nitro Re-Assess 5 Minutes
Chest Pain Continues? Yes?
Give 2nd Nitro Re-Assess 5 Minutes
Chest Pain Continues? Yes?
Give 3rd Nitro THINK MI!
A-Aspirin 81 x 4- Assess HX
M-Morphine -IV Decreases Preload
B-Beta Blockers?
P-PCI Notify Team?
T-Telemetry ECG Ongoing!

Pain Here!
Radiating Neck Jabs!
Radiating Neck
J-Jaw
A-Arm
B-Back
S-Shoulder

The Nurses Notes

Place in the High Fowlers position
Assess PAIN ongoing PQRST-
Vital Signs Q 15 Minutes
Look for Standing Orders
Oxygen, Get an EKG, Put on Telemetry Lead 2
Cardiac Enzymes- Notify MD

Monitor in Lead 2

ST Depression Ischemia

ST Elevation Ischemia/Infarction

Symptoms more common in women = shortness of breath, nausea, vomiting and back or jaw pain

Nursing Kamp—All medical decisions are different per organization these notes are for guidance of methods of illustration ALWAYS FOLLOW POLICY— nursingkamp.com

NURSING V - CARDIAC UNIT

ASPIRIN

NURSINGKAMP Aspirin “ASA” Cardiac Medications Chest Pain HONAMB

ASA is used in chronic as well as Acute situations—it’s action inhibits platelet aggregation but can also treat fever, inflammation and pain. The highest risk with aspirin is bleeding so chronic long term use should be monitored.

Aspirin 81 mg Daily

Taken Daily to prevent potential acute complications
History of Family or risk factors of CAD & MI- though EVB not routinely recommended anymore

Hold or ?

Plants
GI-Ulcers
G-Gout
Platelets Low
Ace-Inhibitor
NSAID Allergy
Tinnitus

324 MG Daily

This higher dose aspirin is sometimes prescribed daily for patient that cannot tolerate warfarin or other blood thinners—or the patient is too much at risk for falls

Given For?

Patients who still require ongoing anticoagulation **Atrial Fibrillation** though not the frontline med anymore because there are more effective anticoagulants though it is still seen in clinical practice so NOTE!



Four 81 mg Baby Aspirins or 325mg x 1

Part of the Chest Pain Algorithm “HONAMB” for Myocardial Infraction(MI) or Angina Symptoms where MI is suspected! (Follow Policy)

Myocardial Infarction Protocol

High Fowlers-Oxygen
O-Oxygen (follow policy)
N-Nitroglycerin Sublingual
A-ASPIRIN
M-Morphine
B-Beta Blockers

The Nurses Notes

Any Chest Pain is an Acute Event patient should be placed in the High Fowlers position, Assess PAIN ongoing PQRST— Vital Signs

Look for Standing Orders
Oxygen, EKG, MEDS, Notify MD

Monitor in Lead 2

ST Depression Ischemia



ST Elevation Ischemia/Infarction



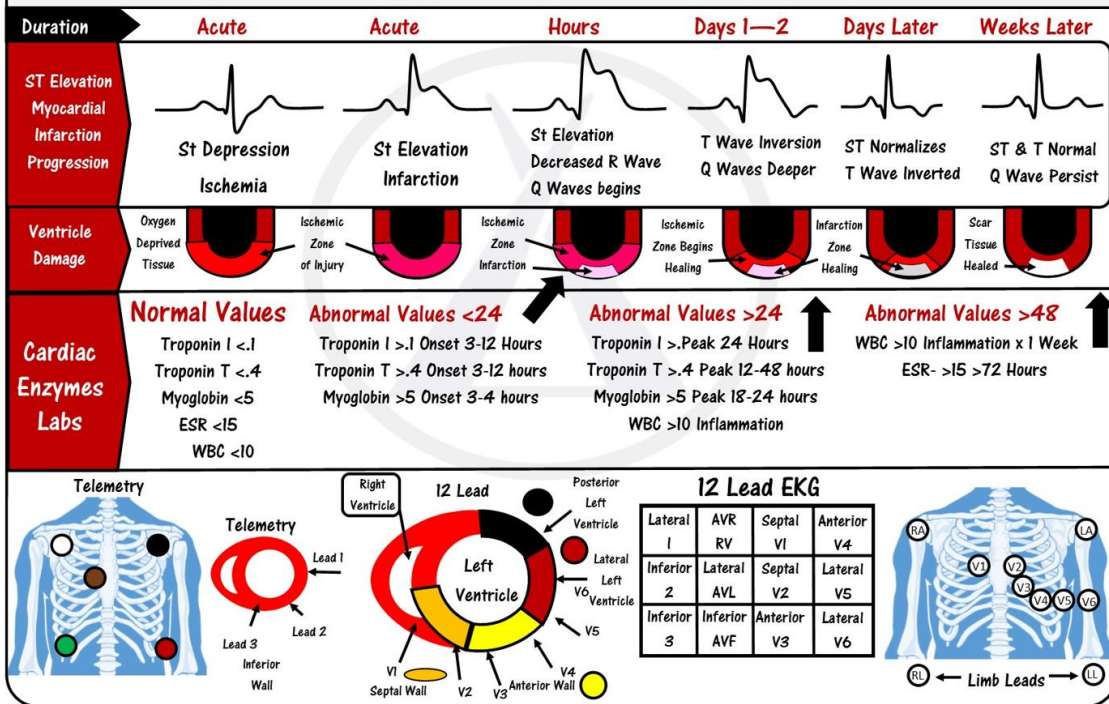
Stage	Aspirin Dose	Notes
Suspected MI	162–325 mg chewed	Immediately on presentation
Post-MI	81–100 mg daily	Continue indefinitely
DAPT (Dual antiplatelet therapy w/stent)	Aspirin + P2Y12 inhibitor	Usually for 12 months
Primary prevention	Not routinely recommended	Use only in select high-risk patients

Nursing Kamp—All medical decisions are different per organization these notes are for guidance of methods of illustration ALWAYS FOLLOW POLICY— nursingkamp.com

Good to know - MI

Nursing KAMP - Cardiac ECG Changes and Myocardial Infarction

Myocardial Infarction is a complicated cardiac event that requires immediate intervention. Understanding the pathophysiology of the ECG/EKG telemetry is essential to identifying potential complications and interventions along with Lab values. Time is muscle!



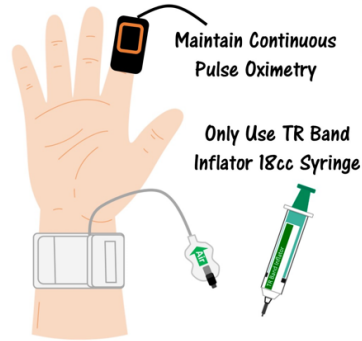
Nursing KAMP—All values are different per organization the values listed are for illustration—

StickNotes @thenursesnotes.com

Good to know MI...

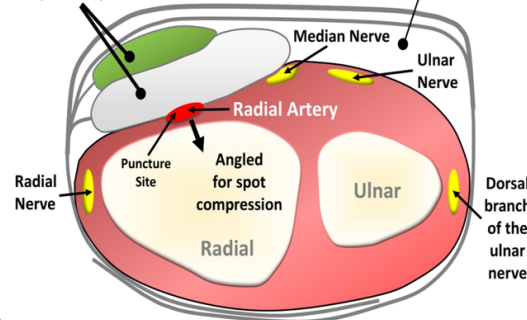
NURSINGKAMP TR Bands Trans Radial Artery Compression Device

The major cause of radial artery occlusion is thrombosis that occurs during hemostasis of the radial artery. The TR band is able to reduce that thrombosis by 75 % at 30 days. TR Bands are used post percutaneous coronary interventions as these devices assist in hemostasis of the radial artery following trans radial cardiac catheterization or angioplasty. The TR band is usually left on for three hours post procedure. (always follow your policy)



Double Compression Balloons
Spot compression can prevent nerve compression, pain reduction

Space Prevents compression of the Ulnar artery or nerve pain reduction



VS, Bleeding & Perfusion Assessments On Return to Floor



X-4



X-2



Q-1

Check Color, Temperature, pulses, sensation, pain and CRT in the affected extremity

No BPs or Venipunctures to extremity x 24 Hours

BARBEAU CLASSIFICATION OF PULSE OXIMETRY WAVEFORM

	Base line	Initial Occlusive Ulnar Artery	After 2 Minutes
A			
B			
C		—	
D		—	—

Removal Procedures (Follow Policy)



Only Use TR Band Inflator Syringe



Step 1-Every 10-15 minute
Remove 3-5 CC of air

Step 2- If bleeding occurs during removal, insert enough air to restore hemostasis; confirm patent hemostasis.

Wait 15-30 minutes,
Repeat Step 1

Once air has been completely removed from band, confirm bleeding has stopped. Unfasten the adjustable band while stabilizing access site with gentle pressure. Remove band by lifting slowly toward palm of hand.

Keep the TR Band at the Bedside Post Removal

Apply sterile Gauze & Tegaderm

Lets talk about Meds & Clots...

Cardiac KAMP

CARDIAC GII Inhibitor

INTEGRILIN-Eptifibatide

Integrilin is an ACUTE DRIP for PTCA and Stenting

Drug for Myocardial Infarction

Give For!

PTCA & STENTING

P- Percutaneous

T- Transluminal

C-Coronary

A- Angioplasty

Stenting- Intracoronary
Stenting

Hold For or ?

Invasive Procedure
(Risk bleed)

Greater than 3 hours
(stroke)

Patient history surgeries,
bleeding strokes?
(30 Days)

Creatinine >2
Other Antiplatelets

Look For!

Bleeding precautions

Hemoccult Stools

Hypotension

Allergic Reactions

The Nurses Notes!

Get Baseline PT/PTT
CBC—BMP

Use Special Vented
Tubing

Cardiac KAMP

CRITICAL CARDIAC

Alteplase - Streptokinase - Reteplase

CLOT BUSTER—THROMBOLYTICS

Drug of Choice for Thrombosis—Stroke

Give For!

CAT-STEMI -Alt- 3 Hours

Coronary Thrombosis

Arterial Thromboembolism

Alteplase <3 Hours for
Ischemic Stroke
(not streptokinase)

Hold For!

Invasive Procedure
(Risk bleed)

Greater than 3 hours
(stroke)

Patient history
surgeries, bleeding
strokes?

Look For!

