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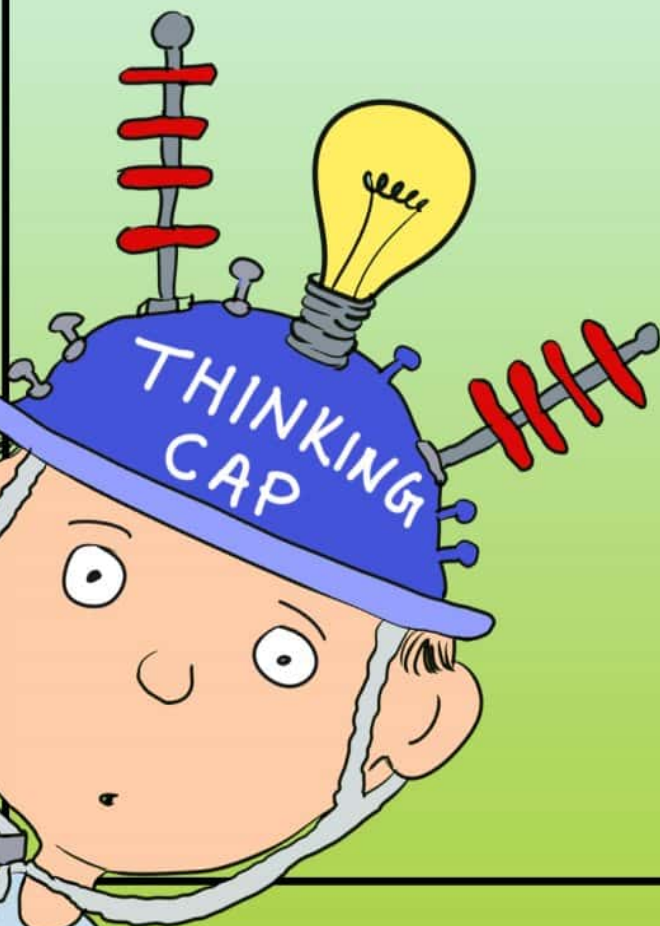


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DRUG OF CHOICE

VISUAL MNEMONICS

PHARMACOLOGY

DR. NAZMUL ALAM





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Today, 10:27 AM

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To: Nazmul Alam

Today at 9:02 PM

AB

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Top Reviews



Pawan Pilia

★★★★★ **Redefining Imagination of a Medico. Worth It.**
6 March 2019

When those bugs eat your brain and you close that bulky textbook. There you Need Mnemonics to Visualise and remember stuffs.

Great piece of work with awesome illustrations. Thanks a Lot Dr Nazmul 🙌

Helpful

Comment

Report abuse



Jennifer

★★★★★ **Very good**
6 March 2019

Thank you for such an awesome book. Learning micro with the help of this book, is just like a cake walk. Worth it 🙌

Helpful

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Re: link

SZ

Wow Mr Nazmul Alam for ur such an amazing Book of immunology.... special thing about ur content is that u organize them so well that nobody did it before....and through beautiful diagrams and mnemonics make the topic very easy and make the memory sharp....God bless ur brother for providing such a conceptual and Most easiest book... I would recommend it to everyone and specially to those who want some extra achievements in his/her medical carrier..... Once again Thanks for ur efforts....Lots of love from Pakistan❤️❤️🙌🙌🙌

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REVIEWS

Sir immunology books are too gooddd 😍😍
Thank you so much

Sir aab tak 9 books bane hai na
Great work sir
Learning made easy 🙌🙌🙌

Message... 🎤 🖼️ +

Sir just now I got it

It's awesome...

3:06 PM

Thank you very much for the appreciation 🙌

Definitely it's useful for us to study in smart way and easily to remember thanx u so much sir...

For ur excellent work 🙌

Message... 🎤 🖼️ +

already get it

Thank you so muchhh

The book so good 🙌

Message... 🎤 🖼️ +

I got email, sorry for bothering and thank you for your great work. ❤️

Hey.. just noticed your message. Sorry for the late response. Thank you very much for the appreciation and support. Have a great day. 🙌

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GENERAL PHARMACOLOGY

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Enzyme Inducers



G = **G**riseofulvin
P = **P**henytoin
R = **R**ifampicin
S = **S**moking

Cell = **C**arbamazepine

Phone = **P**henobarbitone

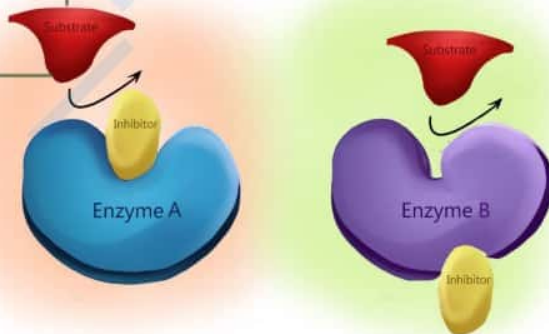


Enzyme Inhibitors

www.medinaz.com

- Valproate
- Ketoconazole
- Cimetidine
- Ciprofloxacin
- Erythromycin
- INH

“Vitamin **K** **C**annot
Cause **E**nzyme **I**nhibition”





Inhibitors of Cytochrome P 450

Café
Coffee
Day



© - Naz

I	→	Isoniazid
Am at	→	Allopurinol
C	→	Cimetidine
C	→	Chloramphenicol
D	→	Disulfiram

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PgP Inhibitors

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Verapamil
Amiodarone
Cyclosporine
Itraconazole
Nifedipine
Erythromycin

“VACINE”



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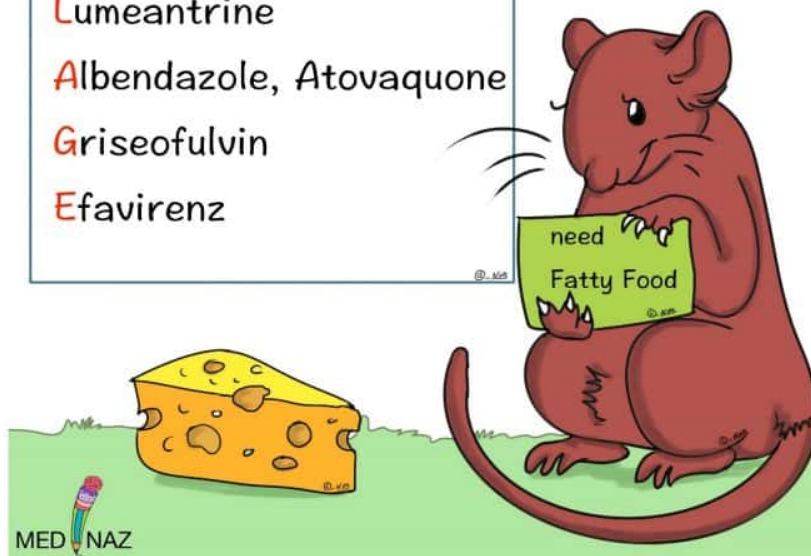


