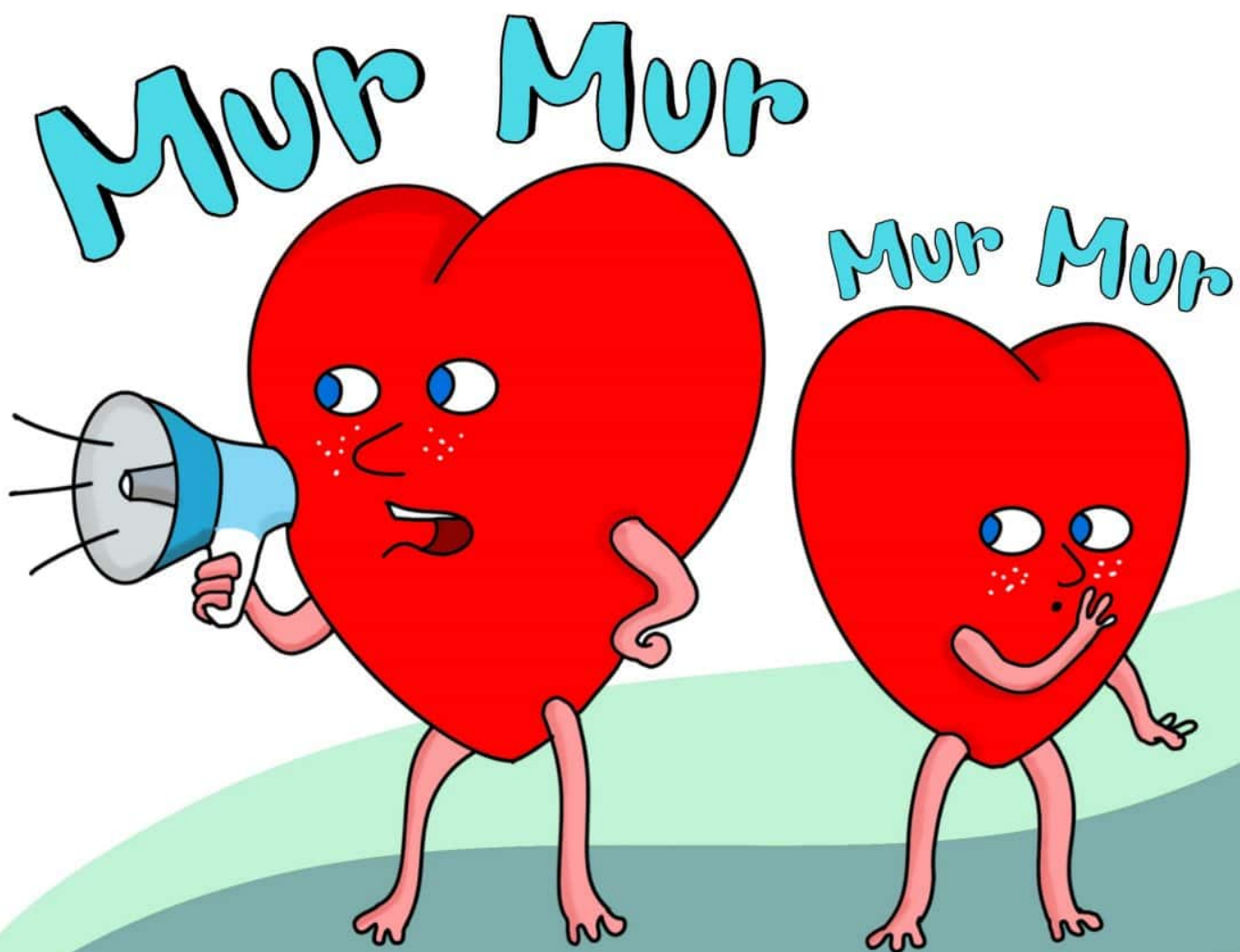


# VISUAL MNEMONICS CARDIOLOGY



- 100+ Mnemonics
- Drug of choice
- New drugs highlight



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for other books

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# VISUAL MNEMONICS Pharmacology

100+ slides

Dr. Nazmul Alam

www.medinaz.com FIRST EDITION

# HIGH-YIELD ANTIBIOTICS

for USMLE, NBDE, FMGE, NEET

500+ High-yield points  
50+ Illustrations & Mnemonics

References and updates from Goodman Gilman's 13/e, Katzung & Trevor 13/e, Harrison's 19/e, CMTD 2018 & Standard Journals

DR. NAZMUL ALAM DR. HIMEL MONDAL

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# VISUAL MNEMONICS Microbiology

100+ slides

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# VISUAL MNEMONICS ANATOMY

100+ Slides

Dr. Nazmul Alam



# INDEX

- **Cardiac Anatomy & Embryology**
- **Cardiac Physiology**
- **Cardiac Pharmacology**
- **Cardiac Pathology**
- **Cardiac Medicine**
- **Cardiac Surgery**
- **Cardiac Drug of choice**
- **Cardiac New drugs highlight**



**Cardiac Anatomy & Embryology**  
**@NEETPGSURGEON**

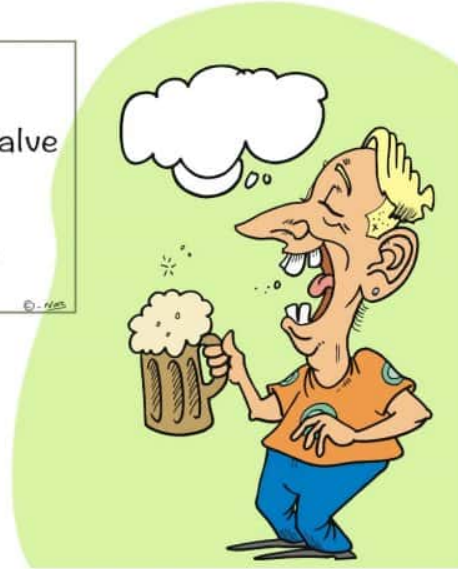


## Heart valves (right to left)

www.medinaz.com

"They Pay Me Alcohol"

Tricuspid valve  
Pulmonary semilunar valve  
Mitral (bicuspid) valve  
Aortic semilunar valve



## Aorta development

www.medinaz.com

A For B

Aorta = Forth Branchial arch



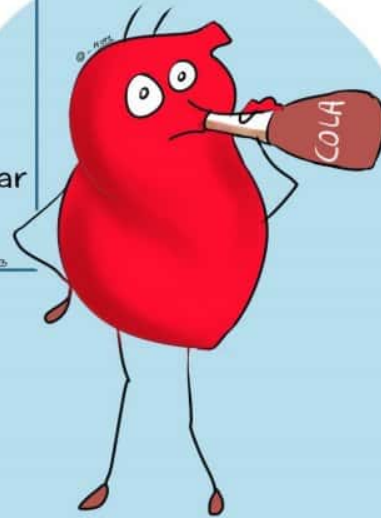


## Left Coronary Artery branches

www.medinaz.com

“A COLA”

- Ant. interventricular artery
- Circumflex artery
- Obtuse marginal artery
- Left diagonal artery
- Atrial, ant. & post. ventricular



## Right Coronary Artery branches

www.medinaz.com

- Acute marginal artery
- Post. interventricular artery
- Acute marginal artery
- Rt. conus artery
- Nodal artery
- Atrial, ant. & post.  
interventricular artery

APARNA





# **Cardiac Physiology**





## Cardiac tissue conduction velocity

Mnemonic:  
Party At  
Vegas Avenue



Purkinje System  
↓  
Atrial muscle  
↓  
Ventricular muscle  
↓  
Av node



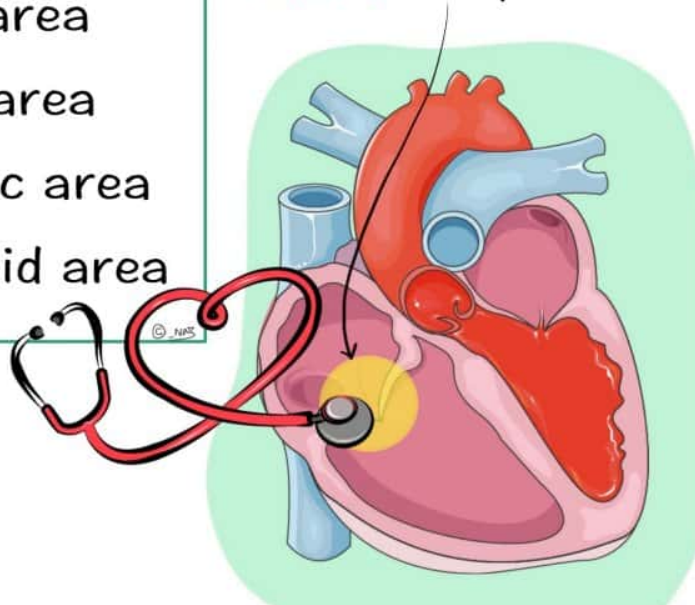
## Auscultation of the heart

(where to listen)

[www.medinaz.com](http://www.medinaz.com)

Mitral area  
Aortic area  
Pulmonic area  
Tricuspid area

“MAP Tricuspid area”



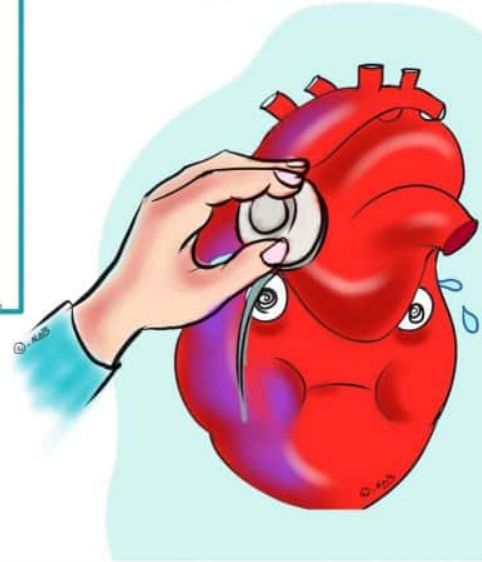


# Heart Sounds

www.medinaz.com

**A**ortic  
**P**ulmonic  
**E**rb's point  
**T**ricuspid  
**M**itral or Apex

“All People Enjoy  
The Meal”