Bleeding precautions

Hemoccult Stools

Hypotension

Allergic Reactions

The Nurses Notes!

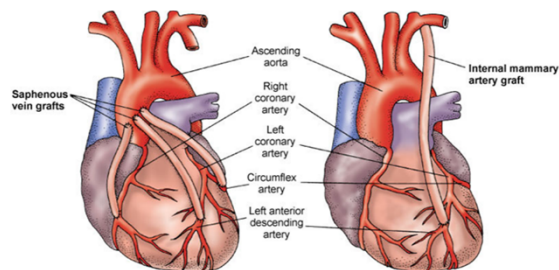
Have to IV's One
Dedicated to
Thrombolytics !
May give Heparin with
Thrombolytics

Aminocaproic Acid Antidote for Life Threatening Situation

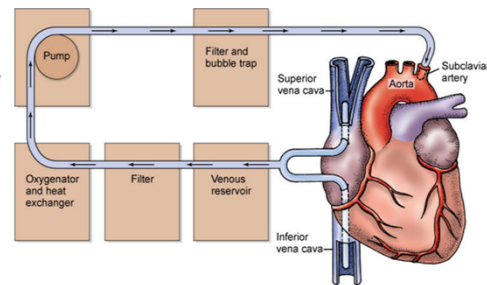
Lets Talk about CABG & Mid Cab...

NURSINGKAMP CABG vs MIDCAB Complications

CABG (Coronary Artery Bypass Grafting) is an open-heart surgical procedure used to treat significant or multivessel coronary artery disease. It involves making a large incision through the sternum (sternotomy), using a heart-lung machine to circulate blood, and grafting vessels—typically from the leg or chest—to bypass blocked arteries. It's the gold standard for patients with complex or widespread coronary blockages but comes with a longer recovery time and higher risk of complications such as infection or stroke.



MIDCAB (Minimally Invasive Direct Coronary Artery Bypass) is a less invasive alternative to traditional CABG, performed through a small incision between the ribs without opening the sternum or using a heart-lung machine. It is most commonly used for isolated blockages in the left anterior descending (LAD) artery. While it offers faster recovery, less pain, and fewer complications, it is limited to select patients and doesn't allow access to multiple vessels like CABG does.



	Complication	Explanation
C	Cardiac tamponade	Due to pericardial bleeding; watch for muffled heart sounds, hypotension, JVD
A	Arrhythmias (especially AFib)	Common within first 48–72 hours; may require rate control or anticoagulation
B	Bleeding	Chest tube output >150 mL/hr is concerning; may need surgical re-exploration
G	Graft occlusion or MI	Monitor for chest pain, ECG changes, hemodynamic instability
B	Brain (Stroke or cognitive decline)	Due to emboli or hypoperfusion; assess neuro status frequently
L	Lung complications (atelectasis, pneumonia)	Encourage incentive spirometry, ambulation, pulmonary hygiene
E	Electrolyte imbalances	Especially low Mg^{2+} and K^{+} → increases arrhythmia risk
D	Deep sternal wound infection	Monitor for redness, drainage, fever; risk increased in diabetics and obese patients

Nursing Kamp—All medical decisions are different per organization these notes are for guidance of methods of illustration ALWAYS FOLLOW POLICY— nursingkamp.com

Let's talk about complications...

NURSINGKAMP Cardiac Tamponade -Pericardiocentesis Acute Cardiac

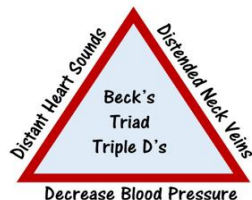
Cardiac tamponade is the accumulation of pericardial fluid, blood, pus, or air within the pericardial space that creates an increase in intrapericardial pressure, restricting diastolic cardiac filling and decreasing Cardiac Output (CO). The diagnosis is based on clinical suspicion and supported by evidence of hemodynamic compromise on echocardiography. It is caused by dissecting aneurysm, pericarditis, cancer, Acute MI, Cardiac Surgeries to include CVC Placements and Trauma. The result of this pressure around the heart decreases preload and impaired organ perfusion resulting in circulatory shock and cardiac arrest. Cardiac tamponade is a cardiac emergency and can be fatal if it is not quickly diagnosed and treated promptly.

Looks Like!

Initial Restlessness
Dyspnea with Clear Breath Sounds
Pulses Paradoxus
Muffled (distant) Heart Sounds

Rule of 20's

CVP>20 HR Increase 20
CVP>20 ↓ RVED ↓ RVEF



Get This!

Notify MD-PCP
Anticipate Echo, CXR
Pericardiocentesis

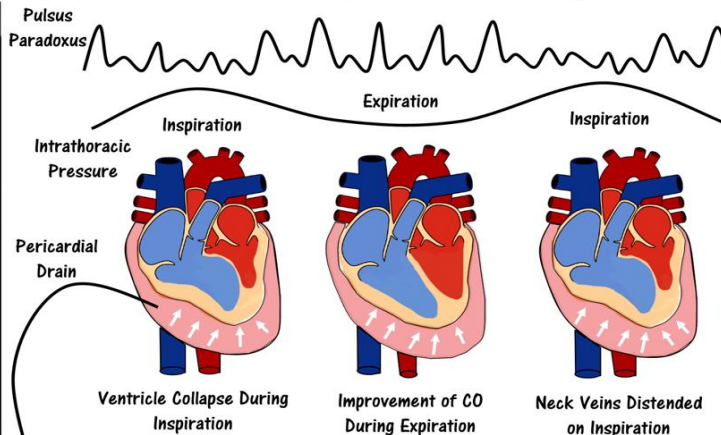
Do This!

Notify Provider
HOB 30-45 Degrees
Stop Anti-Coags
Think Fluids?
Think PA Cath?
Anticipate
Peri-Cardiocentesis

NG Tube
IV Access, O2
ECG Tele
+ Inotropes
Prep Skin
US to Subcostal
Lidocaine

Look For!

Vasovagal Reaction
Pneumothorax
Dysrhythmias
Infection
Hemothorax
Liver Laceration
Laceration of Septum,
Ventricle, artery



Post Assessments & Care

Keep Drainage
Below Level of Patient
Assess Kinks,
Clots, Cloudiness in
Tubing Replace
Dressing Per Policy

Bed Rest-Legs Elevated
CXR (pneumothorax)
Assess for
Reoccurring Tamponade
Assess for Pericarditis

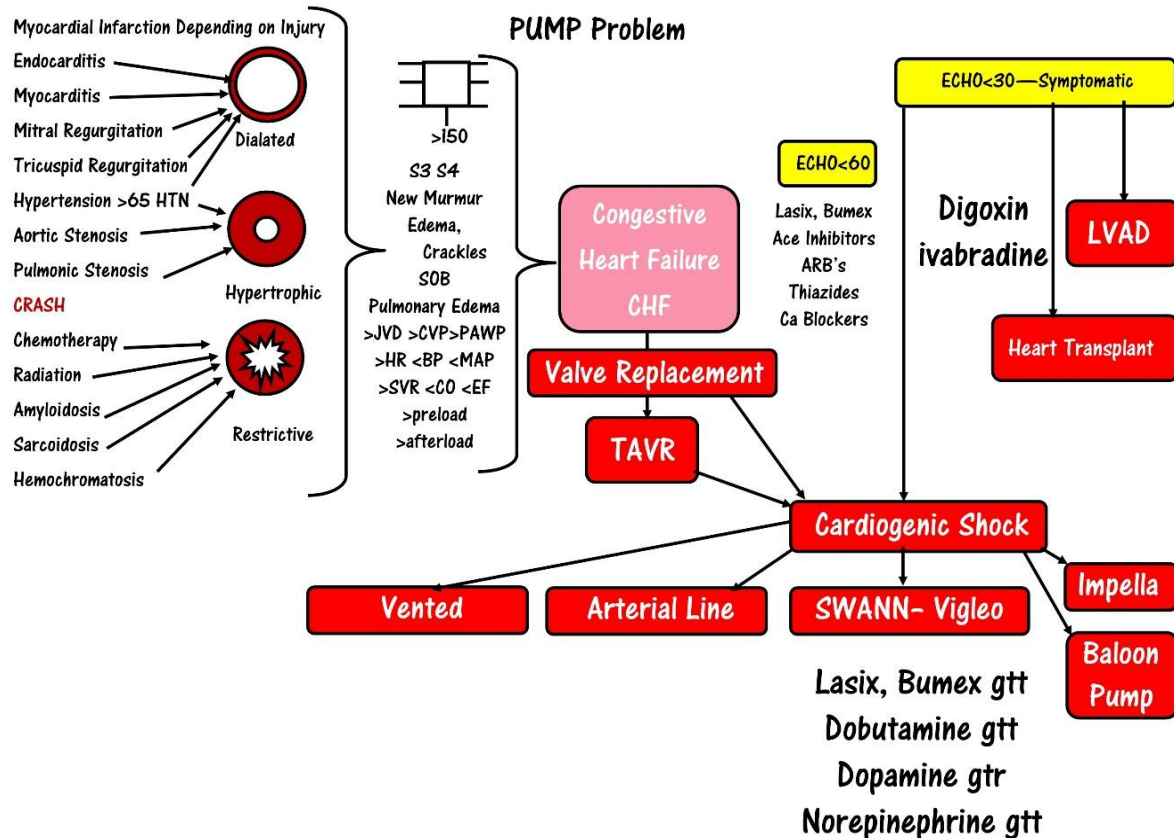
Pericarditis

Pericardial Friction Rub
Heard 4th-5th ICS
Learning Forward
Paradoxical Pulse
Fever >38 Degrees
↑WBC ↑ Sed Rate ↑ CRP

Policies, treatments and plans of care vary per institution this does not in no way supersede your agency policy. Nursingkamp.com

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Let's talk about the PUMP...



Assessment Practice...

T	M
P	A

The Heart Box is a Method to document your valve abnormalities by writing a letter like R in the box of the specific valve location and if it is Regurgitation or a valve or stenosis-examples

	R
	S

→ Mitral "R" Regurgitation

→ Aortic "S" Stenosis

V	→
S	→

Tricuspid Valve "V"

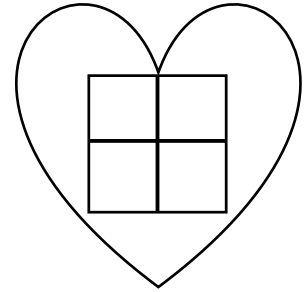
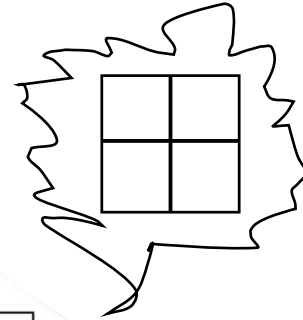
Pulmonic "S" Stenosis

Mitral "V" Valve

	V

450 (Left CHF)

Arrow points to either
right or left sided CHF with BNP
450 (right sided heart failure)



Let's Talk about medications...