Drugs whose Absorption is increased by Fatty food

www.medinaz.com

Posaconazol
Lumeantrine
Albendazole, Atovaquone
Griseofulvin
Efavirenz

“PLAGUE”

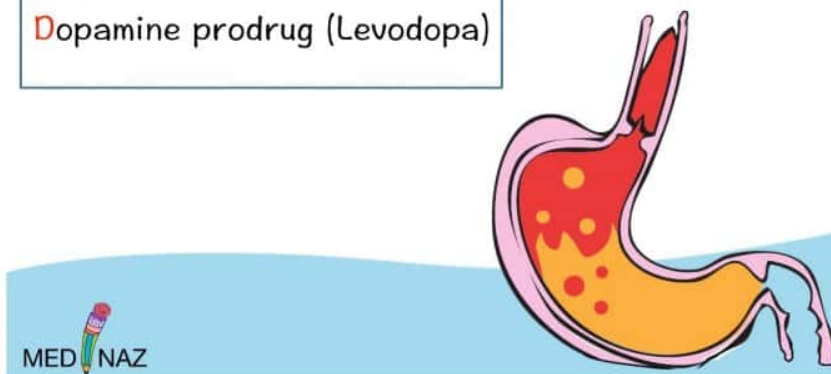


Acidic Drugs

www.medinaz.com

Warfarin
Antiepileptic
(Phenobarbital, Phenytoin)
Chlorothiazide
Ibuprofen & Aspirin
Dopamine prodrug (Levodopa)

“Weak ACID”





Phase I reactions

www.medinaz.com

Oxidation
Reduction
Cyclisation
Hydrolysis
Aliphatic & Aromatic
hydroxylation
Deamination

“ORCHAD”



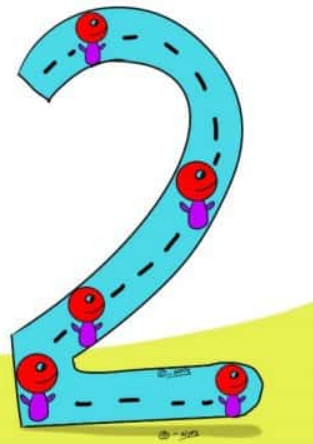
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Phase II reactions

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Glucuronidation,
Glutathionylation,
Glycination
Acetylation
Methylation
Sulfation

“GAMES”



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Dialysis is not effective

www.medinaz.com

Benzodiazepines, Beta blockers
Amphetamine
Digoxine
Digoxine
Opioids, Organophosphates
CCBs, Chloroquine

“BAD DOC”



Drugs metabolized by Acetylation

www.medinaz.com

Sulfonamides
Dapsone
Isoniazid
Nitrazepam
Clonazepam
Hydralazine
Acebutalol, Amantidine,
Amrinone
K(c)affine
Procainamide, Phenelezine

“Singer DINCHAK
Pooja”





Hit & Run Drugs

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MAO inhibitors

Omeprazole

Reserpine

Guanethidine

“MORGue”



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Key points

Drug whose terminal half-life is longer than biological half life show this phenomenon

PPIs have short half-life of 5-2 hrs, but duration of action is 24-36 hrs due to irreversible binding

Therapeutic Index Formula

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$$TI = LD 50 / ED 50$$

“TILE”



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Key points

It is a measure of the safety of a drug

High TI means safer drug

Low TI means drug is more likely to be toxic



Drugs Showing Zero Order Kinetics



Zero **WATT** Power

W = Warfarin

A = Alcohol & Aspirin

T = Theophylline

T = Tolbutamide

Power = Phenytoin



AUTONOMIC NERVOUS SYSTEM

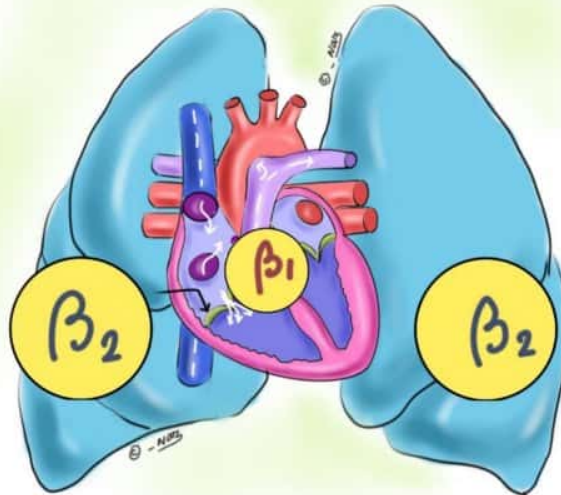
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Beta 1 & 2 Receptors

Beta 1 receptor = Heart
Beta 2 receptor = Lungs

We have 1 heart
and 2 lungs



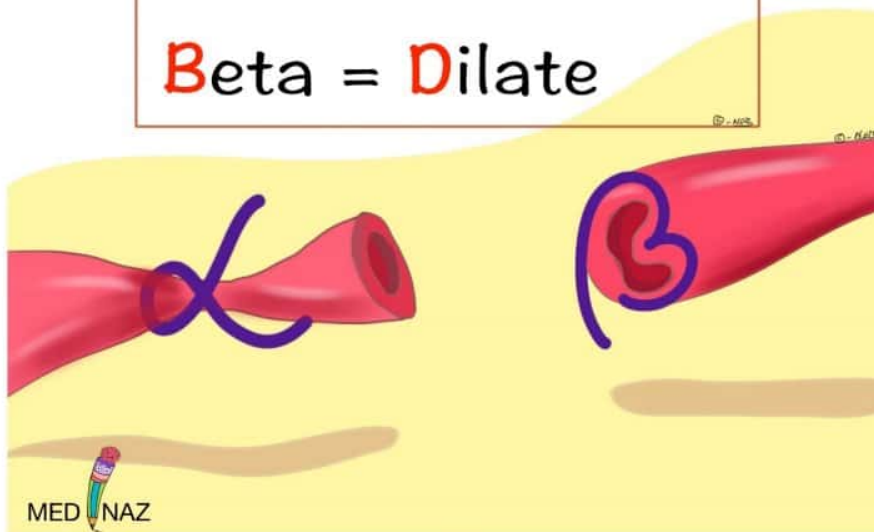
Adrenoceptors: vasomotor function of alpha vs. beta