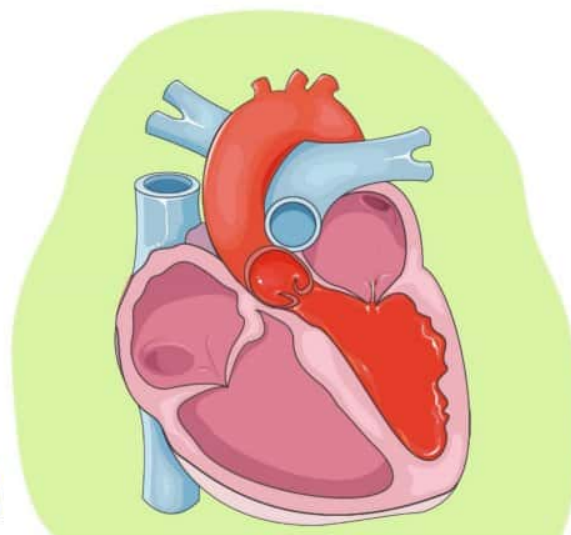


## Murmurs; systolic vs. diastolic

www.medinaz.com

**PASS** → **P**ulmonic & **A**ortic **S**tenosis = **S**ystolic.

**PAID** → **P**ulmonic & **A**ortic **I**nsufficiency = **D**iastolic

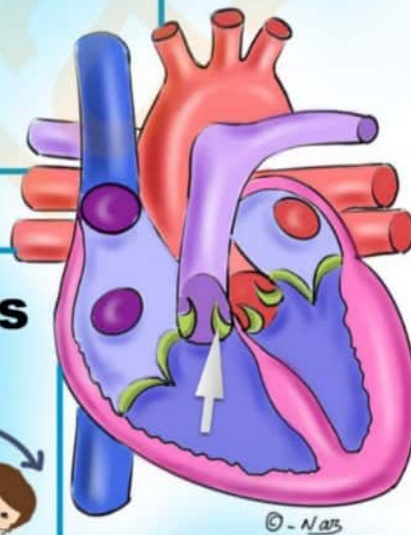




# Valve Movement

**A**ortic valve moves  
**V**ertically

**M**itral valve moves  
**S**ide to **S**ide  
**(MISS)**





# **Cardiac Pharmacology**



## Drugs used for the t/t of Hypertension in Pregnancy



Better =  $\beta$ -blocker

Mother = Methyl dopa

Care = Clonidine

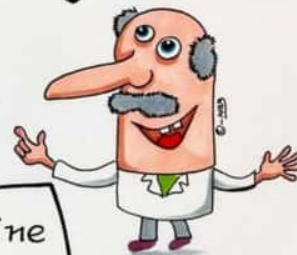
During = Dihydropyridine

Hypertensive = Hydralazine

Pregnancy = Prazosin

## Drugs for Bradycardia and Hypotension

I D E A



I soprorenaline

D opamine

E pinephrine

A tropine Sulfate



## Antiarrhythmic class 1A

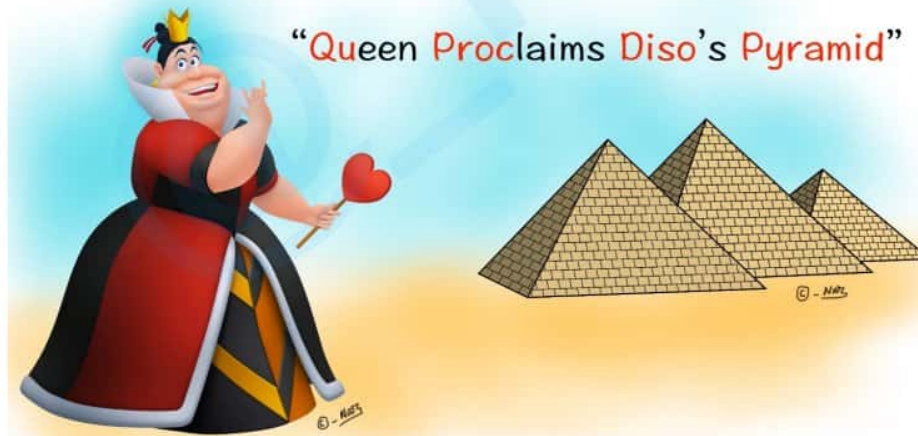
www.medinaz.com

**Quinidine**

**Procainamide**

**Disopyramide**

© - NABZ



## Antiarrhythmic Class 1B

www.medinaz.com

**Phenytoin**

**Lidocaine**

**Mexiletene**

**Tocainide**

© - NABZ

\* shorten repolarization

“Preferably I Buy Lido's Mexican Toffee”

© - NABZ





## Antiarrhythmic Class IC

[www.medinaz.com](http://www.medinaz.com)

**M**oricizine  
**F**lecainide  
**P**ropafenone

“More Fries Please !!  
I Can eat”



## Antiarrhythmic drugs Class III

[www.medinaz.com](http://www.medinaz.com)

**S**otalol  
**A**miodarone  
**D**ofetilide

“So Am i Do”





## Antiarrhythmic drugs Class III

www.medinaz.com

**S**otalol  
**A**miodarone  
**D**ofetilide

© - NARS

“SAD”

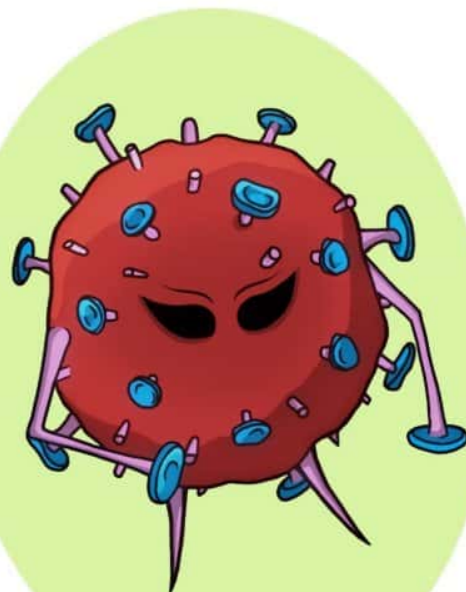


## Antiarrhythmics potassium channel blockers (class III)

www.medinaz.com

**A**miodarone  
**I**butilide  
**D**ofetilide  
**S**otalol.

“AIDS”







# Beta 2 Agonists

**S**almeterol  
**M**etaproterenol  
**A**luterol  
**R**itodrine  
**T**erbutaline

© - NAB

“SMART”

© - NAB



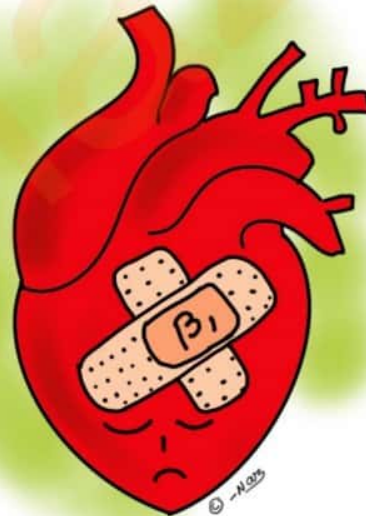
naz\_aratomy

# Cardioselective Beta-blockers

**N**ebivolol  
**B**etaxolol  
**B**isoprolol  
**A**cebutolol  
**E**smolol  
**A**tenolol  
**M**etoprolol  
**C**eliprolol

© - NAB

“New Beta Blockers Acting  
Exclusively At Myo Cardium”



© - NAB



## Dilated cardiomyopathy

www.medinaz.com

Caused by:

**D**oxorubicin

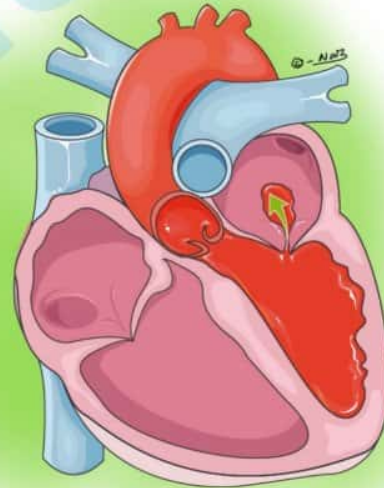
**D**aunorubicin

© - Nats

Prevent with:

**D**exrazoxane

“**D**”



## Contraindications of Digitalis

www.medinaz.com

**C**arditis (myocarditis)

**I**ncreased calcium

**W**PW syndrome

**H**ypokalemia & **H**ypomagnesemia

**E**lderly

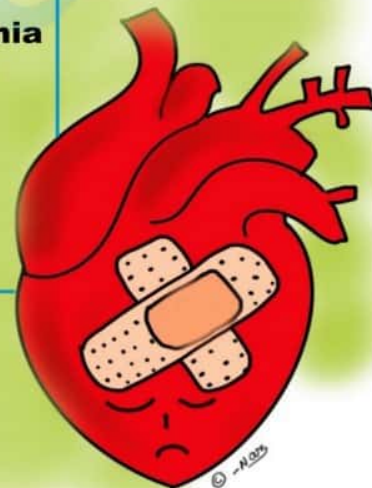
**A**V block (partial)

**R**enal failure

**T**h thyroid (hyper or hypo)

“Contraindicated  
In **W**eak **H**EART”

© - Nats





## Hyperglycemia causing Drugs

www.medinaz.com

**T**acrolimus  
**P**rotease inhibitors  
**N**iacin  
**H**CTZ  
**C**orticosteroids

“The People Need  
Hard Candies”

©-MMS



## Hypertension in pregnancy T/t

www.medinaz.com

**H**ydralazine  
**L**abetalol  
**M**ethyldopa  
**N**ifedipine.

“He Likes  
My Neonate”





# Management of PSVT

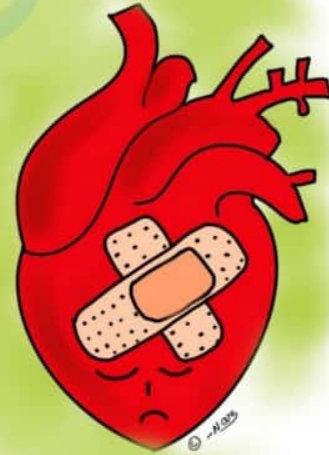
(Paroxysmal SupraVentricular Tachycardia)

**Adenosine > Beta ( $\beta$ ) blocker**

**> Calcium channel blocker (verapamil) > Digoxin**

www.medinaz.com

**A > B > C > D**



## DRUGS CAUSING TORSADES DE POINTES



**C**isapride

**H**aloparidol

**E**rythromycin

**A**miodarone, Arsenium

**P**rocainamide



## BETA BLOCKER MEMBERS



<b>T</b> he	→	<b>T</b> imolol
<b>N</b>	→	<b>N</b> adolol
<b>E</b>	→	<b>E</b> smolol
<b>P</b>	→	<b>P</b> indolol
<b>A</b>	→	<b>A</b> tenolol
<b>L</b>	→	<b>L</b> abetalol
<b>Prime</b>	→	<b>P</b> ropanolol
<b>Minister</b>	→	<b>M</b> etoprolol

© - Niaz

## Drugs cause Torsades de pointes



<b>A</b> miodarone
<b>P</b> rocainamide
<b>A</b> rsenium
<b>C</b> isapride
<b>H</b> aloperidol
<b>E</b> rythromycin

© - Niaz



MEDINAZ

## Adverse Effects of Beta Blockers

"Bald Fish"



- Bronchoconstriction**
- Bradycardia**
- Arrhythmias**
- Lethargy**
- Disturbance in glucose metabolism**
- Fatigue**
- Insomnia**
- Sexual dysfunction**
- Hypotension**

© - Nurs

## Immediate treatment of Myocardial Infarction



**M** → Morphine



**O** → Oxygen



**N** → Nitroglycerine

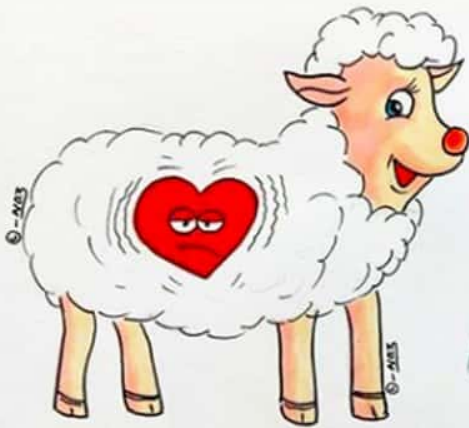


**A** → Acetylsalicylic acid





## Ventricular Trachycardia treatment



**L** = Lidocaine  
**A** = Amiodarone  
**M** = Mexiltene/Magnesium  
**B** = Beta-blocker

## Supraventricular Tachycardia T/t

[www.medinaz.com](http://www.medinaz.com)