NURSINGKAMP

The Cardiac Medication Overview

These are the Cardiac Medications You should know! They are ordered in Priority from A - E "A" are the most acute medications then retrospectively B, C etc. Though all meds have adverse side effects some require more assessment and direct monitoring than others- "A" medications are all ACUTE and should be monitored closely or are used in acute situations.

A	Acute Medications	"A Hand Sewn Lad"- Adenosine-Heparin-Atropine-Nitro-Dopamine-Streptokinase-Epinephrine-Warfarin-Neophenerine-Levophed-Amiodarone-Dobutamine- ALL ACUTE- CARDIAC MEDICATIONS
B	Beta Blockers	"Belly Laugh Out Loud" <u>LOL(suffix)</u> -Metoprolol-Labetolol-Atenolol-Propanolol -Carvedelol Monitor 4 B's of Beta Blockers- Bradycardia, Blood Glucose, Bronchoconstriction, Blood Pressure
C	Calcium Channel Blockers	"DV -AV Pines" Diltiazem Verapamil AV(DV affects rate)"Pines" Amlodipine-Nifedipine Two types DV is rate related Pines are Blood Pressure related. Check or ? if on either
C	Calcium Glycoside (Digoxin)	"Digoxin/Lanoxin Monitor "K2BANDAV" K (Potassium low) 0.8-2.0 >2 Level Dig Toxic Acute! Bradycardia-Anorexia-Nausea Dysrhythmias- Abdominal Pain- Visual Disturbance
D	Diuretics Ace Inhibitors Arb's	Lasix/Bumex - Potassium Wasting Diuretic- Spironolactone-Potassium Sparing Diuretics ACE inhibitors Lisinopril, Captopril "Ace King High in April!" A-Angiodema C-Cough E-Electrolyte K High -ARB's "Ortho Sartan" Ortho-Orthostatic Risk -Sartan-suffix
E	Everything Else Electrolytes	CAMP- (all electrolytes that effect Cardiac ECG) C-Calcium A-Arrhythmias M-Magnesium P-Potassium Statins- lovastatin, rosuvastatin - Not So Stat Cholesterol Meds

Ace's & Arb's are in the "D" section since they work outside the heart reducing fluid through the RAS System

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NURSING V - CARDIAC UNIT

Let's Talk about bleeding meds...

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Bleeding Medications Overview

Always assess for signs of bleeding: bruising, petechiae, hematuria, melena, low H&H.

Avoid IM injections and hard brushing in patients on these meds.

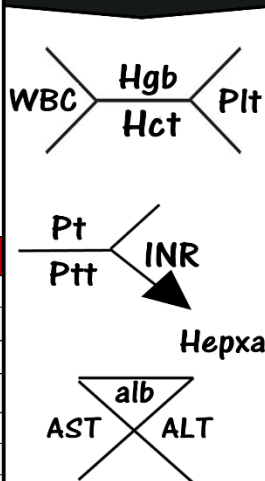
Check platelets, INR, aPTT, or anti-Xa as appropriate.

Assess use of OTC or herbals that may interact.

A BATCHEn Bleeding Meds

A	Antiplatelets (aspirin, clopidogrel)
B	Blood thinners (anticoagulants)
A	Alteplase / thrombolytics
T	Toradol & NSAIDs
C	Chemo agents
H	Herbals (garlic, ginkgo, ginseng)
eN	Neuro meds (SSRIs/SNRIs)

Labs to Monitor!



Diagnosis and potential bleeding frequency requiring assessment

	Diagnosis	Why It Matters
C	CVA/TIA (Stroke)	May be on antiplatelets or anticoagulants to prevent future strokes
H	Heart conditions (Afib, MI, valve replacements)	Require anticoagulation to prevent emboli
A	Aneurysms or recent vascular surgery	High risk of hemorrhage; bleeding is life-threatening
D	DVT/PE (thromboembolism)	Heparin or DOACs used long term
S	Surgical patients	Bleeding risk from anticoagulants or procedural complications
B	Bleeding disorders (e.g., hemophilia, thrombocytopenia)	Already at baseline bleeding risk
L	Liver disease (cirrhosis)	Reduced clotting factors coagulopathy
e	Elderly	Age-related risks + polypharmacy higher bleeding potential
e	End-stage renal disease	Impaired drug clearance + platelet dysfunction
d	Drug use (NSAIDs, SSRIs, herbals, anticoagulants)	Can interfere with clotting mechanisms

Class	Examples	Mechanism	Notes
Antiplatelets	Aspirin, Clopidogrel, Ticagrelor, Prasugrel	Inhibit platelet aggregation	Used for MI, stents, stroke
Anticoagulants	Heparin, Warfarin, Enoxaparin, Apixaban, Rivaroxaban	Inhibit clotting factors	Monitor INR (warfarin), Xa levels
Thrombolytics (Fibrinolytics)	Alteplase (tPA), Streptokinase, Tenecteplase	Dissolve clots	Used in STEMI, stroke, PE
NSAIDs	Ibuprofen, Naproxen, Ketorolac	Inhibit prostaglandins platelets	Risk with GI ulcers
SSRIs / SNRIs	Sertraline, Fluoxetine, Venlafaxine	Affect platelet serotonin clotting	Esp. with NSAIDs or anticoags
Chemotherapy agents	Methotrexate, Cyclophosphamide	Bone marrow suppression platelets	Monitor CBC, platelets
Herbals/Supplements	Ginkgo, Garlic, Ginseng, Fish Oil, Vitamin E	Natural antiplatelet effects	Can potentiate Rx medications

Let's Talk about critical meds...

NURSINGKAMP

Cardiac Medications Critical Drips in shock

Effect	Definition	Examples	Indications	Med	SVR	MAP	HR	CO
Inotropic (I know the force of contraction)	these medications help with Contraction of the Heart Muscle therefore increasing the Cardiac Output called "Positive Inotropic" Affects contractility (strength of contraction)	Positive: <i>Dobutamine, Digoxin, Dopamine (mod dose)</i> Negative: <i>Beta-blockers, CCBs (verapamil, diltiazem)</i>	CHF, cardiogenic shock Hypertension, angina, rate control in Atrial Fibrillation Afib	◆ Phenylephrine 2-20mcg/min ◆ Vasopressin 0.01-0.1 u/min ◆ Norepinephrine 0.5-30 mcg/min ♥ Epinephrine 1-5 mcg/min ♥ Isoproterenol 0.1-10 mcg/min ♥ Dobutamine 2-20 mcg/kg/min ◆ Dopamine 2-20 mcg/kg/min ◆ Nitroprusside 0.3mcg/kg/min-10mcg/kg/min	↑ ↑ ↑ ↑↓ ↓ ↓ ↑ ↓	↑ ↑ ↑ ↑ ↓ ↓ ↑ ↓	↓ ↓ ↑ ↑ ↑ ↑ ↑ ↓	↓ ↓ ↑ ↑ ↑ ↑ ↑ ↓
Chronotropic (Chronometer time)	These Medications have an affect on the rate either the Beta cells ,SA/AV Node or the Electrolytes on the cellular level (SA node activity)	Positive: <i>Atropine, Epinephrine, Dopamine (high dose)</i> Negative: <i>Beta-blockers, Digoxin</i>	Bradycardia, heart block Tachyarrhythmias, Afib, post-MI					
Dromotropic-Drone on & change	Affects conduction velocity (AV node)-Change Rhythm	Positive: <i>Isoproterenol</i> Negative: <i>Amiodarone, CCBs (non-DHP), Beta-blockers</i>	Heart block (rare) SVT, Afib, flutter (slow conduction through AV node)					

◆ Vasopressor ◆ Vasodilator ♥ Beta-Agonist

Dobutamine - Dopamine—Norepinephrine

Always administer via central line to reduce extravasation risk.

Monitor MAP, urine output, HR/rhythm, extremity perfusion. Always establish fluid status before administration (fill the pump before you squeeze)

Use phentolamine (Regitine) for extravasation of dopamine or norepinephrine.

Med	Mechanism of Action	Primary Indications	Key Complications
Dobutamine	Beta-1 agonist → ↑ contractility, ↑ CO, mild ↑ HR	- Cardiogenic shock- Severe CHF (low-output states)- Stress echocardiogram	- Tachycardia- Arrhythmias- Hypotension (vasodilation)
Dopamine	Dose-dependent: Low (1-3 mcg/kg/min): ↑ renal perfusion (dopamine receptors) Mod (5-10): β1 agonist → ↑ HR & CO High (>10): α1 agonist → vasoconstriction	- Bradycardia with hypotension- Cardiogenic shock- Acute renal failure (low-dose, controversial)	- Tachyarrhythmias- Vasoconstriction- Tissue necrosis if extravasated
Norepinephrine (Levophed)	α1 > β1 agonist → potent vasoconstrictor, ↑ SVR, mild ↑ CO	- Septic shock (first-line)- Hypotension unresponsive to fluid resuscitation	- Ischemia (extremities, mesentery)- Reflex bradycardia- Extravasation injury (tissue ne-

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Let's Talk about beta blockers...

NURSINGKAMP Beta Blockers Cardiac Meds

Beta blockers are competitive antagonists that block the receptor sites for the endogenous catecholamines epinephrine (adrenaline) and norepinephrine (noradrenaline) on adrenergic beta receptors, of the sympathetic nervous system, which mediates the fight-or-flight response. It is important to know that there are two types of Beta blockers cardio-selective (just inhibiting Beta 1 receptor sites (The HEART)) and non-cardio-selective that inhibits both Beta 1 (heart) and Beta 2 (the lung) receptor sites.

Give For?

H-Hypertension
A-Anxiety
D-Dysrhythmias
S-SVT
A-Atrial fib
P-VC's

Hold For?

C-CHF Symptoms
AV-Blocks
Systolic <90
Heart Rate <60

THE 6 B's of Beta Blockers think is it cardioselective or not?