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- A
- B
- C
- D

Alpha = Constrict

Beta = Dilate



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Beta Agonists Side effects

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Tolerance
Tachycardia
Tremor

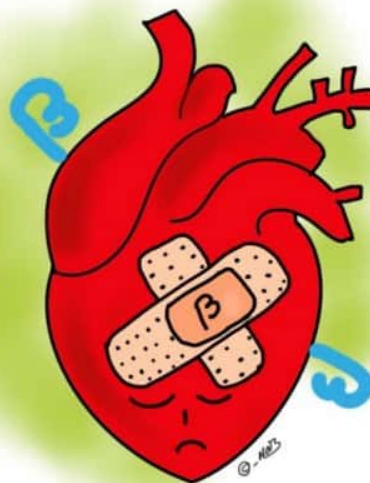
“3 T”



Beta-blockers with Intrinsic Sympathomimetic Activity

“**C**ontain **P**artial
Agonistic **A**ctivity”

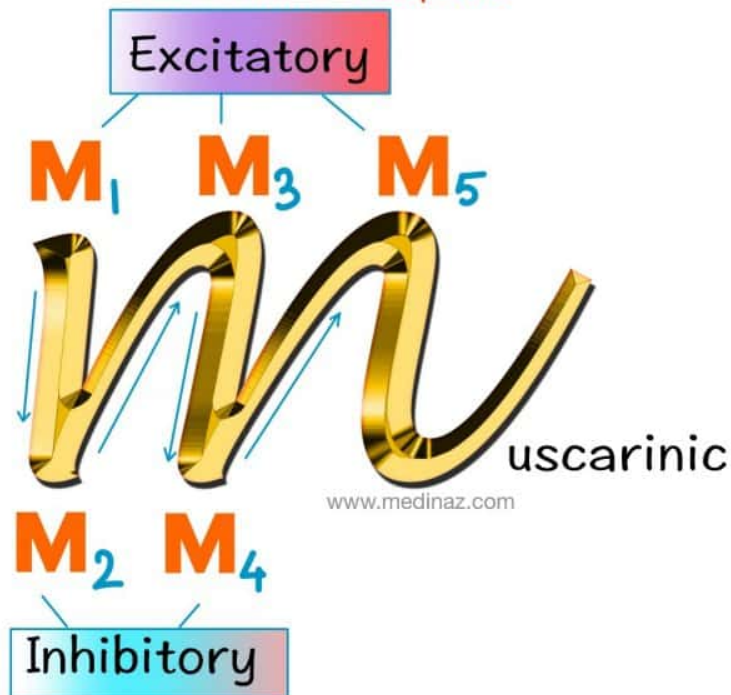
Celiprolol, **O**xprenolol
Pindolol, **P**enbutolol
Alprenolol
Acebutolol





Easy way to Remember

Muscarinic receptors



Atropine Side-effects

www.medinaz.com

Hot as a hare
Dry as a bone
Red as a beet
Blind as a bat
Mad as a hatter
Full as a flask

© - Halls





MAOI Side-effects

www.medinaz.com

3 "H's"



Hepatocellular Jaundice



Hyperthermia



Hypertension

Neostigmine Vs Physostigmine

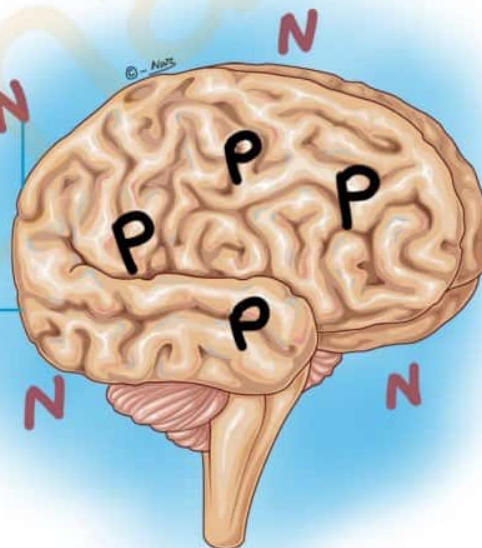
Neostigmine

Neo CNS = **No** CNS penetration

© - NAZE

Physostigmine:

Phreely (freely)
crosses blood-brain





OPIOID μ receptor effects

Sedation

Constipation

Analgesia

Respiratory depression

Euphoria

Dependency



"SCARED"
of μ (meow)



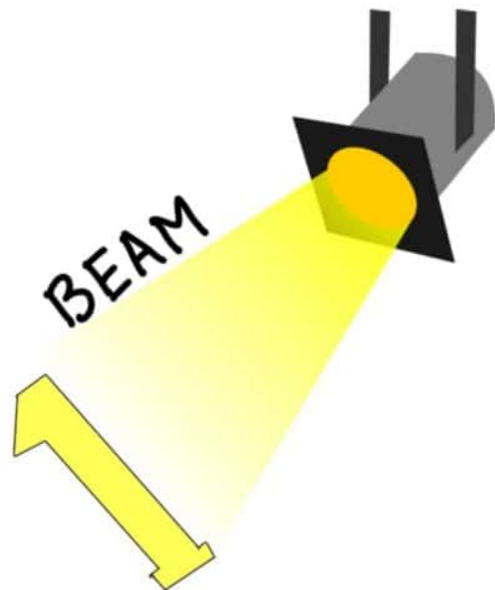
Beta-1 Selective Blockers

BISOPROLOL

ESMOLOL

ATENOLOL

METOPROLOL





Anticholinergic effects



Can't **Pee**

Can't **See**

Can't **Spit**

Can't **Shit**

Other Mnemonic

- **Blind as a bat**
(dilated pupils)
- **Red as a beet**
(vasodilation/flushing)
- **Hot as a hare**
(hyperthermia)
- **Dry as a bone**
(dry skin)
- **Mad as a hatter**
(hallucinations/agitation)