- A**denosine
- B**eta blocker
- C**alcium channel blocker
- D**igoxin
- E**xcitation (vagal stimulation)

“**ABCDE**”





# **Cardiac Pathology**





## Coronary artery disease risk factors



Eating too much **Fatty SOFT HAM** can cause Coronary artery disease

**F**atty (HyperLipidemia)

**S**moking

**O**besity

**F**amily history

**T**ype 1 & 2 diabetes

**H**ypertension

**A**ge

**M**ale

## Causes of new onset Atrial Fibrillation



**P** → **P**ulmonary

**I** → **I**schemic

**R** → **R**heumatic

**A** → **A**trial Myxoma

**T** → **T**hroid

**E** → **E**mboli

**S** → **S**epsis



# Acute MI treatment

www.medinaz.com

Glycerol trinitrate

Oxygen

Aspirin

Cyclomorph

© - MAS

“GOA Calling”



© - MAS

# Aneurysm Types

www.medinaz.com

“BAD Circulatory MASs”

**Aortic aneurysm**

Berry

Arteriovenous fistula

Dissecting

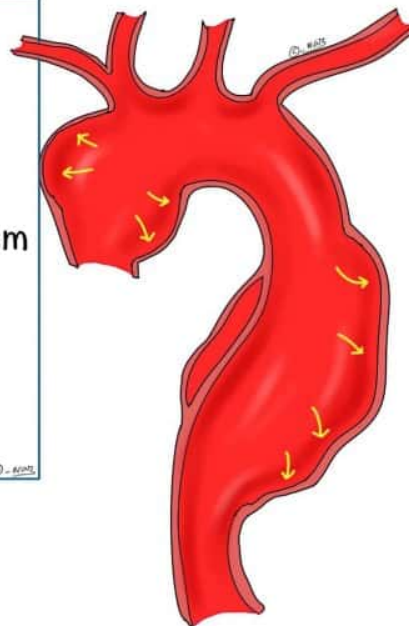
Capillary micro aneurysm

Mycotic

Atherosclerotic

Syphilitic

© - MAS





## Anti-arrythmics for AV nodes

www.medinaz.com

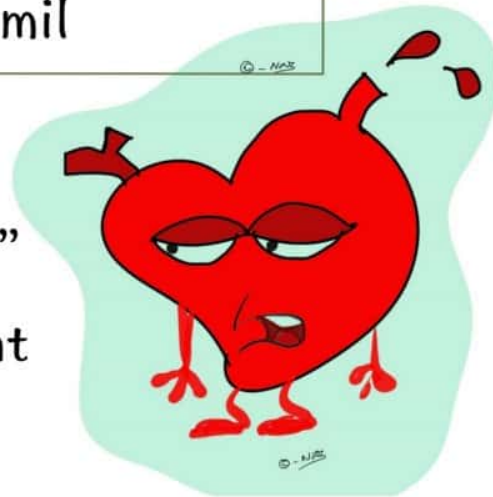
Beta blockers

Adenosine

Digoxin

Verapamil

“**BAD V**entricle”  
needs treatment



## Aortic Dissection risk factors

www.medinaz.com

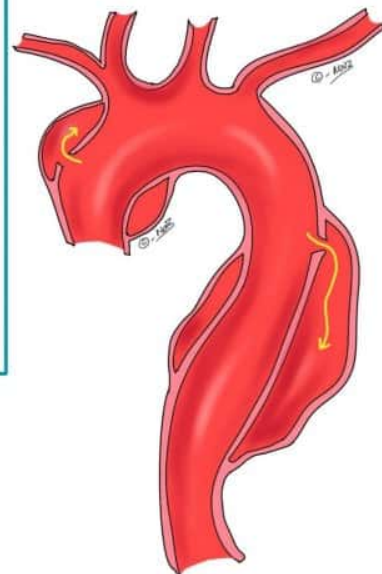
“**A,B,C**”

**A**therosclerosis, Ageing,  
Aortic aneurysm

**B**lood pressure high,  
Baby (pregnancy)

**C**onnective tissue disorders  
(Marfan's, Ehlers-danlos),  
Cystic medial necrosis

**Aortic dissection**





# Aortic dissection

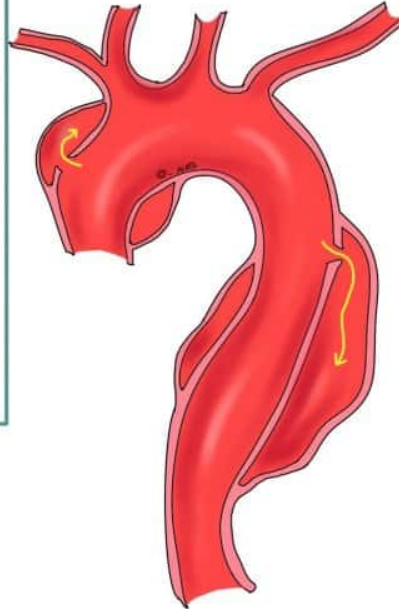
Life threatening complications

[www.medinaz.com](http://www.medinaz.com)

“**AORTIC**”

**Aortic dissection**

**Aortic insufficiency**  
**Occlusion of coronary artery**  
**Rupture**  
**Tamponade**  
**Ischemia of viscera**  
**CVA**

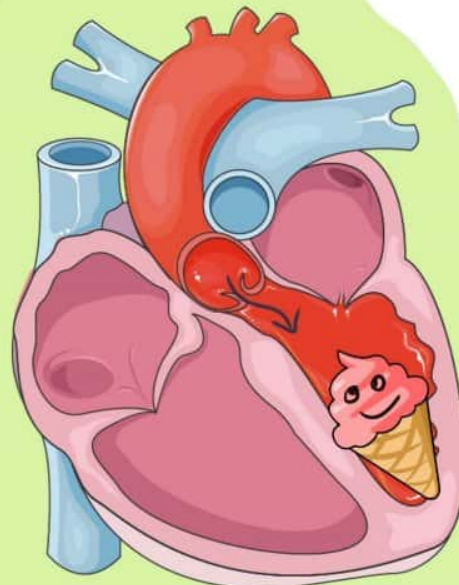


# Aortic regurgitation causes

[www.medinaz.com](http://www.medinaz.com)

“**CREAM**”

**C**ongenital  
**R**heumatic damage  
**E**ndocarditis  
**A**ortic dissection  
**A**ortic root dilation  
**M**arfan's



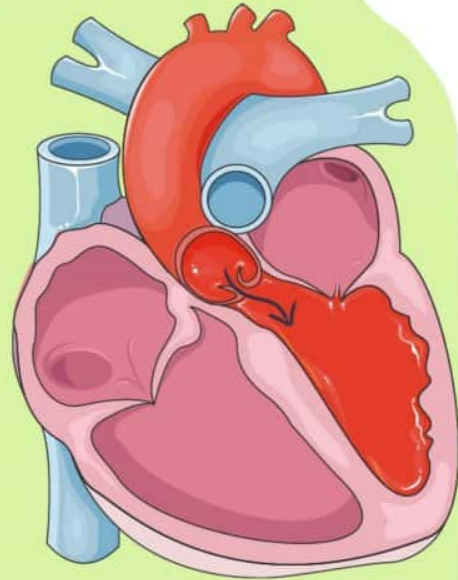


## Aortic regurgitation causes

[www.medinaz.com](http://www.medinaz.com)

“MARRIS”

Marfans  
Ankylosing spondylitis  
Rheumatic fever  
Rheumatoid arthritis  
Infective endocarditis  
Syphilis



## Aortic stenosis characteristics

[www.medinaz.com](http://www.medinaz.com)

Syncope  
Angina  
Dyspnoea

“SAD”



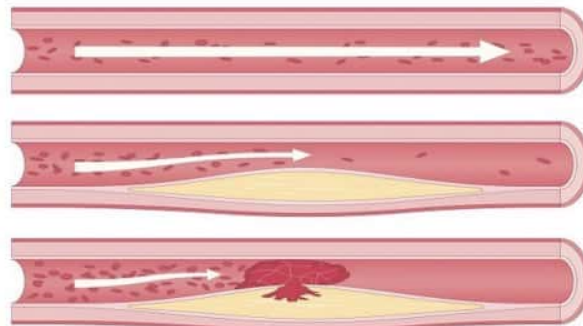


## Atherosclerosis risk factors

www.medinaz.com

- BP high : hypertension
- Age : Middle aged, elderly
- Diabetes mellitus
- Sex - male
- Elevated cholesterol
- Tobacco

“BAD SET of life”



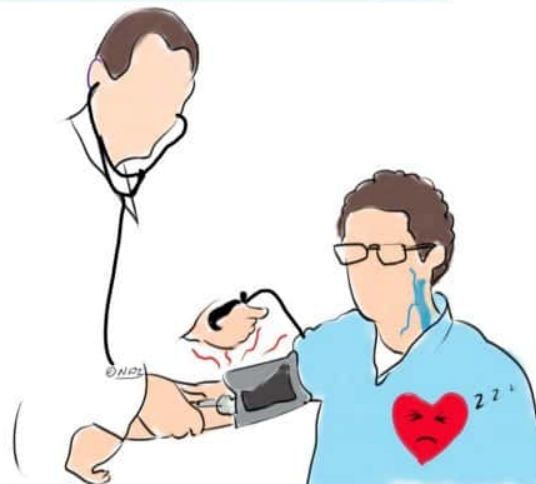
## Beck's triad (Cardiac tamponade)

www.medinaz.com

- Distant heart sound
- Distended jugular veins
- Decreased arterial pressure

© - N.S.

3D's





## Breast cancer risk assessment

[www.medinaz.com](http://www.medinaz.com)

History (family, previous episode)

Abortion / Age (old)

Late menopause

Obesity

Nulliparity

Early menarche

“History ALONE”



Most common 1° cardiac tumor in Adults - Myxoma

Most common 1° cardiac tumor in Children - Rhabdomyoma

“MARCH”

[www.medinaz.com](http://www.medinaz.com)

Myxoma Adults Rhabdomyoma Children



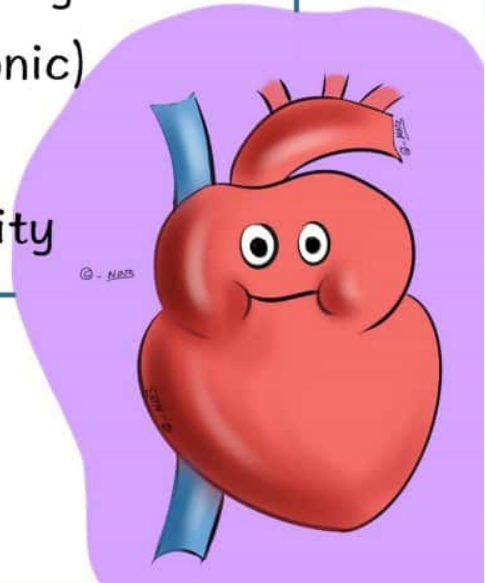


## Dilated cardiomyopathy Etiologies

www.medinaz.com

- A**lcohol abuse (chronic)
- B**eriberi (wet)
- C**oxsackie B viral myocarditis
- C**ocaine use (chronic)
- C**hagas disease
- D**oxorubicin toxicity

“**ABCCD**”