Beta 1 Heart- Blocks Beta1 Receptors on Heart

β -1 Specific Betaxolol, Esmolol, Atenolol, Metoprolol



Beta 2 Lungs-Blocks Beta 2 receptors of Lungs

Bronchoconstriction- Caution COPD Patients

Assess for Wheezes Bronchospasms

PC-Pulmonary Complications = C PLANS

The Nurses Notes

Assess Orthostatic hypotension

NSAIDS Reduce Effect - Never Abruptly stop

Always Assess Patient's who are diabetic - Give Before Meals

Think- Lopressor SLOWPRESSER

Carvedilol-may be used for CHF

Bradycardia(Betal)-Assess for Apical Heart

Rate should be greater than 60 if not

Assess Patient Think? Hold or Call MD

Non Cardio-Selective Beta Blockers

C any Sugar "Plan" = Carvedilol, Propranolol, Labetalol, Any Beta, Nadolol, Sotalol

β_1 Blockers specific to heart



$\uparrow$ SV
 $\downarrow$ HR
 $\downarrow$ BP = CO x PVR
 $\downarrow$ CO = SV x HR

β_2 Blockers specific to lungs



$\uparrow$ Bronchoconstriction



$\uparrow$ Insulin Sensitivity

Cardio-Selective- A1 BEAM Betaxolol, Esmolol, Atenolol, Metoprolol

Blood Pressure- Decreased cardiac output-

Assess Blood Pressure Systolic Greater than

>90-if less Assess Patient Think? Hold or Call MD

Blood Glucose- Beta cells of the pancreas produce insulin Blocking Glycogenesis. May Mask Symptoms of Hypoglycemia (similar to bradycardia)-Check BS

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Let's talk about Calcium Blockers...

NURSINGKAMP Calcium Channel Blockers Cardiac Meds

Acute! ★

Calcium channel blockers disrupt the movement of calcium through calcium channels beneficial against large vessel stiffness. Think calcium is hard and Ca blockers make the vessels soft. There are two types of CA Blockers Non Dihydropyridine (diltiazem, verapamil) or Dihydropyridine (amlodipine think P pines Peripheral). Dihydropyridines are used to reduce systemic vascular resistance and arterial pressure. Where Non-Dihydropyridine Diltiazem and Verapamil (DV-AV) alter the heart rate and prevent peripheral and cerebral vasospasm, which can reduce chest pain caused by angina.

"DV-AV" = Diltiazem & Verapamil Effect Rate - Non-Dihydropyridines

"DV" - blocks the Ca Channels from the SA to the AV which decreases the rate resulting in a decrease in the force of the hearts' contraction

Give For?

"FAST RATE HAP" ★

Flutter-Atrial ★
Atrial Fibrillation
SVT
Hypertension
Angina Pectoris

Look For?

★ "Long QT COB"
Long QT-Interval
Constipation (High Fiber)
Orthostatic
Hypotension
Bradycardia

Hold For Or ? BAD Beta CHF

Bradycardia
Av-Block ★
Digoxin—Can increase risk of toxicity
Beta Blockers can lead to Heart Failure
CHF-Symptoms

The Nurses Notes

Remember "DV" AV are rate Ca Blockers so they will slow down the rate—Any medication that slows down the rate should be questioned

Both Ca Blockers Treat HTN and Angina Pectoris

SA node myocardium
↓ HR ↓ Contractility CO
↓ O₂ Demand ↓ O₂ Demand
Coronary vasodilation and minimal peripheral



Diltiazem, Verapamil - Non-Dihydropyridine

"Ca-Bp NO Grapefruit Pine" Dihydropyridines

No Grapefruit Juice with Ca Blockers=Toxicity
Pine=Class- Vasodilates Peripheral Arteries

Amlodipine, Nifedipine, Nicardipine-Felodipine

Give For?

Hypertension ★ Not
Angina Pectoris MI

Look For?

Peripheral All Ca
Edema Blockers
Tachycardia (rebound)

Hold For Or ?

"Mash CaB"
Myocardial Infarction
Aortic ★
Stenosis
Heart
Ca-Calcium Ca)
Block

Remember "Pines" only affect BP but may cause rebound tachycardia and Beta Blocker May Be used

Felodipine "Feel all the pain"—Not used for ANGINA

↓ afterload ↓ preload
↓ SVR ↓ BP
peripheral vasodilation venodilation (veins)

nifedipine, amlodipine - Dihydropyridine

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Let's talk about Calcium Glyceride...

NURSINGKAMP Calcium Glycosides Digoxin Cardiac Meds ★

Digoxin is Inotropic (I know the Force of Contraction) and Chronotropic (Rate) Generally acute since it requires levels to be monitored given when ACE, ARB's fail to control Heart Failure

Give For?

Flutter-Atrial

Atrial Fibrillation

CHF-Ejection ★

Fraction <60

Hold For or?

L'ACE Quin'I' Dig No Vera

Lasix-Check K

ACE-Inhibitor- Check K?

Quinidine-(Quin'I'dig")

Increases Dig Effects

Verapamil-Decreases Dig Effect

Apical Heart <60

Look For!"

"K2 BANDAV"

Look For Toxicity in >2- "K2BANDAV"

All signs of Toxicity Should be Addressed and MD Should be Notified

K-Monitor Potassium Low Increases Toxicity Look for s/s

2-Digoxin Level greater than 2 is Toxic

B-Bradycardia Heart Rate Less than < 60 Generally Hold

A-Anorexia Early sign due to SNS Sympathetic Nervous System Develops
Shunting and less blood flow causing symptoms

N-Nausea

D- Dysrhythmia's - PVC's then Bradycardia-VTACH VFIB ★

A- ABDOMINAL PAIN—LATE SIGN TOXICITY ★

V- Visual Disturbances—Yellow White Halos around lights

★
Treatment Digoxin
Toxicity!

Digibind- LAP "DIGIBIND"—First Choice

L—Lidocaine

A- Atropine—Bradycardia

P- Dilantin



"K2BANDAV"
Has 8 Letters
think !

Level is .8-2.0

The Nurses Notes

"I know the Banana
Spin pot song"

(Foods High In Potassium)

I-Increased

K-Potassium

Banana

Spinach

Potatoes

S-Salt Substitutes

O-Orange Citrus

N-Nuts

G-Grapefruit

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Let's talk about Diuretics...

NURSINGKAMP Cardiac Medications—Loop Diuretics Meds Affecting Fluid Volume

High loop Diuretics include Furosemide, Bumetanide, Torsemide & Ethacrynic Acid- They are acute and given in acute fluid related problems, blood pressure or to evaluate urinary output concerns or evaluation.

Give For PEACH CLUB!

P- Pulmonary
E- Edema
A- Acute Kidney Injury
C- Calcium
H- High
C- Congestive Heart Failure
L- Liver Disease
U- Up
B- Blood Pressure

Hold For?

NO! PUDG LICK!

No- NO

P- PREGNANCY

U- URIC ACID Increased?

D- Diabetes Question?

G- Gout?

Li- LITHIUM can Increase!

C- Calcium Glycerides (Digoxin)

K- Digoxin toxic low K

Look For?

Low Big Gentle Deaf K-Clams

Low- Low

B- Blood Pressure

I- Increased

G- Glucose

Gentle- Gentamycin- ? (ototoxic)

D- Diuretics

E- Ethacrynic

A- Acid

F- Furosemide

K- Potassium -Low

C- Chloride—Low

L- Chloride—Low

A- Acute LABS

M- Magnesium Low

S- Sodium Low

LABS

LOW

Do
This

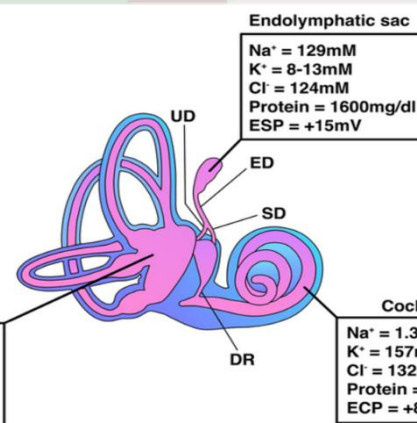
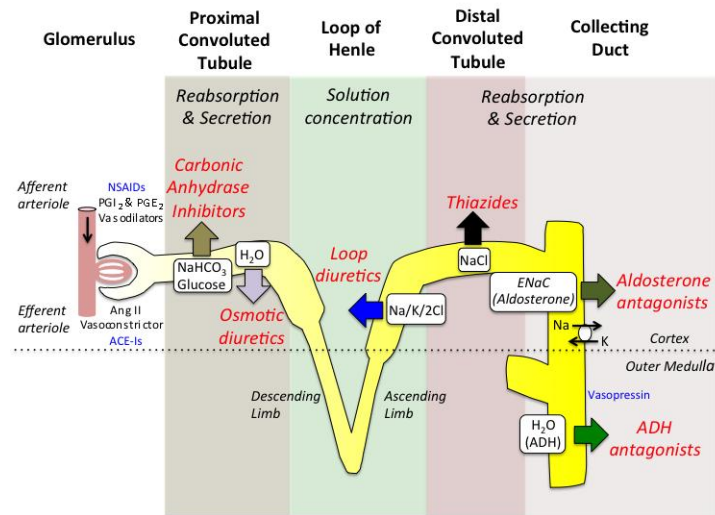
Orthostatic Vitals to assess fluid status, Sit Up first before walking

Never give Diuretics unless fluid status is known!

Assess BUN/CR Prior to Administration

Teach patient to report Dizziness, Weight Loss Tinnitus N/V

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NURSING V - CARDIAC UNIT

Die Aces & ARBS...

NURSINGKAMP Ace Inhibitors & Angiotensin 2 Receptor Blockers ARB's Cardiac Meds

Both Angiotensin Converting Enzyme Inhibitors and Angiotensin 2 Receptor Blockers' ARB's are similar in their action and result in lowering Blood pressure and preventing complications. Ace's are the first line med and if they are unable to be tolerated ARB's are then prescribed.

Ace Inhibitors

Lisinopril, Captopril, Ramipril, Enalapril
Ace Inhibitors Blocks the conversion of Angiotensin 1 to 2 resulting in vasodilation and decreased blood pressure.

"D- O ACE(class) King High!"

D-Pregnancy Class

O- Orthostatic Hypotension

A- Angioedema- Acute Respiratory - Epi!