SSRI's Side-effects

www.medinaz.com

Stomach upset

Sexual dysfunction

Serotonin syndrome

3 "S"





CARDIOVASCULAR SYSTEM

@NEETPGSURGEON



Drugs used for the t/t of Hypertension in Pregnancy



Better = β -blocker
Mother = Methyl dopa
Care = Clonidine
During = Dihydropyridine
Hypertensive = Hydralazine
Pregnancy = Prazosin

Drugs for Bradycardia and Hypotension



I **D** **E** **A**

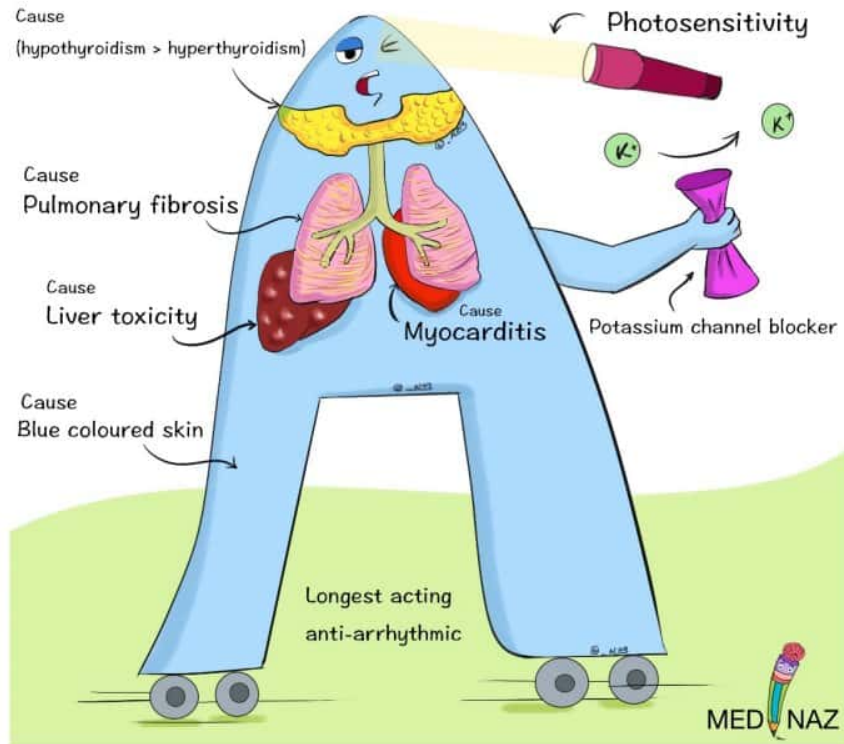


Isoprenaline
Dopamine
Epinephrine
Atropine Sulfate



Amiodarone

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Amiodarone side-effects

www.medinaz.com

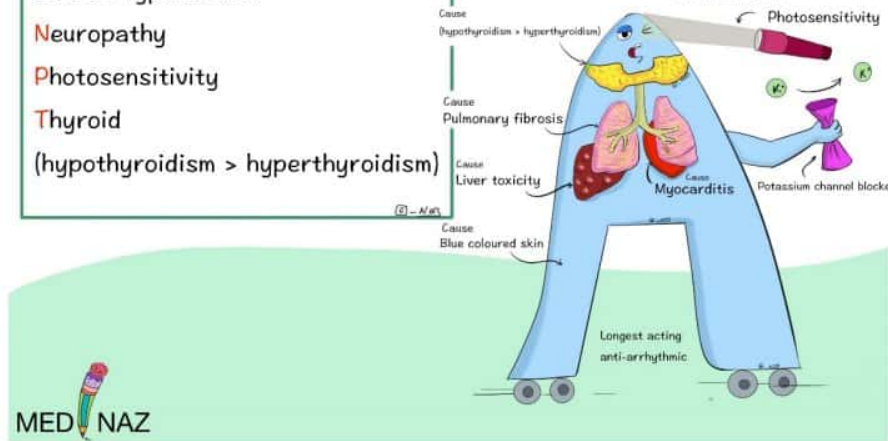
- Pulmonary fibrosis
- Corneal microdeposits
- Blue coloured skin
- Myocarditis
- Liver toxicity
- Alpha receptor block causes hypotension
- Neuropathy
- Photosensitivity
- Thyroid (hypothyroidism > hyperthyroidism)

"Potassium Channel Blocker Makes Liver And Nerve Photo Toxic"

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Amiodarone

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Antiarrhythmic class 1A

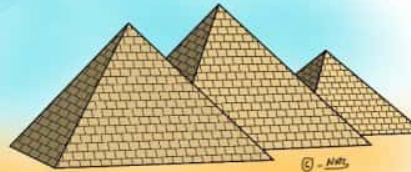
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Quinidine
Procainamide
Disopyramide

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“Queen Proclaims Diso’s Pyramid”



© - NAB

Antiarrhythmic Class 1B

www.medinaz.com

Phenytoin
Lidocaine
Mexiletene
Tocainide

© - NAB

* shorten repolarization

“Preferably I Buy Lido’s
Mexican Toffee”

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Antiarrhythmic Class IC

www.medinaz.com

Moricizine
Flecainide
Propafenone

“More Fries Please !!
I Can eat”



Antiarrhythmic drugs Class III

www.medinaz.com

Sotalol
Amiodarone
Dofetilide

“SAD”





Antiarrhythmic drugs Class III

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Sotalol
Amiodarone
Dofetilide

“So Am i Do”



Beta 2 Agonists

Salmeterol
Metaproterenol
Aluterol
Ritodrine
Terbutaline

“SMART”



 naz_aratomy

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Beta blocker members

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T he	→	T imolol
N	→	N adolol
E	→	E smolol
P	→	P indolol
A	→	A tenolol
L	→	L abetalol
Prime	→	P ropranolol
Minister	→	M etoprolol



Beta-blockers: main contraindications

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Asthma
Block (heart block)
COPD
Diabetes mellitus
Electrolyte (hyperkalemia)

“**ABCDE**”