## Heart Failure Causes

- H**ypertension
- E**mbolism
- A**nemia
- R**heumatic heart disease
- T**hyrotoxicosis
- M**yocardial infarction
- A**rrhythmia
- D**iet and lifestyle
- I**nfection
- E**ndocarditis

“**HEART MAY DIE**”

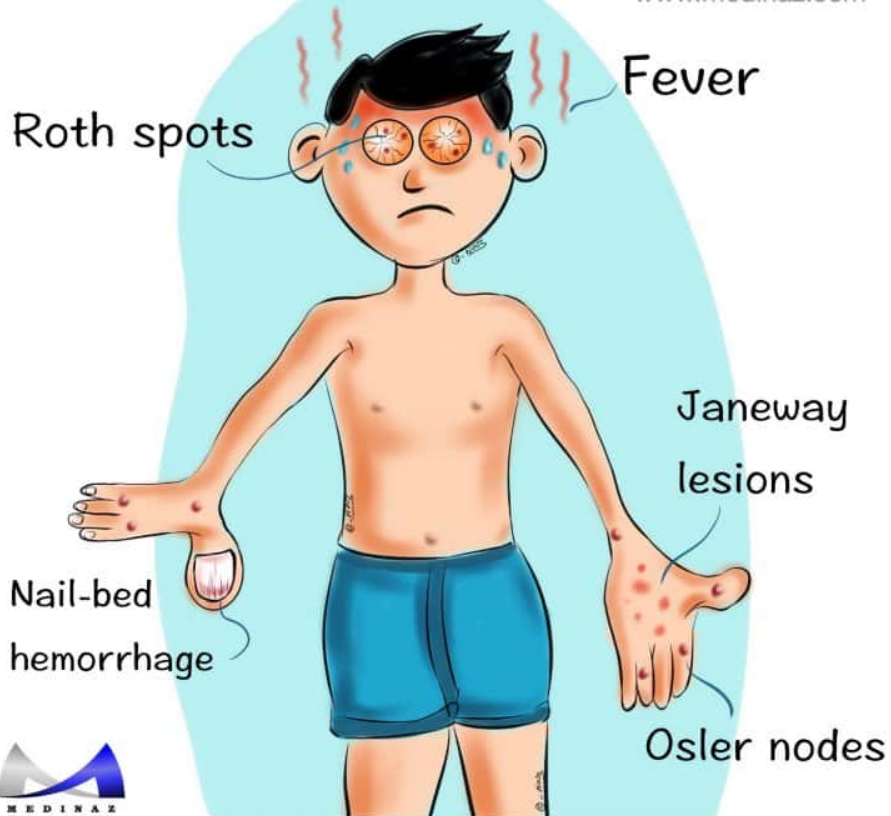






# Bacterial Endocarditis

www.medinaz.com

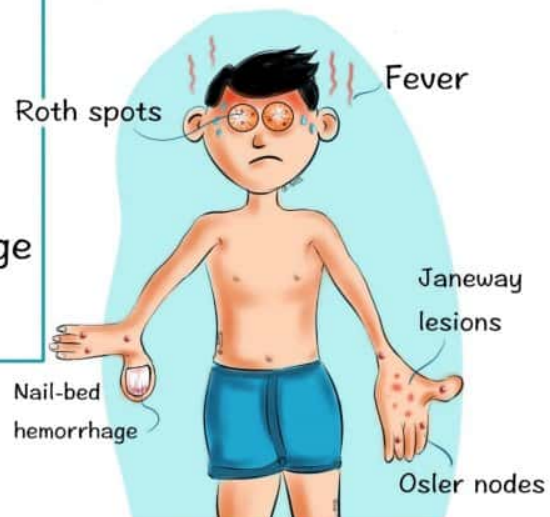


# Bacterial Endocarditis

www.medinaz.com

- Fever
- Roth spots
- Osler nodes
- Murmur
- Janeway lesions
- Anemia
- Nail-bed hemorrhage
- Emboli

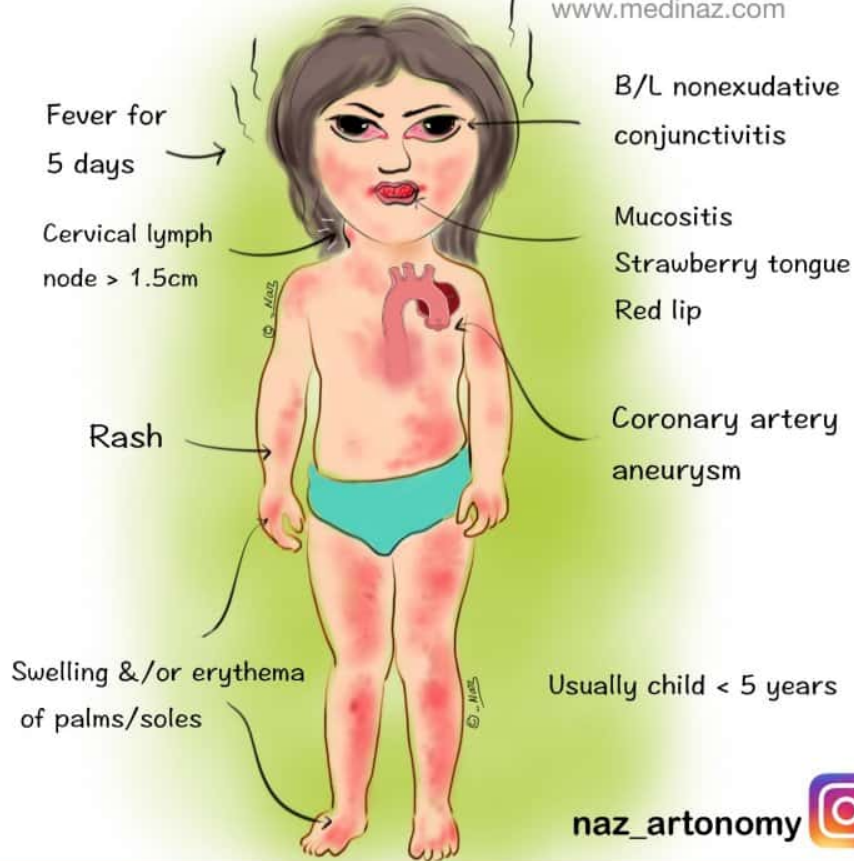
“FROM JANE”





# Kawasaki Disease

www.medinaz.com



naz\_artonomy

# Kawasaki Disease

www.medinaz.com

Apply "Warm CREAM" in Kawasaki disease

**W**arm = Fever >5 days  
**C** = Conjunctivitis (non-exudate)  
**R** = Rash  
**E** = Edema / Erythema of hands & feet  
**A** = Adenopathy cervical  
**M** = Mucositis, strawberry tongue



naz\_artonomy



# KAWASAKI DISEASE

**Sausage fingers**

**Conjunctival redness**

**Rash**

**Extremity involvement**

**Adenopathy**

**Mucosal erythema**

**FEVER**

**“SCREAM Fever”**



# MI Complications

Arrhythmias

Congestive heart failure

Pericarditis

Shock cardiogenic

Thromboembolism

Rupture

Aneurysm cardiac

Post myocardial infarction syndrome

**“All Cardiac Patients Suffer TRAP”**



[www.medinaz.com](http://www.medinaz.com)



[naz\\_aratomy](https://www.instagram.com/naz_aratomy)



# Patau Syndrome

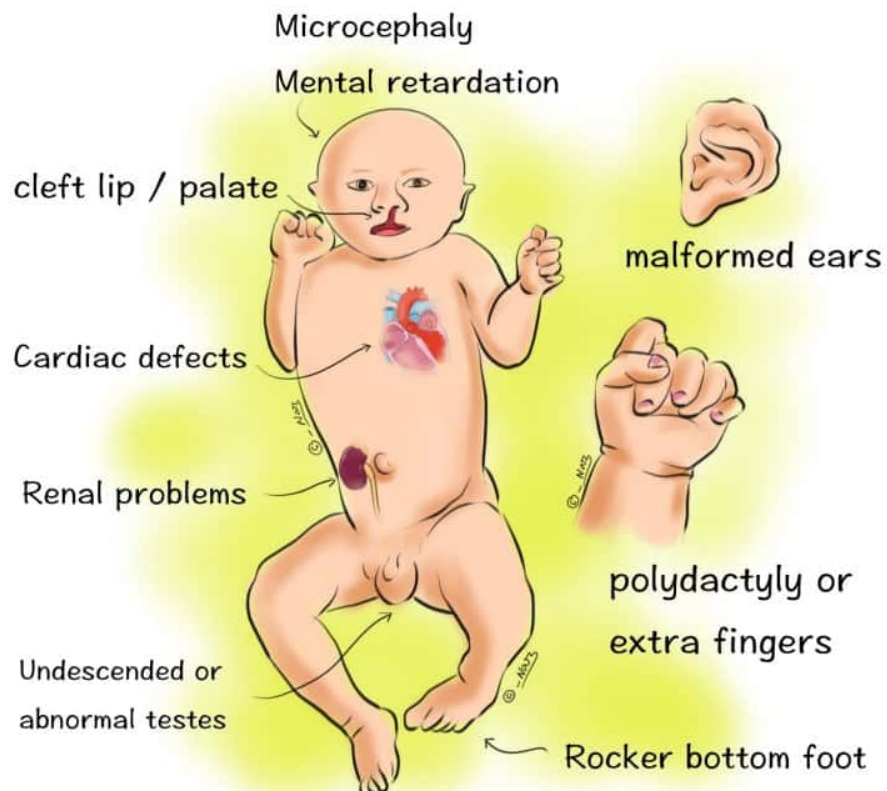
- C**left lip/palate
- R**enal Abnormalities
- c**ardiac defects
- M**ental Retardation,
- M**icrocephaly
- P**olydactyly

“**CRAMP**”



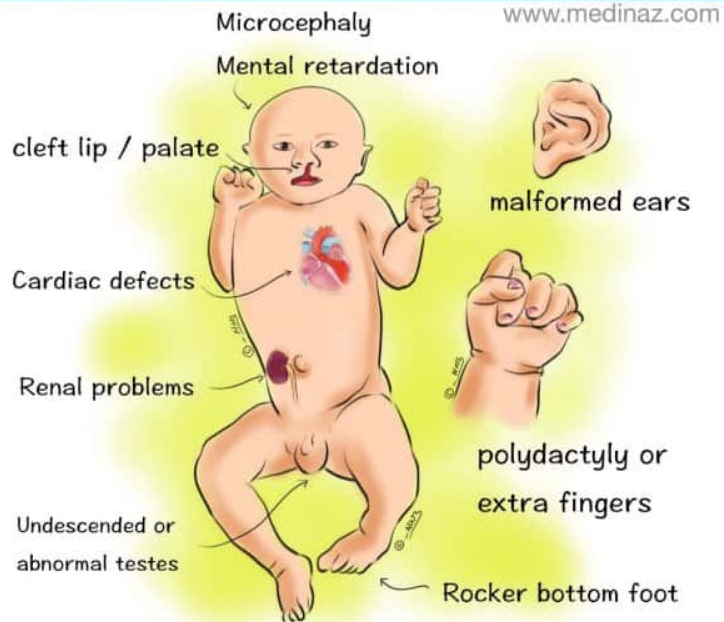
# PATAU Syndrome

[www.medinaz.com](http://www.medinaz.com)