C-Cough Non Productive

E-Electrolyte Monitor

King-"K" Potassium High

The Nurses Notes

Captopril="CRAPTROPIL"

Can cause bad taste in mouth

Give 1 Hours before meals or stop?

No Salt Substitutes

Cough on ACE

Can be Annoying to patient!

Both Are Given For

Hypertension
Heart Failure
Post Myocardial Infarction
Diabetic Nephropathy
Stroke Prevention

Good to Know!

Lithium & NSAIDS
Lessen the Effect

Only IV - ACE Inhibitor
ENALPRILAT

ARB's Angiotensin 2 Blockers

Valsartan, Candesartan, Irbesartan, Losartan
ARB's block the conversion of Angiotensin 2 resulting in vasodilation and decreased blood pressure.

"D Ortho (class) A Sartan"

D-Pregnancy Class

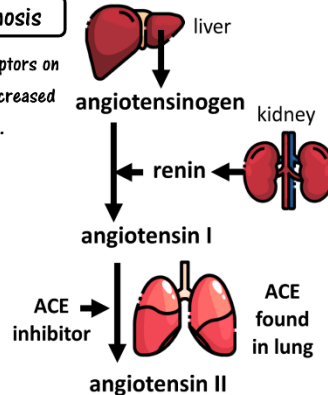
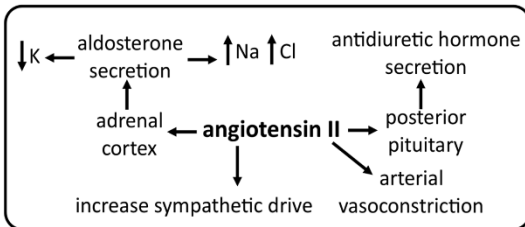
O- Orthostatic Hypotension (greater with arbs)

A- Angioedema- Acute Respiratory- Give

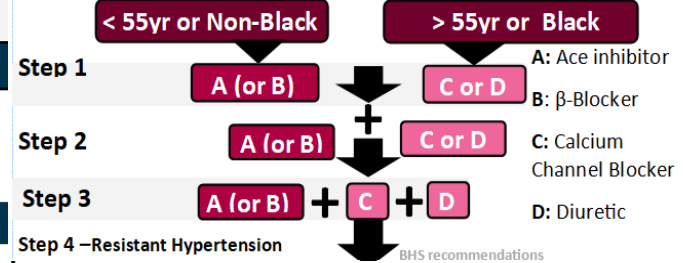
Epinephrine 0.5 ml of 1:1,000 SQ

Question Patients with "KORS" Kidney One Renal Stenosis

Angiotensin II is a potent vasoconstrictor. It binds to angiotensin II receptors on blood vessels leading to smooth muscle contraction, vasoconstriction, increased systemic vascular resistance (SVR), and increased blood pressure (BP).



Blood Pressure & Med RX Flow



Everything Else Meds...AWAY

Alpha 2 Agonist

Methyldopa Clonidine

"Dine @ Trans 7 so sleepy dry ok No Sad MI for High BP "

Give For!

- W-Withdrawal
- A- ADHD
- T- Tourette's
- C- Cancer
- H- Hypertension

Look For!

OK SYMPTOMS

- D - Drowsy- Subsides over time
- D- Dry Mouth- Subsides 2-4 Weeks

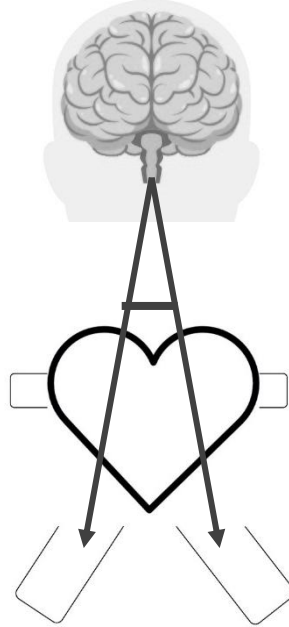
Look For or ?

DRUMS Question

- D- Diabetes Mellitus
- R- Renal Disease
- U-Unhappy Depressed (?MAOI)
- M- Myocardial Infarction- Recent
- S- Stroke

The Nurses Notes!

Transdermal stays on upper arm 7 Days
Can be epidural and oral Transdermal
Vasodilates Arterial & Venous Should Be tapered Never Abruptly Stopped due to rebound hypertension



Alpha Adrenergic Blockers

Prazosin, Doxasin, Terazosin

"CFood At-Nights a SIN But-Please-Have FUDge "

C(class) Food(take with food) At-Night(first dose at night) SIN(suffix)
BPH (Main reason given) FUD (BPH Symptoms)

Give For!

- H - Hypertension
- U- Urinary
- (FUD)
- Frequency
- Urgency
- Dysuria
- B- BPH

Look For or ?

NONAPC! = N- New

O - Orthostatic 1st Dose

N- Night Dose First Dose

A- Angina

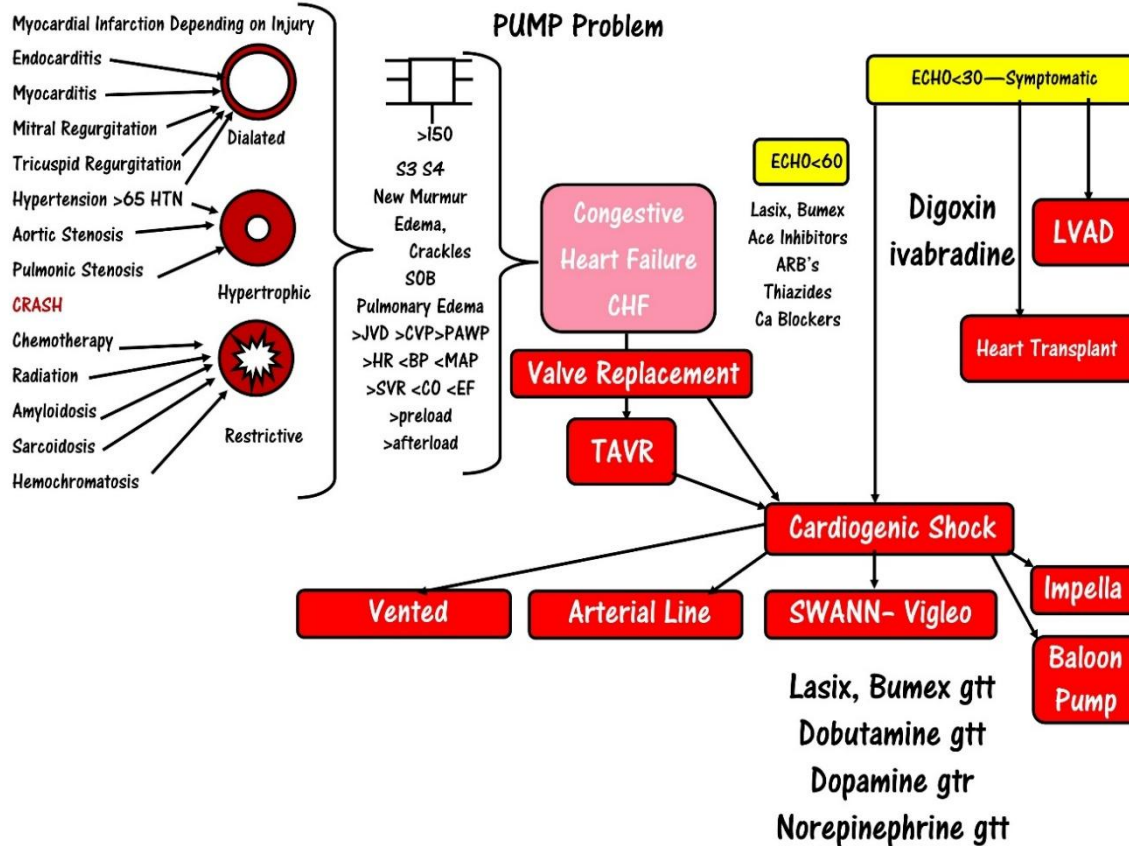
P- Pectoris

C -Pregnancy Class

The Nurses Notes!

Mainly given for BPH and problems associated with BPH like the FUD-
Caution Renal Insufficiency patients

Let's talk about Pump Problems...



Let's talk about Pump Problems...

Nursing KAMP ACUTE Cardiac Complications Congestive Heart Failure



Congestive Heart Failure (CHF) is a chronic and general term of indicating that there is damage to the heart resulting from either an long term valve abnormalities stenosis or Myocardial Infarction. When a person has Heart Failure think is it either Right Sided or Left Sided then treat accordingly. The goal of CHF is to limit the amount of Exacerbations a patient has since they can be life-threatening and immediate treatment is necessary.

Right (Right Rest) Sided!

More chronic since it raises the heart blood (deoxygenated) back up into the venous system resulting in venous congestion or Edema, peripherally and the organs liver spleen

Looks Like!

WET BEACH SAND!
Wet -Wet Congestion Fluid!
B-Bilateral(congestion)
E-Edema(congestion)
A-Ascites (congestion)
C-Congestion Symptoms
H-Hepatosmegaly(congestion)
S-Shunting Symptoms
A-Anorexia-(Shunting/Congestion)
N-Nausea(Shunting/Congestion)
D-Distended Neck Veins(congestion)

Inotropic Meds

(Used to increase Cardiac Output)

Digoxin—Chronic
 Dobutamine—ACUTE Drip
 Dopamine—ACUTE Drip
 Nesitride-IV-“hBNP” ACUTE

CHF Exacerbation Caused By HEART FAILED

H-Hypertension
E-Endocrine-Thyroid
A-Anemia
R-Rheumatic Disease
T-Toxins-(staph)
F-Failure to take meds
A-Arrhythmia(afib)
I-Infection(endoc/myocarditis)
L-Lung (PE, pneumonia)
E-Electrolytes
D-Diet (salt high)

Acute Assessment of Significant CHF Hemodynamics!

CVP-CVP >8 RIGHT Sided (Increased Preload)
JVD/JVP-JVD/JVP >4 Right Sided (Increased Preload)
Cardiac Output- CO-CO < 4 LPM (decreased inotropic output)
EF/Ejection Fraction -EF <60(decreased Inotropic output)
PAWP-(wedge) > 12 Left Sided Lung (Increased Preload)
(LAB)BNP>100-Positive CHF Exacerbation >900 SEVERE!

Treatment underlying issue or preventing exacerbation!