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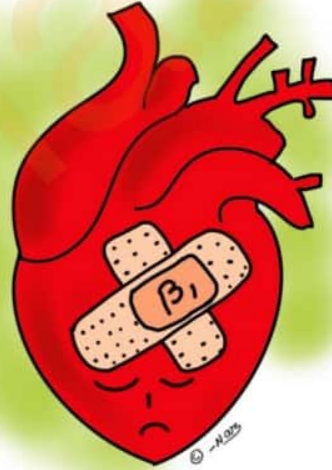


Cardioselective Beta-blockers

Nebivolol
Betaxolol
Bisoprolol
Acebutolol
Esmolol
Atenolol
Metoprolol
Celiprolol

© - Naz

"New Beta Blockers Acting
Exclusively At Myo Cardium"



© - Naz

Dilated cardiomyopathy

www.medinaz.com

Caused by:

Doxorubicin
Daunorubicin

© - Naz

Prevent with:

Dexrazoxane

“D”



© - Naz



Contraindications of Digitalis

www.medinaz.com

Carditis (myocarditis)
Increased calcium
WPW syndrome
Hypokalemia & **H**ypomagnesemia
Elderly
AV block (partial)
Renal failure
Thyroid (hyper or hypo)

“**C**ontraindicated
In **W**eak **H**EART”



Hyperglycemia causing Drugs

www.medinaz.com

Tacrolimus
Protease inhibitors
Niacin
HCTZ
Corticosteroids

“**T**he **P**eople **N**eed
Hard **C**andies”





Management of PSVT

(Paroxysmal SupraVentricular Tachycardia)

Adenosine > **Beta (β) blocker**

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

www.medinaz.com

A > B > C > D



DRUGS CAUSING TORSADES DE POINTES



Cisapride

Haloparidol

Erythromycin

Amiodarone, Arsenium

Procainamide



Drugs cause Torsades de pointes

Apache



Amiodarone
Procainamide
Arsenium
Cisapride
Haloperidol
Erythromycin

© - Naz

Adverse Effects of Beta Blockers

"Bald Fish"

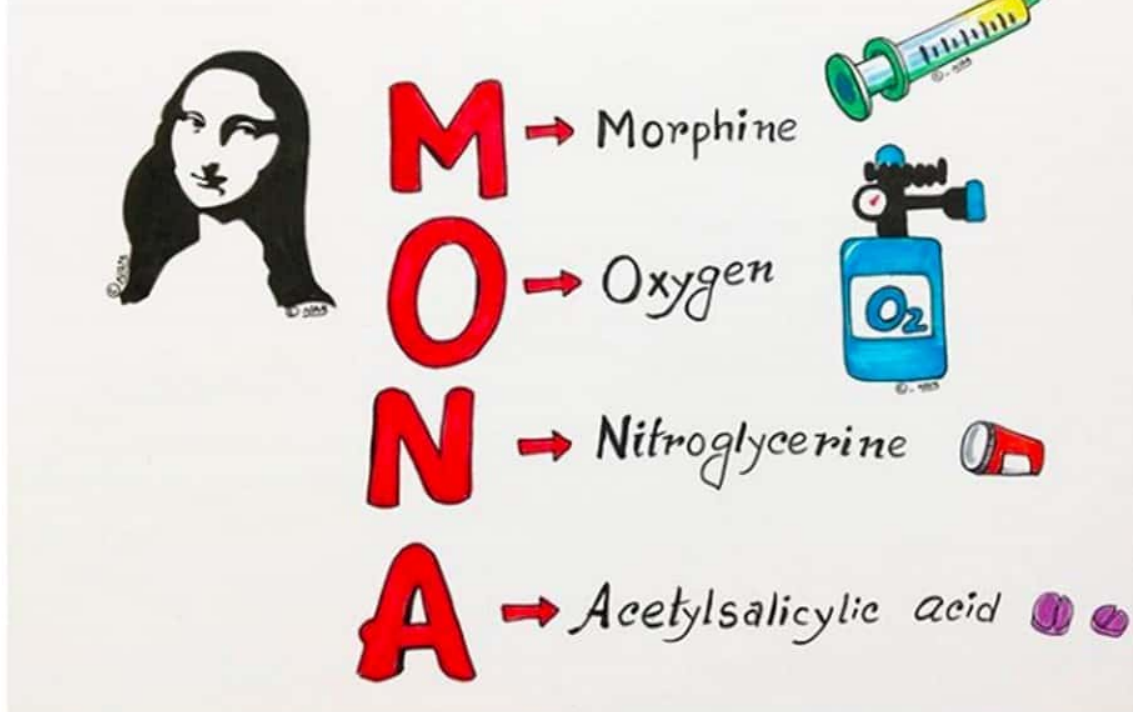


Bronchoconstriction
Bradycardia
Arrhythmias
Lethargy
Disturbance in glucose metabolism
Fatigue
Insomnia
Sexual dysfunction
Hypotension

© - Naz



Immediate treatment of Myocardial Infarction



MORPHINE

To reduce pain and anxiety, also has other beneficial effects as a vasodilator and decreases the workload of the heart by reducing preload and afterload

OXYGEN

To provide and improve oxygenation of ischemic myocardial tissue; enforced together with bed rest to help reduce myocardial oxygen consumption. Given via nasal cannula at 2-4 L/min.

NITROGLYCERIN

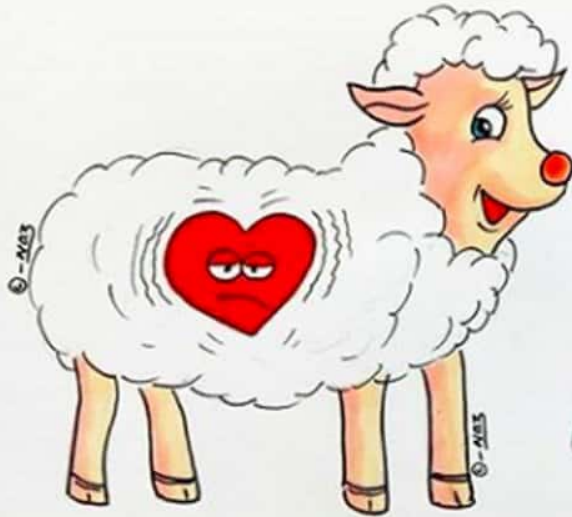
Cause vasodilation and increase blood flow to the myocardium