13 letters = Trisomy 13  
**PATAU Syndrome**

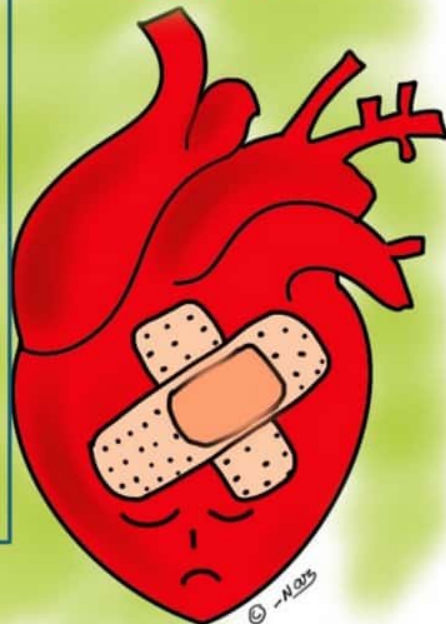


## Pericarditis Causes

www.medinaz.com

- Collagen vascular disease
- Aortic dissection
- Radiation
- Drugs
- Infections
- Acute renal failure
- Cardiac (MI)
- Rheumatic fever
- Injury
- Neoplasms
- Dressler syndrome

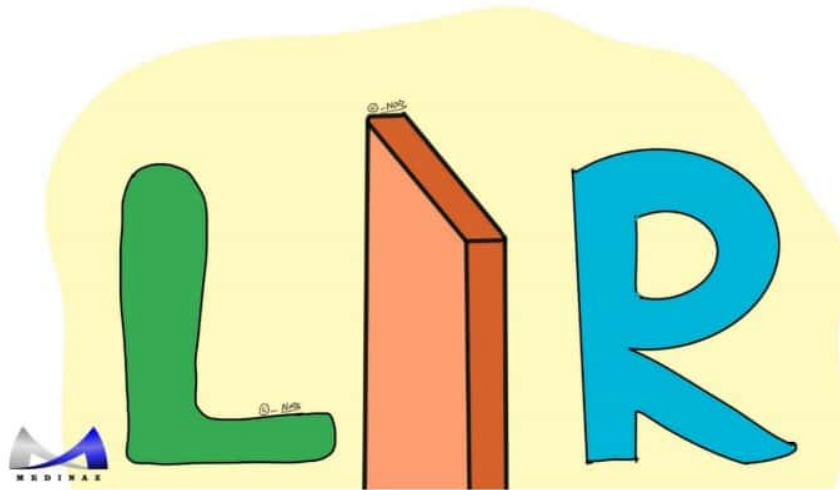
“**CARDIAC RIND**”





**Right-to-Left shunts: eaRLy cyanosis**  
**Left-to-Right shunts: "LateR" cyanosis.**

www.medinaz.com

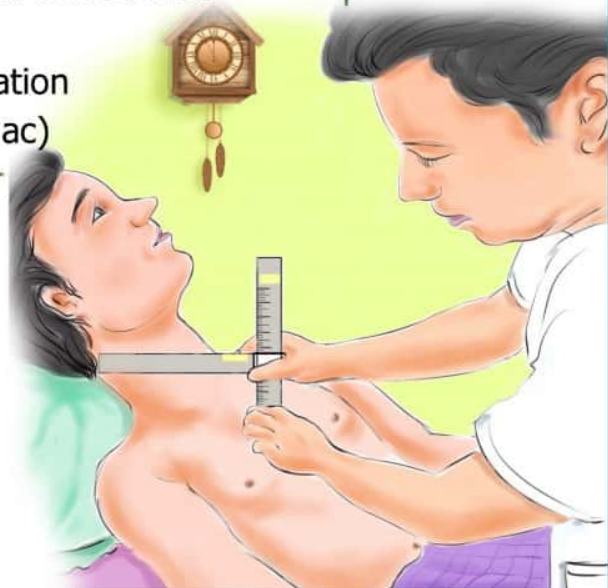


## Raised JVP differential

www.medinaz.com

- P**ericardial effusion
- Q**uantity of fluid raised (fluid over load)
- R**ight heart failure
- S**uperior vena caval obstruction
- T**ricuspid stenosis
- T**ricuspid regurgitation
- T**amponade (cardiac)

"PQRST"



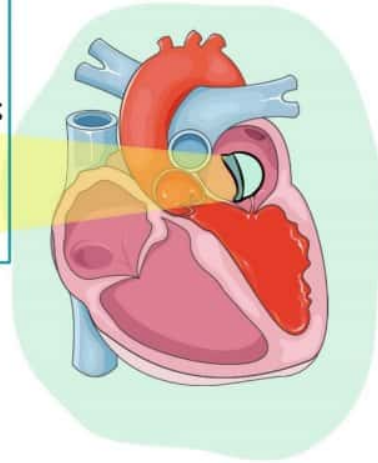


## Restrictive Cardiomyopathy (Causes)

www.medinaz.com

Hemochromatosis  
Löffler syndrome  
Amyloidosis  
Sarcoidosis  
Endocardial fibroelastosis  
post Radiation

“Heart LASER”



## Restrictive/infiltrative cardiomyopathy

www.medinaz.com

Postradiation fibrosis  
Löffler endocarditis  
Endocardial fibroelastosis  
Amyloidosis  
Sarcoidosis  
Hemochromatosis

“Puppy LEASH”





# Rheumatic Fever

(Major criteria)

[www.medinaz.com](http://www.medinaz.com)



**J**oint (migratory polyarthritis)



**C**arditis



**N**odules in skin (subcutaneous)



**E**rythema marginatum



**S**ydenham chorea

## Rheumatic Fever: Minor criteria

[www.medinaz.com](http://www.medinaz.com)

CRP

Arthralgia

Fever

Elevated ESR

Prolonged PR interval

Anamnesis Rheumatism

Leukocytosis

“CAFE PAL”





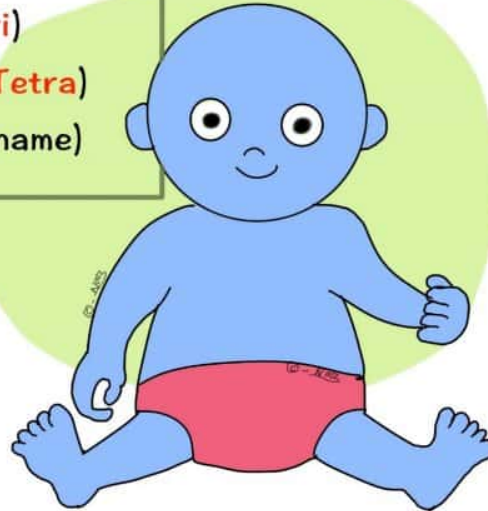


# RIGHT-TO-LEFT SHUNTS

www.medinaz.com

- Truncus arteriosus (1 vessel)
- Transposition (2 switched vessels)
- Tricuspid atresia (3 = Tri)
- Tetralogy of Fallot (4 = Tetra)
- TAPVR (5 letters in the name)

“5 T’s”



## Right to Left Shunt

4 “T”



- Tetralogy of fallot
- Tricuspid atresia
- Truncus arteriosus
- Transposition of great vessels



## Angina precipitating factors



**E**xertion

**E**ating

**E**motional distress

**E**xtrême temperature

## Immediate treatment of Myocardial Infarction



**M** → Morphine

**O** → Oxygen

**N** → Nitroglycerine

**A** → Acetylsalicylic acid



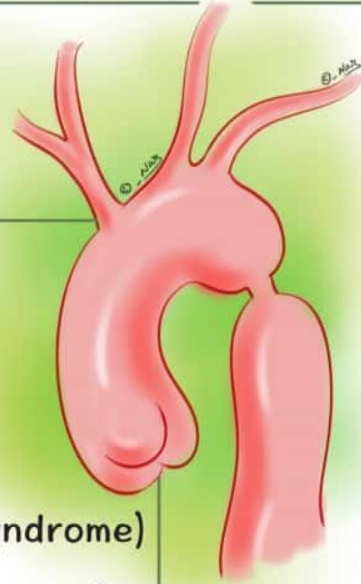


## Secondary Hypertension Causes

www.medinaz.com

“Pathological Aorta Causes  
Secondary Hypertension”

- P**heochromocytoma
- A**ortic coarctation
- C**ushing syndrome
- S**tenosis of renal arteries
- H**yperaldosteronism (Conn syndrome)



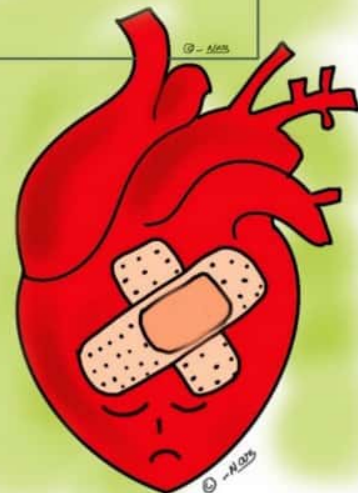
 naz\_artonomy

## Syncope causes (CVS)

www.medinaz.com

- H**eat attack
- E**mbolism (PE)
- A**ortic obstruction (IHSS, AS or myxoma)
- R**hythm disturbance, ventricular
- T**achycardia

“HEART”





## Syncope causes (Vascular)

www.medinaz.com

Vasovagal  
Ectopic (reminds one of hypovolemia)  
Situational  
Subclavian steal  
ENT (glossopharyngeal neuralgia)  
Low systemic vascular resistance (Addison's, diabetic vascular neuropathy)  
Sensitive carotid sinus

© - MED

“VESSELS”

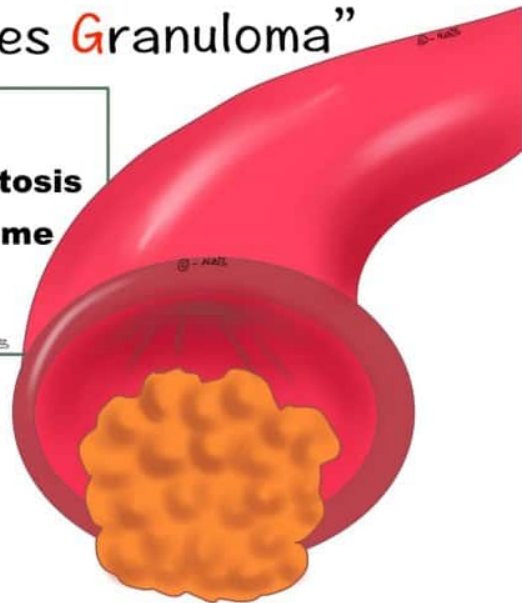


## Vasculitis Causing Granuloma

“This Way Comes Granuloma”