Meds to Decrease Preload

K-PUB LATE!
K-Potassium Monitor
P-Preload
U-Urine focus
B-Bumex-Acute
L-Lasix -Acute/Chronic
A-Aldactone-K Sparing Chronic
T-Thiazides (Chronic)
E-Elevated BUN/CR Risk!

Meds to Decrease Afterload

After PINE LANDS!
After- Afterload
Pine-Ca Blockers“Pines”
L-Lisinopril-chronic
A-Ace inhibitors-chronic
N-Nifedipine-chronic
D-Diltiazem-Acute/Chronic
S-Sartans(ARBs) Chronic

Nitroprusside Acute Med Affects
 Preload (nitroPrusside)

Nitro & Imdur Affect Both
 Preload & Afterload!

Left (Left Lungs) Sided Acute!

This is the Acute side involving (oxygenated) blood backing up into the lungs resulting in crackles and problems with pumping oxygenated blood to the vital organs

Looks Like!

S4 Dyspneic Lung CLOUD!
S3- Left Lateral SMCL
S4 Left Lateral SMCL
D-Dyspneic
C-Crackles-Not Clearing
L-Lung- Lung Crackles
O-Orthopnea Sleep Lying Down
U-Urine-Decreased Perfusion
D-Decreased

Do This For CHF!

High Fowlers position
 Assess—Think Oxygen?
 Vital Signs
 Standing Orders?
 Oxygen? EKG? Telemetry?
 BNP? Notify MD?

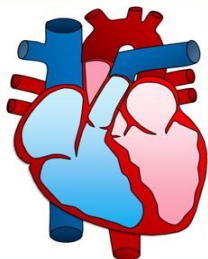
Always Assess Fluid Status before
 Dobutamine Dopamine Nesitride

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Let's talk about Pump Problems...

NURSINGKAMP Cardiomyopathies Dilated, Restrictive & Hypertrophic

"Cardiomyopathy is a structural change in the heart's muscle tissue. There are three types of pathology: Dilated Cardiomyopathy (characterized by a big, floppy heart resulting in weak contractions), Hypertrophic Cardiomyopathy (involving an enlarged heart resulting in poor cardiac output), and Restrictive Cardiomyopathy (which prevents proper cardiac filling and output, related to a negative Starling's Law—the greater the fill, the bigger the pump). All of these conditions result in symptoms similar to congestive heart failure (CHF) and develop over time, with the first symptoms typically being shortness of breath, fatigue, and syncope. Each condition should be further evaluated to determine the underlying cause with treatments aimed at future exacerbations.



Dilated Cardiomyopathy

Damaged muscle fibers resulting in thinning and dilation reducing contractility and cardiac output. Eventually resulting in a new onset murmurs in Mitral and Tricuspid regurgitation-Systolic Issue

LOOK FOR!

May have syncopal episodes,
Narrowed Pulse Pressure
Jugular Vein Distention, Hepatomegaly,
Right Sided CHF Symptoms S3, S4 Gallop
Edema - Elevated BNP
Dig Toxicity, PE, Weight >2lb in 1 Day
Pulmonary Congestions "Frothy Sputum"

Might DO THIS!

C- Coumadin
L - Lasix
E- Enalapril
A- Ace Inhibitors
N- Nitro
L-Losartan
A-Amiodarone
D- Digoxin

Good
to
Know!

Also Called Congestive Cardiomyopathy
Most common in 30-40's No Salt
No Alcohol - No Pregnancy (age related)

Hypertrophic Cardiomyopathy

Thickening of the Intraventricular Septum or Ventricle Further classified as **obstructive** (blocking the Aortic Valve) or **non obstructive**

LOOK FOR!

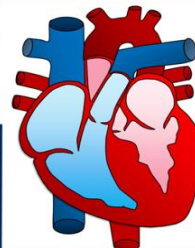
May have syncopal episodes, orthopnea and DOE—Harsh Systolic Murmur after S1 at apex with a lateral displacement of the Apex, Prominent S4, frequent s3- Pulsus bisferiens

Patients can have Angina, Pulmonary
Congestions Crackles and sudden death.

May DO THIS! Calcium WAD

Ca- Blockers (verapamil)
Warfarin - Amiodarone (slowderone)
Disopyramide

Causes of Restrictive Cardiomyopathy include, hemo-
chromatosis, Cancers, Chemotherapy, Radiation
therapy sarcoidosis, Amyloidosis



DON'T DO THIS!

No LANDDD
Lasix
ACE-Inhibitors
Nitrates
Digoxin Dopamine
Dobutamine

Restrictive Cardiomyopathy

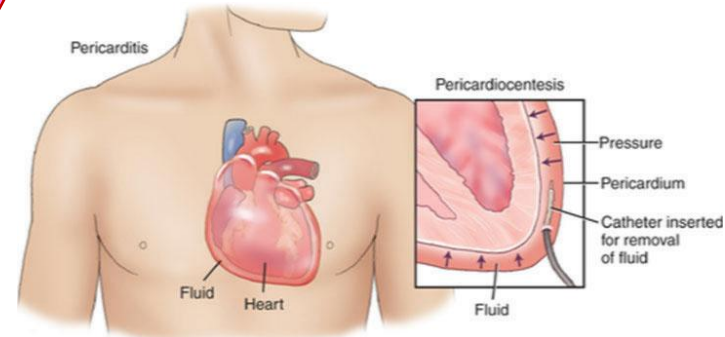
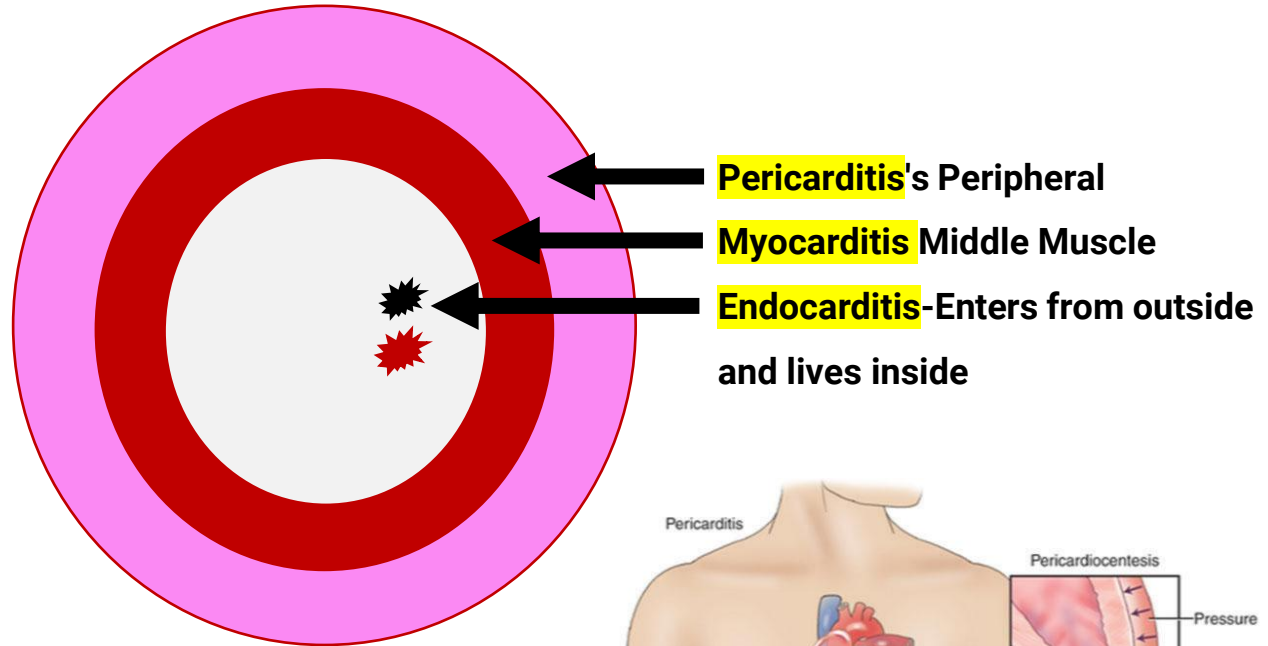
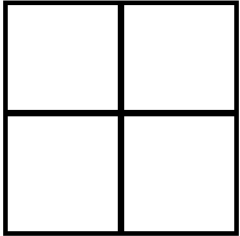
Diastolic dysfunction related to Non-Compliant & Stiff Ventricles- Treatments and symptoms are similar to Right Sided Heart Failure and Dilated Cardiomyopathy but lacking in the ability to stretch therefore decreasing Cardiac output- Restrictive cardiomyopathy may appear similar to constrictive pericarditis. Cardiac catheterization may help confirm the diagnosis. Rarely, a biopsy of the heart may be required.



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Lets talk about Tissue Injuries...



Lets talk about Tissue Injuries...

NURSINGKAMP Cardiac Tissue Complication Endocarditis, Myocarditis, Pericarditis

Cardiac Tissue problems of the heart are based on the location ,Endocardium (Inside) Myocardium(Middle) Pericardium (outside) All conditions have an inflammatory process resulting in Congestive Heart Failure like symptoms shortness of breath or more specific like Endocarditis with disseminated embolic symptoms throughout the body. Treatment is aimed at the specific area involved.