ASPIRIN

Prevents the formation of Thromboxane A₂ which causes platelet aggregation and arterial constriction. Earlier the patient receives ASA after symptom onset, the greater the potential benefit



Ventricular Trachycardia treatment



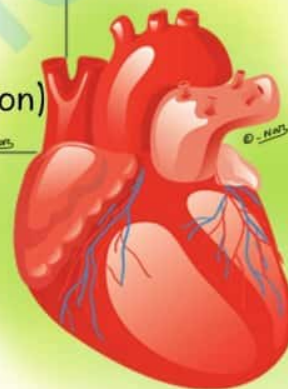
L = Lidocaine
A = Amiodarone
M = Mexiltene/Magnesium
B = Beta-blocker

Supraventricular Tachycardia T/t

www.medinaz.com

Adenosine
Beta blocker
Calcium channel blocker
Digoxin
Excitation (vagal stimulation)

“**ABCDE**”





KIDNEY

@NEETPGSURGEON



ACE inhibitor side effects

- C**ough
- A**ngioneurmtic edema
- P**roteinuria
- T**aste change
- T**eratogenic
- O**ther (fatigue)
- P**otassium increased
- R**ash
- I**ncreased Renin
- L**ow BP

Loop Diuretics Side effects

- O**totoxicity
- H**ypokalemia
- D**ehydration
- A**llergy
- N**ephritis (interstitial)
- G**out

“OH DANG”
it's a Loop



Osmotic Diuretics

www.medinaz.com

Mannitol

Urea

Glycerol



Potassium sparing Diuretics



Spiroⁿolactone

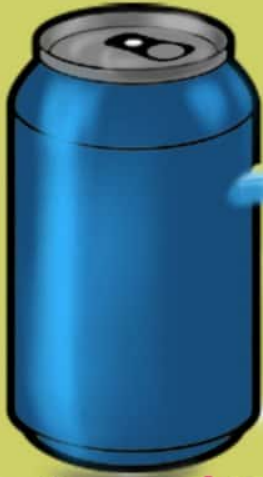
EPlerenone

A^miLoride

T^riamterene



DIURETICS



©-NAZ

Leak Over The CAN

Loop diuretics

Osmotics

Thiazides

Carbonic anhydrase inhibitors

Aldosterone inhibitors

Na⁺ channel blockers

©-NAZ



CENTRAL NERVOUS SYSTEM

@NEETPGSURGEON



Uses of Anti-depressants



- D** = Depression
- E** = Enuresis
- P** = Phobia
- R** = Recurrent panic attacks
- E** = Eating disorders (**Bulimia**)
- S** = Smoking Cessation
- S** = Stress disorder
- I** = Impulse disorder
- O** = Obsessive Compulsive disorder
- N** = Neuropathic pain

Migraine Prophylaxis Drugs



- V**ery → **V**erapamil
- V**olatile → **V**alproic Acid
- P**harmaco → **P**izotifen
- A**gents → **A**mitriptyline
- F**or → **F**lunarizine
- M**igraine → **M**ethysergide
- P**rophylaxis → **P**ropranolol



Use of Antipsychotics

www.medinaz.com

ANTI-emetics

PSYchosis

CHOrea

TIC disorders

(gille de la torrette syndrome)

“ANTIPSYCHOTIC”



Short Acting Benzodiazepines

www.medinaz.com

Short acting

Triazolam, Temazepam

Oxazepam

Lorazepam

Estazolam

“STOLE”





Benzodiazepine withdrawal symptoms

www.medinaz.com

Insomnia
Sweating
Tremor
Anorexia
Nightmares
Dysphoria, Dizziness



“I can't **STAND**”

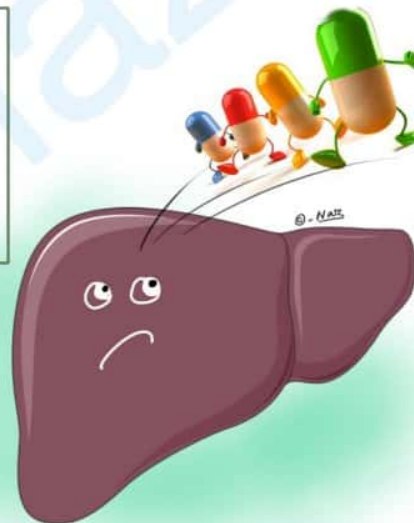


Benzodiazepines undergo Extra-hepatic metabolism

www.medinaz.com

“Outside **T**he **L**iver”

Oxazepam
Temazepam
Lorazepam





Carbamazepine side-effects

www.medinaz.com

Hypnatremia, Hepatotoxic
Eosinophillia
Agranulocytosis, Ataxia, Aplastic anemia
Diplopia
SJS, Splenomegaly

© - MED

“HEADS”



Clozapine Side-effects

www.medinaz.com

Mycocarditis
Agranulocytosis
Seizures
Sialorrhea
Gain (weight)

© - MED

“MASS GAIN”



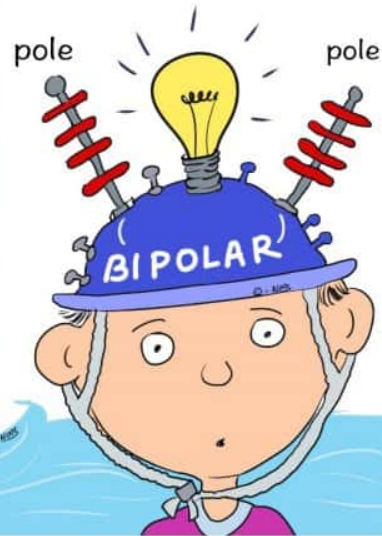


Drugs used in Bipolar Disorder

www.medinaz.com

Valproate
Oxcarbazepine,
Carbamazepine
Lithium, Lamotrigine
Topiramate
Antipsychotics
(atypical > typical)
GabapEntine

“VOLTAGE”



Drugs used in Trigeminal neuralgia

www.medinaz.com

Lamotrigine
Gabapentin
Baclofen
Topiramate
Carbamazepine (DOC)
Phenytoin

“LGBT Cap”





Drugs used for Myoclonic Seizures

www.medinaz.com

Levetiracetam
Lamotrigine
Topiramate
Valproic acid (**DOC**)
Benzodiazepines
Zonisamide

© - NMS

“Let’s Lock The
Very Bad Zombie”