**Takayasu arteritis**  
**Wegener's granulomatosis**  
**Churg Strauss Syndrome**  
**Giant cell arteritis**

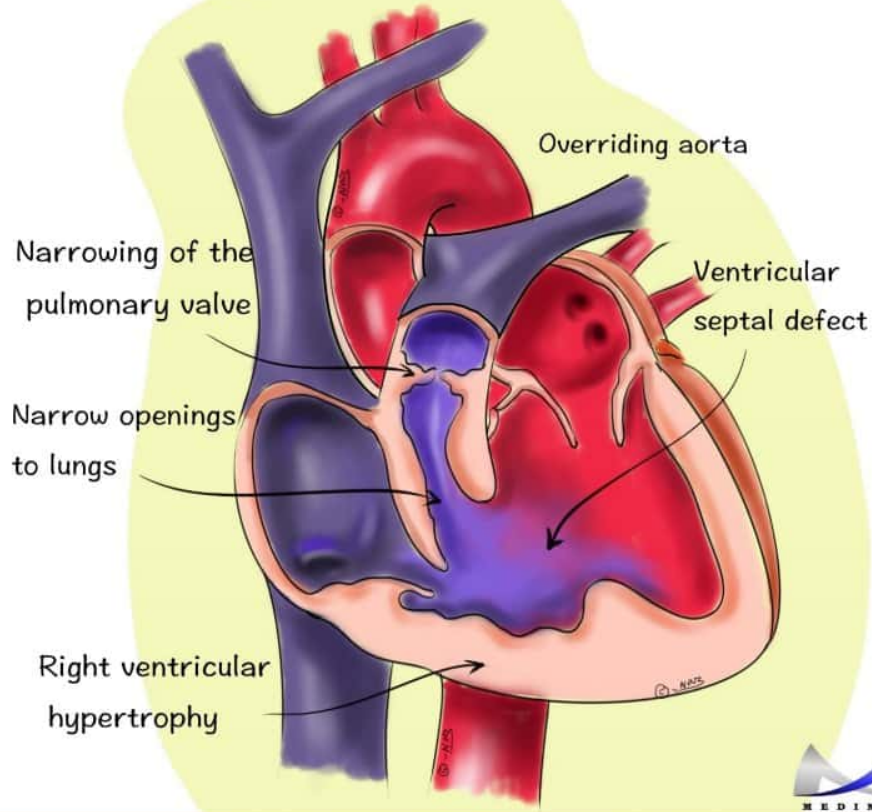
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# Tetralogy of Fallot

www.medinaz.com



# Tetralogy of Fallot

www.medinaz.com

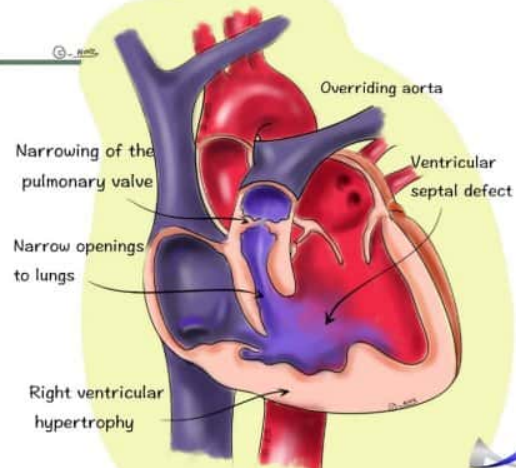
**P**ulmonary infundibular stenosis  
(most important determinant for prognosis)

**R**ight ventricular hypertrophy (RVH)  
— boot-shaped heart on CXR

**O**verriding aorta

**V**SD

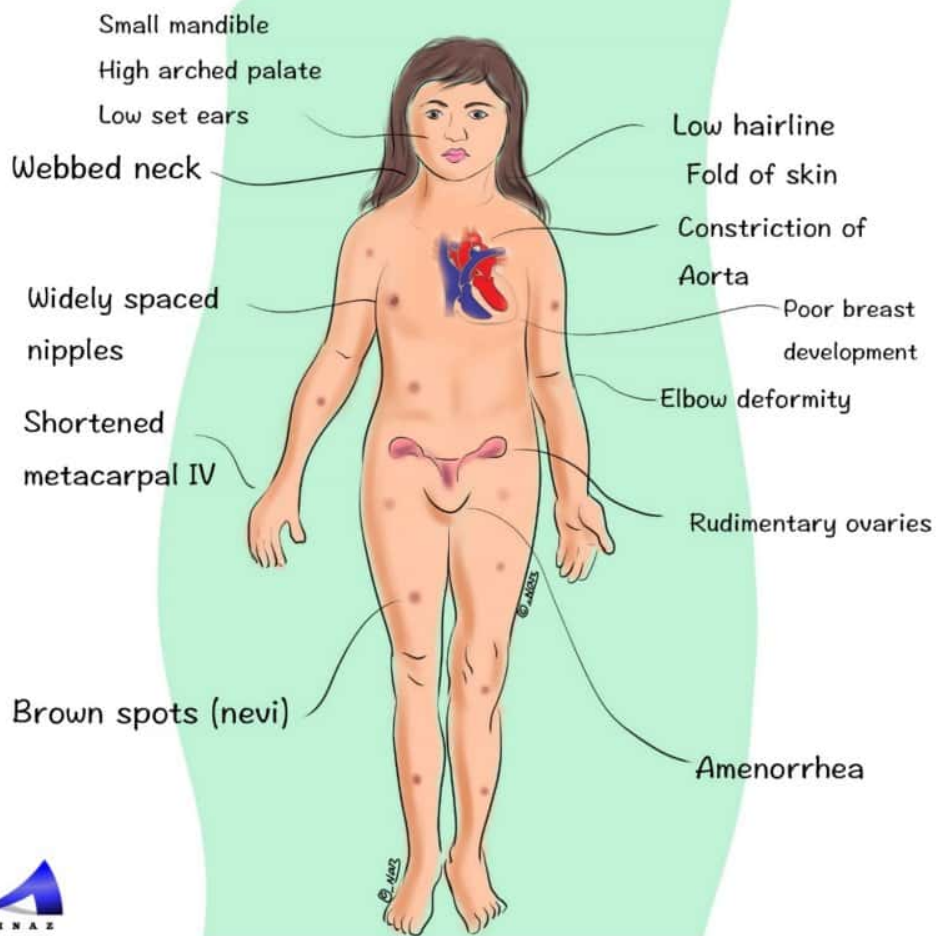
“**PROVe**”





# Turner Syndrome

[www.medinaz.com](http://www.medinaz.com)





# **Cardiac Medicine**



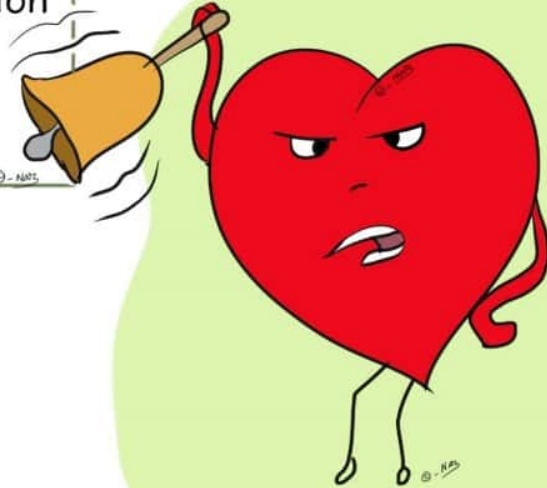
## Acute Myocardial Infarction

### Major complications

[www.medinaz.com](http://www.medinaz.com)

- Aneurysm
- LV dysfunction
- Arrhythmias
- Rupture
- Mitral regurgitation
- Septal defect

“ALARMS”

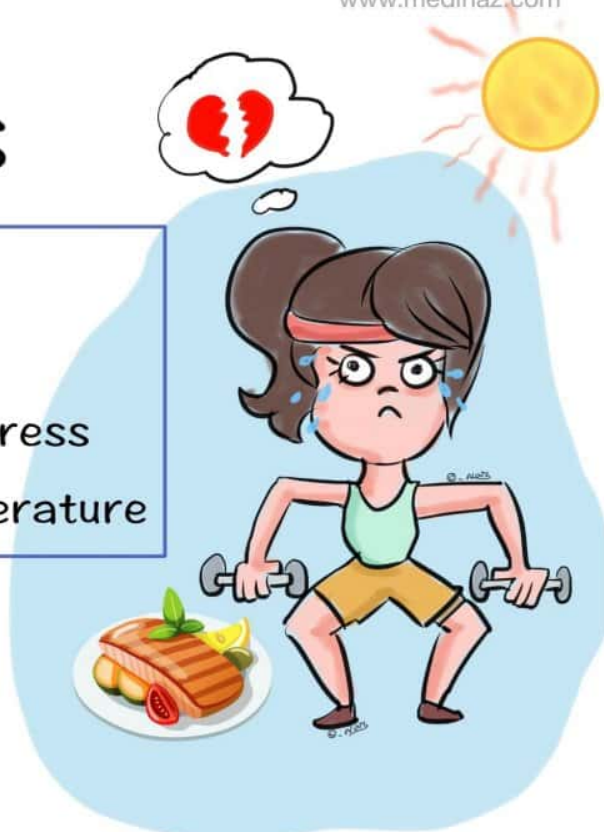


## Angina Precipitating Factors

[www.medinaz.com](http://www.medinaz.com)

4 E's

- Exertion
- Eating
- Emotional distress
- Extreme temperature





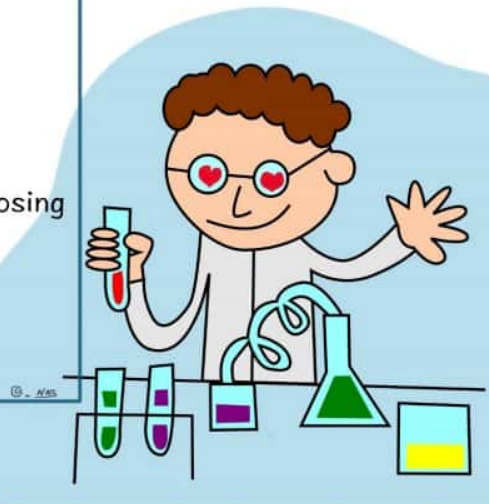


## Aortic Insufficiency Causes

www.medinaz.com

- Rheumatic heart disease
- Aneurysm (aortic)
- Dissection (aortic)
- Congenital aortic valve disease
- Hypertension
- Endocarditis
- Marfan's & other collagen vascular diseases
- Iatrogenic (e.g. LHC)
- Systemic disease (SLE, Ankylosing spondylitis)
- Trauma to chest
- Sedation (before paralysis)

“RAD CHEMISTS”

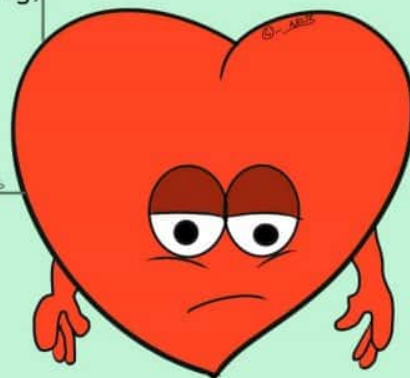


## CHF: causes of exacerbation

www.medinaz.com

- Forgot medication
- Arrhythmia/ Anaemia
- Ischemia/ Infarction/ Infection
- Lifestyle: taken too much salt
- Upregulation of CO: pregnancy, hyperthyroidism
- Renal failure
- Embolism: pulmonary

“FAILURE”





## CXR findings in Aortic Dissection

www.medinaz.com

- Widened mediastinum
- Effusion (plural)
- Effusion (pericardial)
- Dilated aortic arch
- Separation of intimal calcification
- Blurring of aortic contour

“WEEDS are Bad for heart”