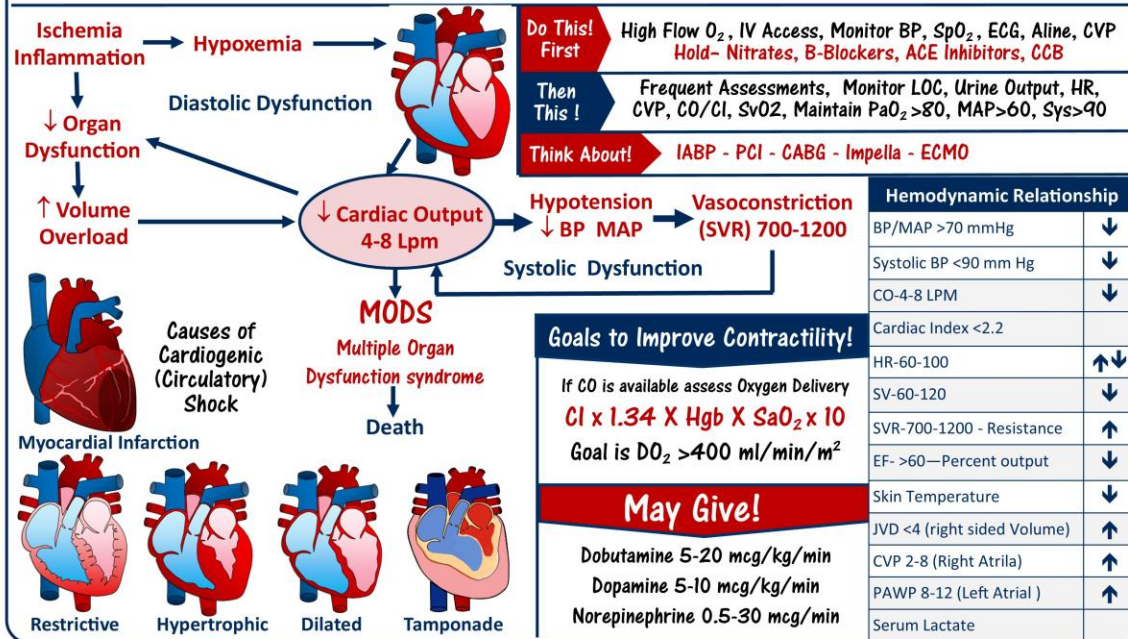
Pericarditis (Peripheral)			MYOCARDITIS (Middle)		ENDOCARDITIS (ENTERS OUTSIDE LIVES INSIDE)			
	Stands For	Explanation		Stands For	Explanation		Stands for	Description
P	Pleuritic chest pain	Sharp, stabbing pain that worsens with inspiration	M	Muffled heart sounds or murmurs	Due to inflammation or heart failure	F	Fever	Most common symptom
E	EKG changes	Diffuse ST elevation and PR depression	Y	Younger patients at risk	Often affects young adults, especially after viral illness	R	Roth spots	Retinal hemorrhages with white centers (rare but classic)
R	Relieved by sitting up and leaning forward	 Classic positional feature	O	Onset after viral illness	Common with Cocksackie, influenza, or COVID-19	O	Osler nodes	Painful, raised nodules on fingers/toes (immune complex)
I	Increased pain when lying flat	Supine position worsens pain	C	Chest pain that mimics MI	Non-ischemic pain; ECG and troponin may be elevated	M	Murmur	New or changing heart murmur due to valve damage
C	Chest pain sudden onset	Typically starts abruptly	A	Arrhythmias and sudden death	Can cause VT/VF or heart block	J	Janeway lesions	Painless red macules on palms/soles (embolic)
A	A friction rub	Pericardial rub heard on auscultation	R	Reduced ejection fraction	Leads to heart failure symptoms (HFrEF)	A	Anemia	Normocytic, normochromic due to chronic illness
R	Radiates to trapezius/shoulder	Due to phrenic nerve irritation	D	Dilated cardiomyopathy (long-term effect)	Can develop if myocarditis is severe or untreated	N	Nail-bed hemorrhages (splinter hemorrhages)	Small linear streaks in nails (microemboli)
D	Dressler's syndrome	Post-MI autoimmune pericarditis (2–6 weeks post-MI)				E	Emboli	Stroke, pulmonary embolism, renal infarct, etc.
Pericarditis			Myocarditis		Endocarditis			
Anatomy Affected	Pericardial sac surrounding the heart		Heart muscle (myocardium)		Inner lining of heart and valves			
Common Cause	Viral (Coxsackie), autoimmune, post-MI (Dressler's)		Viral (Coxsackie, influenza), autoimmune, toxins		Bacterial infection (Staph, Strep), IV drug use, prosthetic valves			
Chest Pain	Sharp, pleuritic, relieved by sitting up		Can mimic MI: dull, pressure-like pain		Often absent			
Fever	Low-grade fever		May have low-grade fever		High fever, chills, night sweats			
Murmur	May be present if tamponade affects flow		May occur with inflammation-induced dysfunction		New or changed murmur (valve involvement)			
Key Symptoms	Pericardial friction rub- Pain ↑ on inspiration- ST elevation in most leads		Fatigue, palpitations- Dyspnea- Signs of HF		- Janeway lesions- Osler nodes- Roth spots- Splinter hemorrhages			
ECG Findings	Diffuse ST elevation, PR depression		ST changes, T wave inversion, arrhythmias		Non-specific; may show heart block			
Imaging/Labs	Echo: pericardial effusion↑ ESR, CRP		↑ Troponin, CK-MB/MRI: myocardial inflammation		Echo: vegetations Blood cultures (+)			
Complications	Cardiac tamponade, constrictive pericarditis		HF, cardiomyopathy, arrhythmias		Valve damage, emboli (stroke, lungs), sepsis			
Treatment	PADS-C-Pericardiocentesis Antibiotics, Drain, Steroids, Colchicine		Supportive, manage HF, antivirals, avoid exercise		Long-term IV antibiotics, valve surgery if needed			

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Let's talk about Pump Problems...

NURSINGKAMP Cardiogenic Shock Acute Cardiac

This circulatory shock is the result of inadequate blood flow of malfunctioning ventricles. It can be triggered by acute events like Myocardial Infarction, Cardiac Tamponade, Papillary Ruptures or the result of an underlying heart conditions like Heart Failure and Cardiomyopathies. All of these conditions can lead to ischemia and reduced cardiac output despite sufficient vascular volume. Unfortunately compensatory mechanisms like SVR and HR react to the insufficient organ perfusion thereby exacerbating the critical conditioning and worsening the shock. Treatment is focused on aggressively correcting the underlying causes by monitoring hemodynamics and adding positive inotropic medications or administering mechanical Interventions like IABP, Impella or ECMO's.

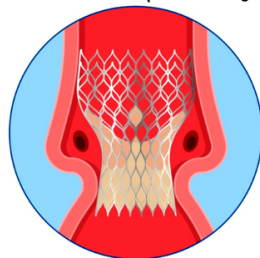


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Let's talk about Pump Problems...

NURSINGKAMP TAVR Transcatheter Aortic Valve Replacement

TAVR is a minimally invasive, catheter-based procedure where a new valve is inserted without removing the old damaged valve. The new valve is placed inside the diseased valve. This procedure can be performed through a transfemoral or transapical approach and is somewhat similar to placing a stent in an artery. The TAVR approach delivers a fully collapsible replacement valve to the valve site through a catheter. Once the new valve is expanded, it pushes the old valve leaflets out of the way, and the tissue in the replacement valve takes over the job of regulating blood flow. The surgery may be called transcatheter aortic valve replacement (TAVR) or transcatheter aortic valve implantation (TAVI). This is an alternative to complete surgical valve replacement (SAVR) for patients who generally are not surgical candidates.



Normal Aortic Valve Diseased Aortic Valve



VS, Bleeding & Perfusion Assessments On Return to Floor



X-4



X-2



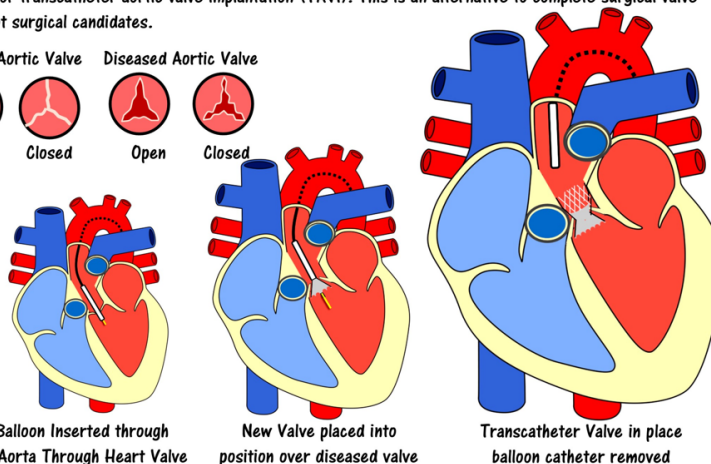
Q-1

Vital Signs, Pulse Checks, Check Color, Temperature sensation, pain and Capillary Refill Time (CRT)
Heart Sounds (New Onset Murmur?)

Monitor Changes in Vital Signs

Monitor I&O Renal Functioning BUN/CR

Strict Bedrest HOB<30 Degrees (Follow Policy)



Balloon Inserted through
Aorta Through Heart Valve

New Valve placed into
position over diseased valve

Transcatheter Valve in place
balloon catheter removed

Ongoing Bleeding & Perfusion Assessments & Care

Check Color, Temperature, pulses, sensation, pain and Capillary Refill Time (CRT) in the affected extremity

Frequent Neuro Check - Risk For Stroke

Monitor Heart Rate Rhythm (Atrial Fibrillation, Heart Blocks)

Bedrest 6 Hours HOB <30 Degrees (follow policy)

May remove Access Site Dressing 24-48 (Per Policy)

Policies, treatments and plans of care vary per institution this does not in any way supersede your agency policy.

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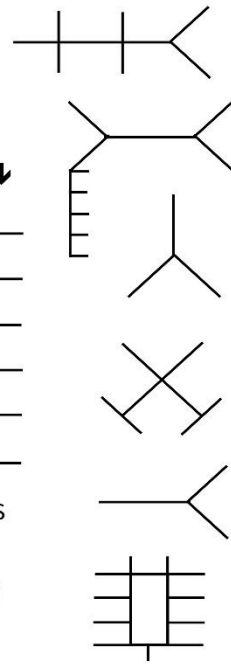
P R E S E N T A T I O N



SYMPTOMS-3

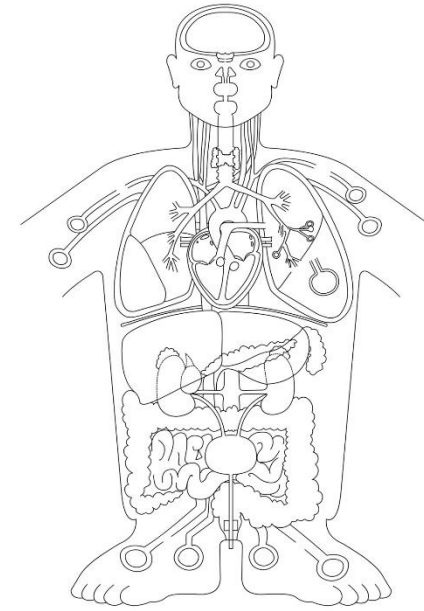
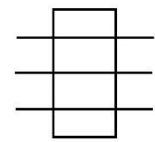
TEMP	
PULSE	
RESP	
BP	
MAP	
PULSE OX	

FLUID STATUS PULSES



Precipitating!