© - NMS



Opioids Effects

www.medinaz.com

Bradycardia & Hypotension
Anorexia
Diminished pupillary size
Analgesia
Miosis
Euphoria
Respiratory depression
Increase smooth muscle activity
(biliary track constriction)
Constipation
Ameliorate cough reflex
Nausea & Vomiting
Sedations

© - NMS

“BAD AMERICANS”

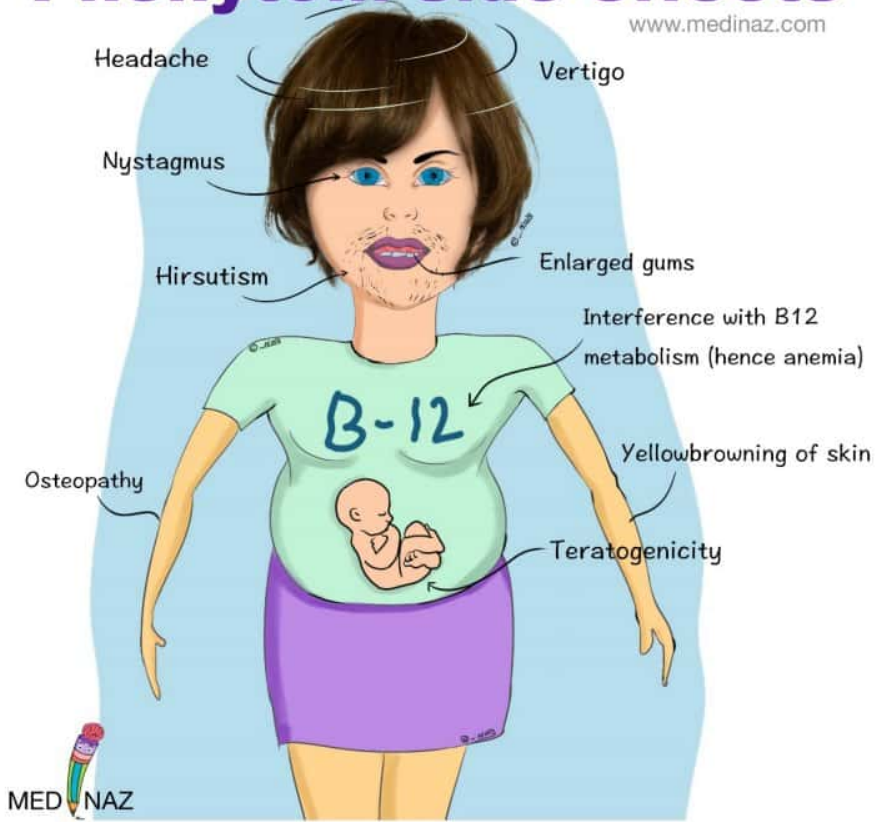
© - NMS





Phenytoin side-effects

www.medinaz.com



phenytoin side effects



- P** = P-450 drug interactions
- H** = Hirsutism
- E** = Enlarged gums (gingival hyperplasia)
- N** = Nystagmus
- Y** = Yellow discoloration of skin
- T** = Teratogenic
- O** = Osteomalacia
- I** = Interfere with folate/B12 absorption
- N** = Neuropathies: Vertigo, Ataxia



Morphine side effects



Miosis
Out of it (sedation)
Respiratory depression
Pneumonia (Aspiration)
Hypotension
Infrequency (constipation, Urinary retention)
Nausea
Emesis

SSRI's

www.medinaz.com

Escitalopram

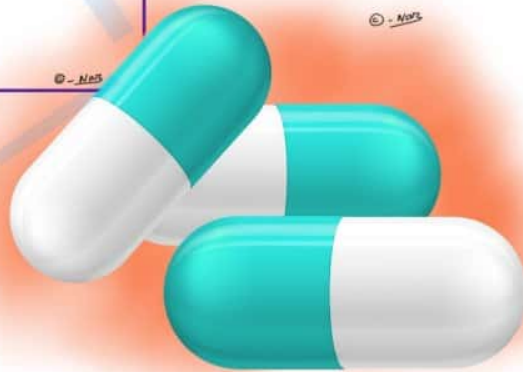
Fluoxetine, Fluvoxamine

Sertoline

Paroxetine

Citalopram

“Effective For Sadness,
Panic, Compulsions”





ANAESTHESIA

@NEETPGSURGEON

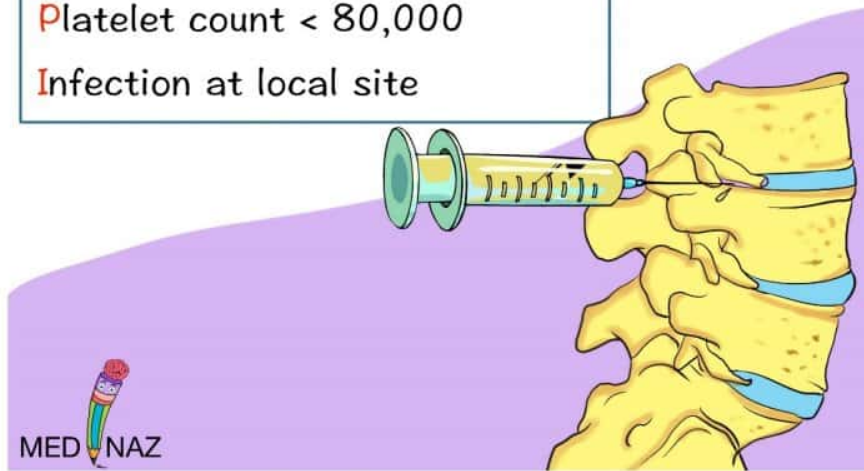


Contraindication of Spinal & Epidural anaesthesia

www.medinaz.com

- Stenotic valvular heart disease
- Hypovolemia
- Anticoagulation therapy
- Raised ICP
- Platelet count < 80,000
- Infection at local site

“SHARP
Injection”



Factors decreasing MAC

www.medinaz.com

- | | |
|--------------------------------|--|
| H Hypoxia | A Age |
| H Hypercarbia | A Anemia |
| H Hypotension | A Anesthetic agents (IV, Local, Opioids, Sedatives) |
| H Hypothermia | A Acute alcohol intake |
| H Hypothyroidism | T Trimester of pregnancy |
| E Electrolyte imbalance | |
| Hyponatremia | |
| Hypercalcemia | |
| Hypermagnesemia | |