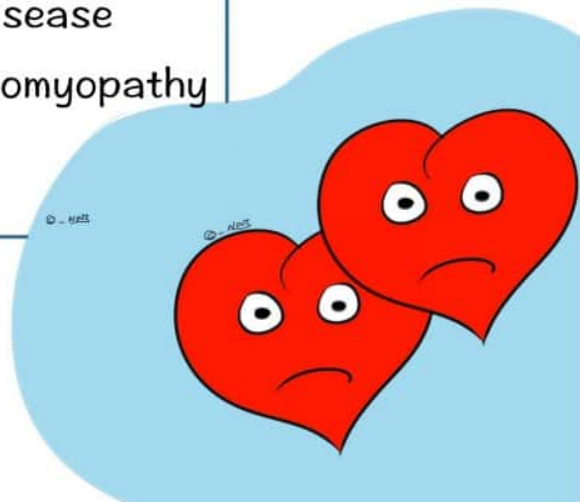


## Diastolic Heart failure causes

www.medinaz.com

- Aortic stenosis
- Pericardial disease
- Age
- Ischemic heart disease
- Restrictive cardiomyopathy
- Hypertension

“A PAIR of Heart”



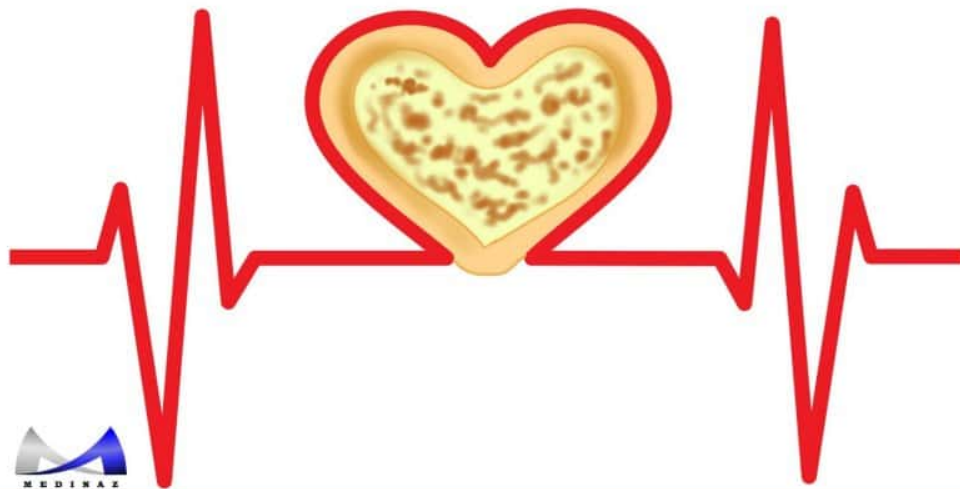


## ECG: left vs. right bundle block

www.medinaz.com

**W** pattern in V1-V2 and **M** pattern in V3-V6 is **Left bundle block**.  
**M** pattern in V1-V2 and **W** in V3-V6 is **Right bundle block**.

“WILLIAM MARROW”

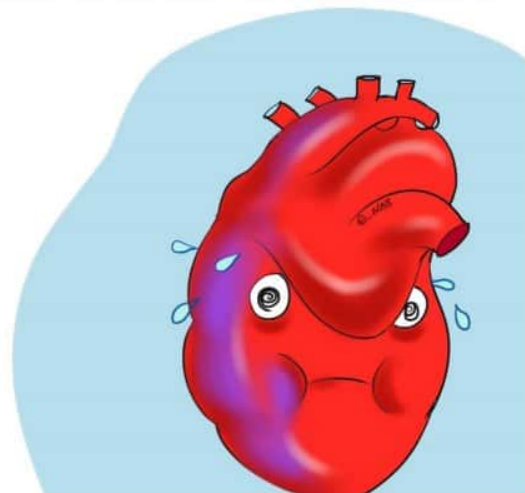


## Heart blocks

www.medinaz.com

If the **R** is far from **P**, then you have a **First Degree**.  
Longer, longer, longer, drop! Then you have a **Wenkebach**.  
if some **P**'s don't get through, then you have **Mobitz II**.  
If **P**'s and **Q**'s don't agree, then you have a **Third Degree**.

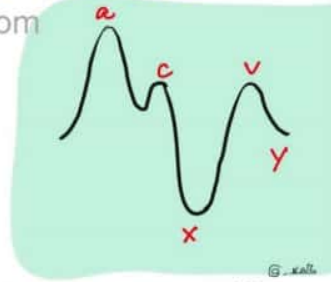
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# JVP wave form

www.medinaz.com



- Atrial contraction
- Systole (ventricular contraction)
- Klosure (closure) of tricusps, so atrial filling
- Maximal atrial filling
- Emptying of atrium

“ASK ME”

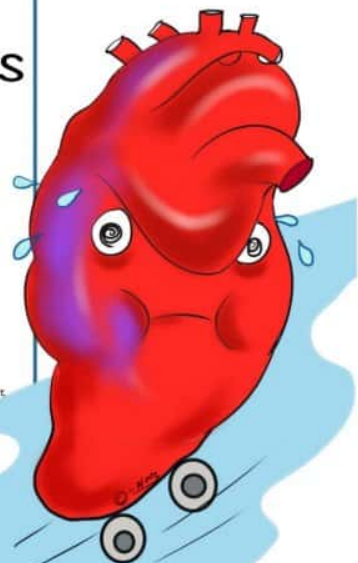


# LV Aneurysm Clinical Presentation

www.medinaz.com

“Enlarged Ventricular  
CAR”

- VT
- Embolism & Thrombus
- CHF
- Angina
- Rupture





## MI: therapeutic treatment

www.medinaz.com

Oxygen  
Beta blocker  
ASA  
Thrombolytics (e.g. heparin)  
Morphine  
Ace prn  
Nitroglycerin

“O BATMAN”



## Risk factors for Acute Aortic Syndrome

www.medinaz.com

Bicuspid aortic valve  
Atherosclerosis  
Connective tissue disorder  
Known aneurysm  
Arteritis  
Cocaine and Crack  
Hypertension  
Expecting (pregnancy)  
Surgery (cardiac)

“BACKACHES”





## Pulmonary Hypertension causes

www.medinaz.com

- E**mbolism
- C**ongenital Heart Disease
- L**eft heart disease
- I**nherited (e.g. BMPR2, ALK1)
- P**ulmonary disease (COPD, OSA)
- T**oxin or drug-induced
- I**atrogenic or multifactorial
- C**onnective tissue disorder

“ECLIPTIC”

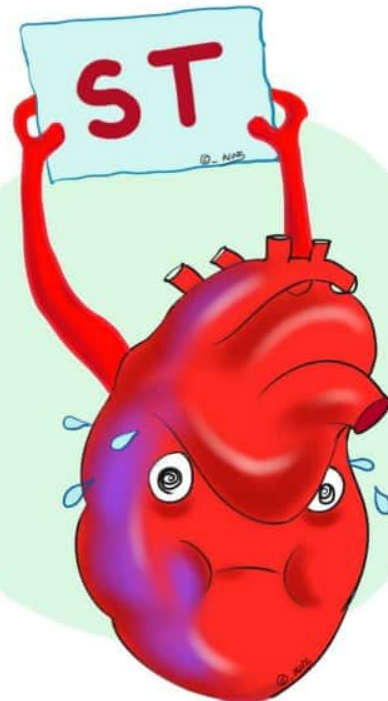


## ST elevation in ECG'S causes

www.medinaz.com

“ELEVATION”

- E**lectrolytes
- L**BBB (left bundle branch block)
- E**arly repolarisation
- V**entricular hypertrophy
- A**neurysm
- T**reatment – pericardiocentesis
- I**njury (acute myocardial infarction, contusion)
- O**sborne waves (in hypothermia)
- N**on-occlusive vasospasm





## Treating Congestive Heart Failure

www.medinaz.com

### “UNLOAD FAST”

Upright position

Nitrates (low dose)

Lasix

Oxygen

Aminophylline

Digoxin

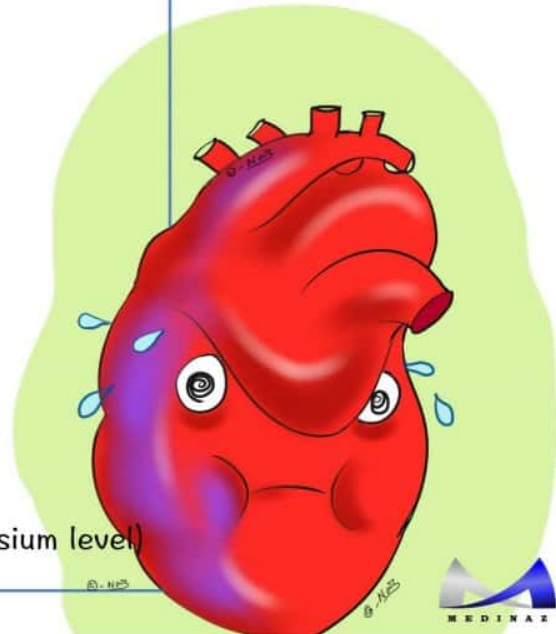
Fluids (decrease)

Afterload (decrease)

Sodium restriction

Test

(DIG level, ABGs, Potassium level)



## Ventricular Arrhythmia causes

www.medinaz.com

Coronary Ischemia (active)

Overexertion

Surgery (esp cardiac)

Myopathy (Cardiomyopathy)

Infarct (scar)

Congenital (brugada, ARVD)

Drugs (cocaine, meth)

Idiopathic

Long QT syndrome

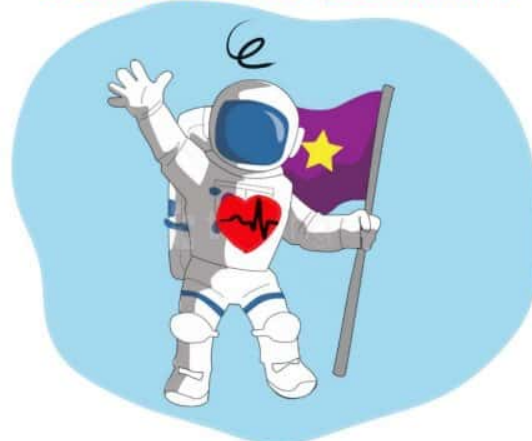
Electrolyte abnormalities (k,Mg)

Myocarditis

Medications (pro-arrhythmic)

Alcohol to excess

### “COSMIC DILEMMA”





# **Cardiac Surgery**





## Causes of Postop Electromechanical Dissociation

www.medinaz.com

Hypothermia  
Electrolytes  
Acidosis  
Reduced oxygenation  
Tamponade  
Blood volume decreased  
Embolism (pulmonary)  
Anaphylaxis  
Tension PTX

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“HEARTBEAT”



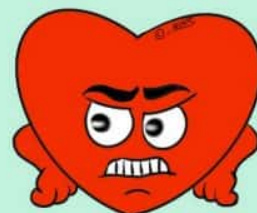
## Causes of Tachycardia after Surgery

www.medinaz.com

Cardiogenic shock  
Oxygenation poor  
Malignant hyperthermia  
Bleeding  
Anemia  
Temperature elevated  
Inotropes  
Volume deficit  
Emotion and pain

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“COMBATIVE”



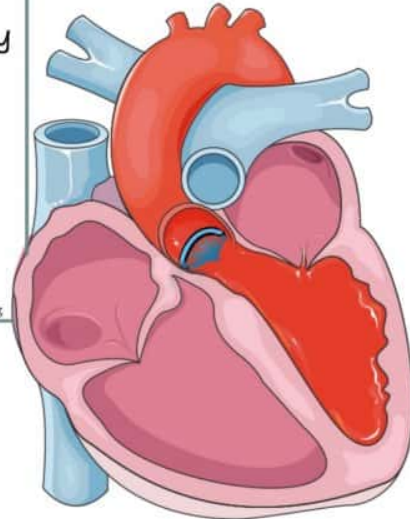


## Complications after Aortic valve replacement

www.medinaz.com

- Thromboembolism
- AV block
- Mismatch (PPM)
- Perivalvar leak
- Obstruction of coronary artery
- Neurologic deficits
- Abscess
- Dysfunction of valve leaflets
- Endocarditis