Anticipate!



MAIN CONCEPT CONDITION

Main Complication Condition



THE ACUTE 3

The Nursing 7



COMPLICATION

Critical Drips Overview

Always establish fluid status prior to hanging any vasopressors. **MONITOR** BP, HR an EKG with all critical gtt's & Always consult primary policy resources before any medication administration titration and bolus– Disclaimer

Drug	Start/Max Infusion	α	β 1	β 2	DA
Amiodarone 	1mg/min (x 6hr)0.5mg/min	Monitor BP,HR every 5 Min			
Cardizem 	5-15 mg/hour	Not greater than 24 hours			
Cardene nicardipine 	5 mg/hour (initial) May Increase 2.5 mg/hr every 5-15 min. Max Dose 15mg/hr	Monitor ECG, HR,BP Infusion pump required			
Dobutamine	2-20 mcg/kg/min	+	+++	++	0
Dopamine     	0-2 mcg/kg/min	0	+	0	+++
	2-10 mcg/kg/min	+	++	+	+++
	10-20 mcg/kg/min	++	+++	+	+++
Epinephrine  	0.01-30 mcg/min	+	++	+	0
		++	++	+	0
Isuprel 	1-11 mcg/min	0	+++	+++	0
Labetalol 	1-2 mg/min	0	--	--	0
Lasix 	2-20 mg/hour	Monitor HR,BP U/O - K, BUN			
Levophed norepinephrine 	0.5-30 mcg/min	++	+	0	0
		+++	++	0	0
Lidocaine 	1-4 mg/min	Monitor ECG, BO, HR			
Neo synephrine phenylephrine 	1-180 mcg/min	+++	0	0	0
Nitroglycerin 	5-200mcg/kg/min	Monitor ECG, BP, HR			
Nitroprusside 	0.25-10 mcg/kg/min	Monitor ECG, BP, HR			
Procainamide 	1-6 mg/min	Monitor ECG Wide QRS, BP			
Vasopressin	0.15-0.9 units/min	Monitor HR, BP Q 5 Min			
 Antiarrhythmic  Beta Agonist  Diuretics	All drips are specific to patients, HCP Orders and treatment protocols, always follow your agency policy and consult other resources before administering or titrating any medications (nursingkamp.com)				
 Vasopressor  Beta Blocker					
 Vasodilator  Ca Blocker					

Let's talk about ...

VITAL SIGNS & LAB VALUES																				
Time	HR	BP	RR	SpO ₂	Temp	Pain	Tro-I	Na	K ⁺	Cl	CO ₂	BUN	Cr	GFR	Glu	WBC	Hgb	HCT	Plt	aPTT
0h	92	152/88	20	95% RA	98.4	8	0.08	135	4.2	98	23	29	1.7	38	188	9.5	12.3	36	147	28
2h	88	138/84	18	96% 2L	98.6	4	0.12	136	4.1	107	22	30	1.8	37	172	9.2	12.3	37	148	54 (on heparin)
4h	84	132/80	18	96%	98.5	2	1.56	136	4.1	98	26	32	1.8	37	160	8.6	12.5	36	155	62
6h	80	128/78	18	97%	98.4	1	4.90	137	4.3	99	25	32	1.9	38	148	9.6	12.3	36	149	66
8h	78	124/76	16	97%	98.2	0	–	136	–	102	25	33	1.9	37	142	8.9	12.0	38	153	63
12h	76	120/72	16	98% RA	98.1	0	4.3	135	4.0	98	26	33	1.9	35	138	9.1	12.6	39	152	68
16h	74	118/70	16	98%	98.0	0	2.2	140	4.1	97	23	29	1.8	38	132	8.7	12.3	36	149	58
20h	72	116/68	16	98%	98.1	0	1.0	142	4.2	98	22	29	1.7	37	126	9.3	12.6	36	148	55
24h	72	114/68	16	98% RA	98.0	0	0.45	138	4.3	98	24	30	1.6	37	120	9.5	12.3	37	155	54

Let's talk about ...

LAB DATA		
	Lab Test	Result
0h	Troponin I	0.05 ng/mL
	CK-MB	24 U/L
	BMP	Na 138, K 4.1, Cl 101, CO ₂ 24, BUN 18, Cr 1.1, Glu 272
	CBC w/ Diff	WBC 9.8, Hgb 11.0, Hct 33.2%, Plt 210
	HbA1c	8.1%
	Lipid Panel	LDL 138, HDL 32, Total Chol 212, Trig 180
	PT/INR	INR 1.1
	aPTT	32 sec
	BNP	158 pg/mL
	Type & Cross	Completed
4h	aPTT (repeat)	64 sec
	Urinalysis	Protein +, Glucose +
6h	Troponin I	2.31 ng/mL
8h	BMP	Na 138, K 4.0, Cl 102, CO ₂ 23, BUN 17, Cr 1.0, Glu 189
12h	Troponin I	5.86 ng/mL

Let's talk about ...

Vital Signs and Laboratory Data

Time	HR	BP	RR	Temp	SpO2	Pain	Na	K	Cl	CO2	Cr	BUN	GFR	BNP	Gluc	WBC	Hgb	Hct	Plt
Day 0 (0h)	106	142/88	24	98.9	91	3	134	6.2	100	22	2.1	36	38	1680	172	10.1	11.8	35.2	205
Day 1 (24h)	98	130/76	20	98.6	95	2	136	5.4	102	24	2	34	40	1400	160	9.8	11.6	34.8	208
Day 2 (48h)	90	124/72	18	98.2	96	1	137	4.8	103	25	1.9	32	43	1150	148	9.2	11.4	34.4	210
Day 3 (72h)	88	120/70	18	98.1	96	0	138	4.5	104	26	1.8	30	45	960	140	8.9	11.3	34	215

Let's talk about ...

Laboratory Results		
Panel	Lab Test	Result
CBC	WBC	7.8 K
	Hemoglobin	13.5
	Hematocrit	40.5%
	Platelets (Day 1)	245 K
	Platelets (Day 2)	180 K
	Platelets (Day 3)	125 K
CMP	Sodium	138
	Potassium	4.2
	Chloride	101
	CO ₂	24
	BUN	12
	Creatinine	0.8
	Glucose (fasting)	90
	Calcium	9.1
	AST	19
	ALT	22
	Alk Phos	68
	Total Bili	0.7
	Albumin	4.0
	Total Protein	6.8
	eGFR	>90
Coag	INR (Day 1)	1.0
	INR (Day 2)	1.2
	INR (Day 3)	1.6
	aPTT	Normal
Other	D-Dimer	1350
	hCG (urine)	Negative
	Heparin-PF4 Ab	Pending

Let's talk about ...

Hemodynamics and Vasopressor Administration

									Norepinephrine (mcg/min)			Dobutamine (mcg/kg/min)		CVP (mmHg)		PCWP (mmHg)		CO (L/min)
Time	HR	BP	MAP	SpO2	RR	Lactate	UO	Temp										
0h	112	98/64	75	94	22	5.4	0	98.4	0	0	10	22	3					
4h	118	95/60	72	93	24	5.4	0	98.2	1	1	12	24	2.8					
8h	124	88/54	65	91	26	5.4	10	98.1	2	2	14	26	2.5					
12h	128	78/52	61	91	28	5.1	12	98.1	3	2.5	16	28	2.2					
16h	130	82/50	63	92	28	4.5	15	98	4	3	17	26	2.4					
20h	126	86/56	66	93	26	4	18	98.2	4	3	16	24	2.6					
24h	120	90/60	68	94	24	3.2	24	98.5	3.5	2.5	14	22	2.8					
28h	115	92/64	70	95	22	2.9	28	98.7	3	2.5	12	20	3.1					
32h	110	94/66	72	95	22	2.8	30	99	2.5	2	10	18	3.4					
36h	108	92/68	69	95	22	2.6	32	99	2	2	9	16	3.6					
Time	WBC (K)	Hgb	Hct	Plt (K)	Na	K	Cl	CO ₂	Cr	Glu	TropI	Lactate	CK-MB	pH	PaCO ₂	HCO ₃ ⁻	PaO ₂	
0h	10.8	13.5	41	210	137	4.6	102	23	1.2	168	12.5	1	68	7.36	34	20	78	
4h	11.2	13.2	40	208	136	4.5	102	22	1.3	172	18	0.5	85	7.34	33	19	75	
8	11.5	13	39	206	136	4.4	101	21	1.4	178	22	5.4	102	7.32	32	18	72	
12	11.7	12.8	38	202	135	4.4	101	21	1.4	180	24	5.1	110	7.29	32	18	70	
24	11	12.3	36	196	134	4.1	99	19	1.3	160	16	3.2	80	7.33	34	20	76	
36	10.3	11.9	34.5	193	133	3.9	98	20	1.1	130	6.1	2.6	40	7.38	36	23	82	
48	9.8	11.5	33	190	132	3.7	97	23	1	100	1	1.6	15	7.4	38	24	90	

Let's talk about ...

Test	Result
Trop	8.2
CK-MB	21.5
BNP	190
K+	4.3
Na+	138
Cr	1.1
Gluc	174
HbA1c	7.4%
WBC	10.k
Hgb	13.8
Hct	41%
Plat	270
INR	1.0
PT	12.5

Test	Result
Trop- I	3.8
WBC	12.3 K
Hgb	11.2
Platelets	230 K
INR	1.3
Creatinine	1.3

Let's talk about ...

VITAL SIGNS AND LAB DATA

Time	HR	BP	Temp	RR	SpO2	WBC	Hgb	Hct	Plt	Na	K	Cl	CO2	BUN	Cr	Gluc	ESR	CRP	TroponinI	Blood CX
Day 0 (0h)	122	94/56	102.4	22	95	17.2	10.5	31	138	132	4.3	99	23	18	1.3	108	75	119	<0.01	Pending
Day 1(24h)	98	108/70	99.6	18	98	15.5	10.2	30	142	134	4.1	101	24	20	1.4	102	68	92	<0.01	MSSA
Day 2(48h)	88	112/74	99	16	98	13.1	10	30	148	135	4.2	102	24	19	1.3	98	55	60	<0.01	No Growth
Day 3(72h)	84	118/76	98.4	16	98	11.8	9.8	29	155	136	4.3	103	25	18	1.2	96	48	34	<0.01	No Growth