“TAMPONADE”



## Coronary artery bypass graft: indications

www.medinaz.com

- Depressed ventricular function
- Unstable angina
- Stenosis of the left main stem
- Triple vessel disease

“DUST”



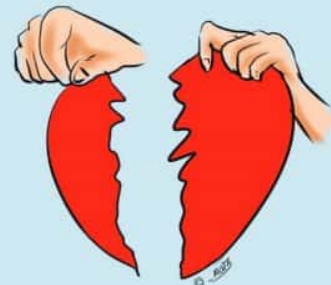


## Indications for Operating on a Type B Dissection

www.medinaz.com

**T**EVAR expertise  
**E**ffusion-Left pleural  
**A**neurysmal dilation  
**R**efractory pain  
**E**xtension Proximally  
**M**alperfusion syndrome

“TEAR’EM”

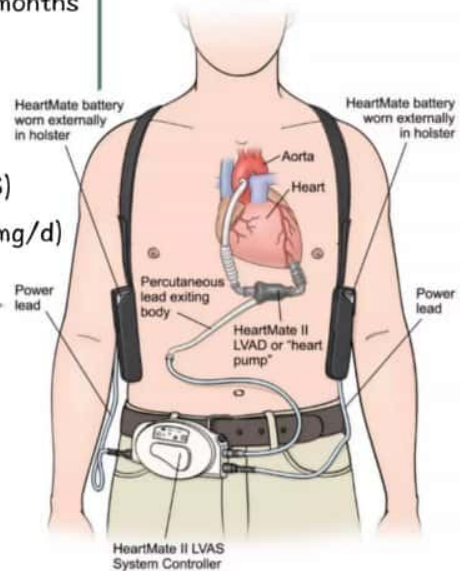


## “DASHBOARD” for LVAD Referral

www.medinaz.com

**D** stage heart failure  
**A**nemia (Hct <35%)  
**S**odium <136 mmol/L  
**H**ospitalisation for HF within past 6 months  
**B**iV non responder  
**O**ne-block or less DOE  
**A**CEI/ARB/Beta blocker intolerance  
**R**enal dysfunction (BUN >40, Cr > 1.8)  
**D**iuretic resistance (e.g. lasix > 120 mg/d)

“DASHBOARD”



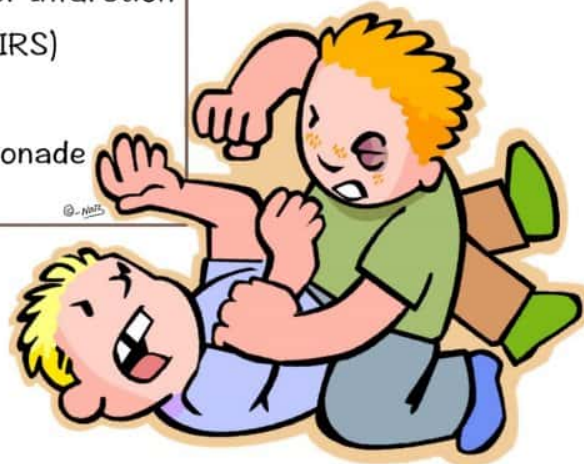


## Major complications of Heart surgery

www.medinaz.com

- Stroke
- Kidney failure
- Infection
- Rhythm disturbances
- Myocardial ischemia or Infarction
- Inflammatory state (SIRS)
- Shock
- Haemorrhage or tamponade

“SKIRMISH”

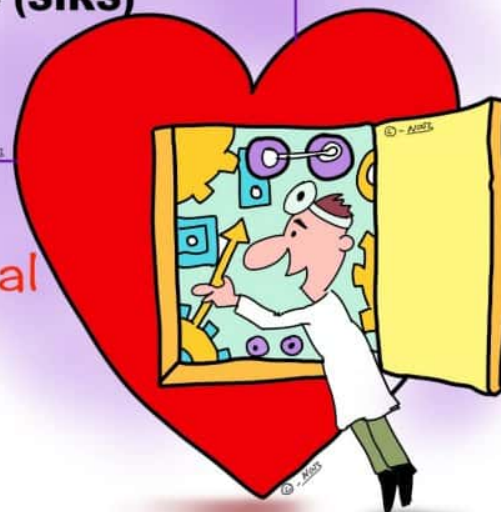


## Major Complications after Heart Surgery

www.medinaz.com

- Haemorrhage**
- Myocardial** ischemia or infraction
- Rhythm disturbances**
- Infection**
- Inflammatory state (SIRS)**
- Stroke, Shock**
- Kidney failure**

“High Myocardial  
RISK”



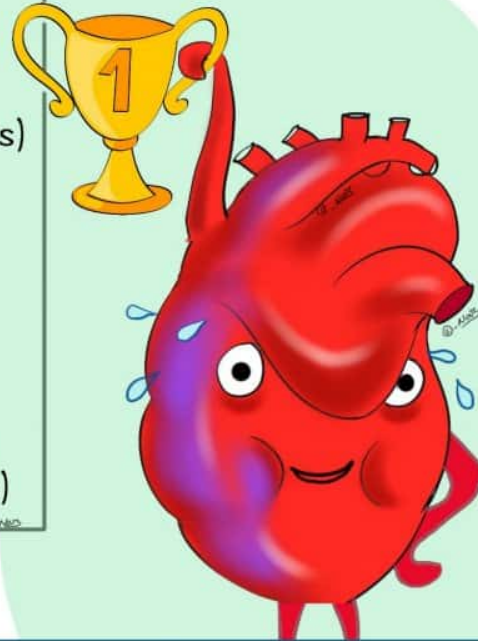


# Optimizing RV Function

www.medinaz.com

“CHAMPIONS”

- CO<sub>2</sub> (blow off)
- Heme (optimize Hgb)
- Acid-base (correct acidosis)
- MCS (if all else fails)
- Paralyse (after sedation)
- Inotropes (esp milrinone)
- Oxygenate
- Nitric oxide
- Sedation (before paralysis)



# Reasons for Urgent CABG

(Coronary Artery Bypass Graft)

www.medinaz.com

- VSD
- Anatomy (e.g. Tight LM)
- Papillary muscle rupture
- Ongoing angina
- Rupture of LV free wall
- IABP dependence
- Shock
- Evolving MI

“VAPORISE”





## Sites to search bleeding during Reexploration

www.medinaz.com

Epicardial wire sites  
Neck region  
IMA bed  
Grafts  
Marrow  
Anastomoses  
Tube entry sites  
Incisions (heart)  
Cannulation sites

“ENIGMATIC”

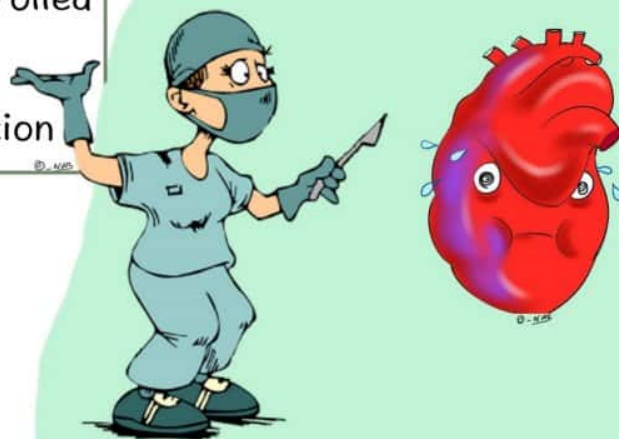


## Surgical indications for Endocarditis

www.medinaz.com

Prosthetic  
Heart failure  
Abscess  
Sepsis, uncontrolled  
Embolisation  
Size of vegetation

“PHASE”





**Drug of choice**



# Cardiovascular system

- Angina acute attack – Sublingual nitroglycerine
- Long term prophylaxis in stable angina – Beta blockers
- Aortic dissection – Labetalol
- Arterial fibrillation and flutter – Acute attack – IV Ibutilide  
Rhythm control – Amiodarone  
Rate control – Beta blockers
- Anticoagulation in Atrial fibrillation – Dabigartan, Apixaban
- Acute CHF first drug of choice – Furosemide
- Acute CHF Inotrope of choice – Dobutamine
- Chronic CHF – ACE inhibitors / ARBs
- Hypertriglyceridemia – Fibrates
- Chylomicronemia syndrome – Fibrates
- Type III hyperlipoproteinemia – Fibrates
- Hypercholesterolemia – Statins
- Hypertension first line drugs – ACE inhibitors, ARB, CCB
- Resistant hypertension – Aldosterone antagonists
- Hypertension in elderly – CCB
- Hypertension in young patients - ACE inhibitors / ARBs
- PSVT – IV Adenosine
- PSVT prophylaxis – Verapamil or beta blockers
- Anaphylactic shock – Epinephrine
- Cardiogenic shock – Norepinephrine or Dopamine
- Septic shock – Norepinephrine
- Vasodialatory shock – Norepinephrine
- SVT treatment & prophylaxis – Verapamil
- SVT associated CHF – Digoxin
- Torsades de pontes – Magnesium sulphate
- Ventricular extrasystole (symptomatic) – beta blockers
- Ventricular fibrillation – Amiodarone
- Ventricular tachycardia in MI and digitalis toxicity – Lidocaine
- WPW syndrome – IV procainamide





# New Drugs

## New cardiovascular drugs

### Ivabridine

**MOA** – Inhibits current in **SA node** that decrease its **automaticity** and **myocardial oxygen consumption**

**USE** – Decrease in oxygen demand is beneficial for  
**Angina**  
**CHF**

### Cangrelor

**MOA** – **P2Y12** platelet receptor inhibitor that blocks **ADP** – induced platelet **activation** and **aggregation**

**USE** – Antiaggregant

### Vorapaxar

**MOA** – Protease Activating Receptor -1 (**PAR -1**) antagonist, which inhibits thrombin induced and thrombin receptor agonist peptide (**TRAP**) – induced platelet aggregation

**USE** – Antiaggregant

### Riociguat

**MOA** – Soluble guanylate cyclase stimulator, which increase **cGMP** and cause **vasodilation**

**USE** – Pulmonary artery hypertension

### Mipomersen sodium

**MOA** – Inhibits **ApoB – 100** protein and decrease **LDL** production

**USE** – Homozygous familial hypercholesterolemia

### Macitentan

**MOA** – Endothelial receptor agonist

**USE** - Pulmonary artery hypertension

### Lomitapide

**MOA** – Microsomal triglyceride transport protein (**MTP**) inhibitor

**USE** - Homozygous familial hypercholesterolemia

**Icosapent**

**MOA** – Decrease **VLDL** synthesis and secretion

**USE** – Hypertriglyceridemia

**Sacubitril**

**MOA** – Inhibits Neutral endopeptidase

**USE** – Chronic **CHF** along with **ARBs**

**Omapatrilat**

**MOA** – Vasopeptidase inhibitor

**USE** – Chronic CHF

**Evolocumab**

**MOA** – Anti **PCSK-9 Ab**

**USE** - Hyperlipidemia