“HEAT”



MED NAZ

MED NAZ



Contraindication to use of LA with Epinephrine

www.medinaz.com

Block of areas with end arteritis
(e.g. Digital block)

Hypertension, Hyperthyroidism,
with Halothane

Intravenous regional anaesthesia

Myocardial ischemia

“BHIM”



MED NAZ

Contraindication to use of LA with Epinephrine

www.medinaz.com

Block of areas with end arteritis
(e.g. Digital block)

Hypertension, Hyperthyroidism,
with Halothane

Intravenous regional anaesthesia

Myocardial ischemia

“Ban HIM”



MED NAZ

MED NAZ

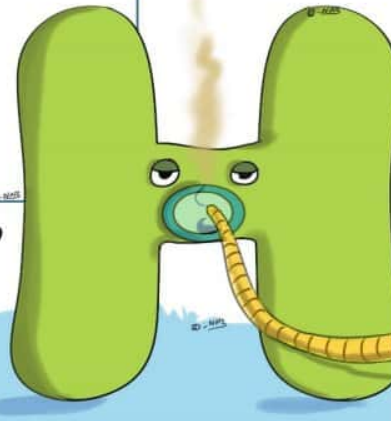


HALOTHANE

www.medinaz.com

High blood gas and lipid blood partition coefficient
Amber colored bottle for storage
Lowers blood pressure
Obstetric use as tocolytic in internal version & manual removal of placenta
Thymol used as preservative
Hyperthermia (malignant) and hepatotoxicity
Asthma safe for use
No analgesia
Epinephrine's effect is increased in heart

“HALOTHANE”

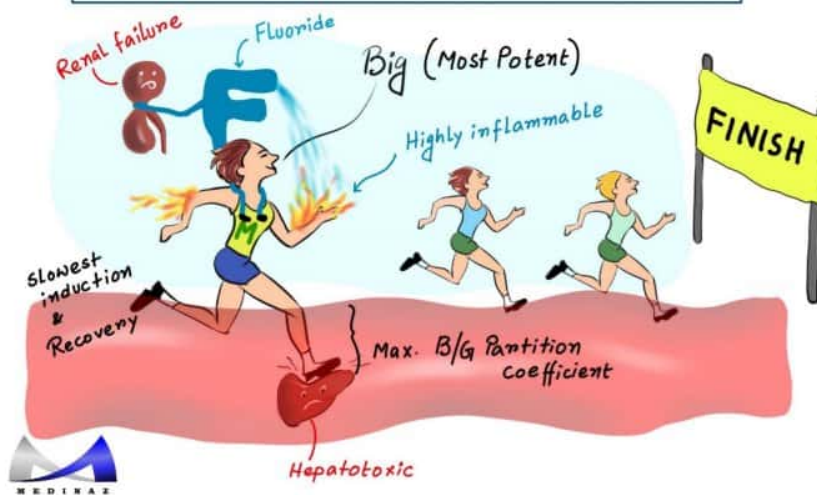


Methoxyflurane

www.medinaz.com

“METH”oxyflurane

Maximum potency, Maximum metabolized
Easily catches fire and hence combined with fluoride
Tubes soluble
Hepatotoxic, Highest B/G partition coefficient



MED NAZ

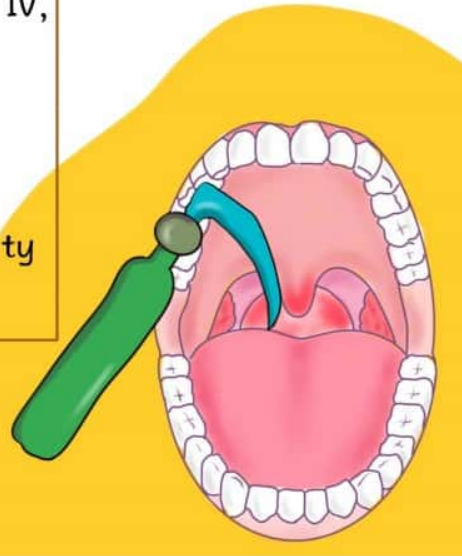


Indicator of difficult Laryngoscopy / Intubation

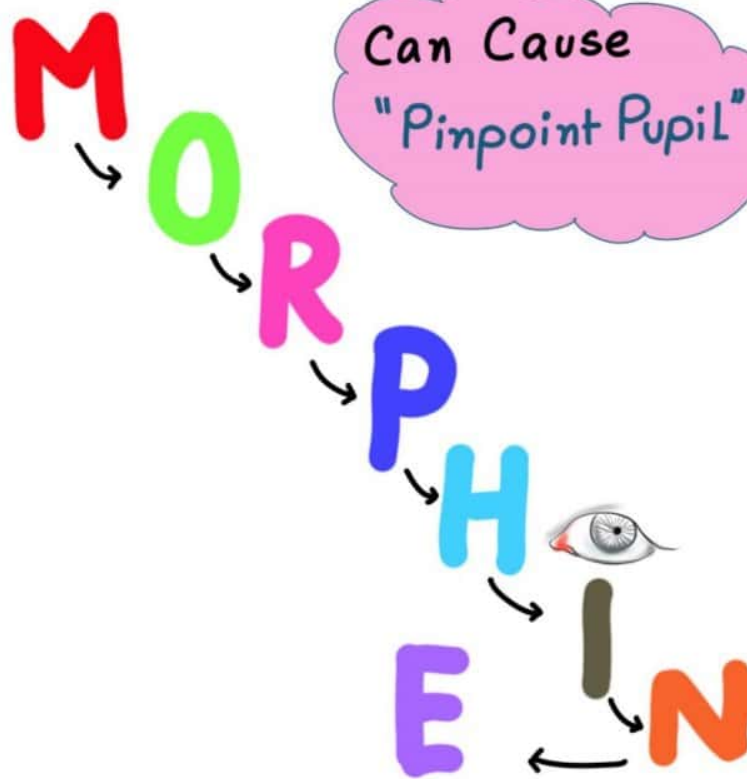
www.medinaz.com

Short thyromental distance, short neck
Mallampati class III & IV, mouth opening small
Arched, high palate
Long upper incisors
Limited cervical mobility
Prominent overbite

“SMALL Palate”



MED NAZ



MED NAZ

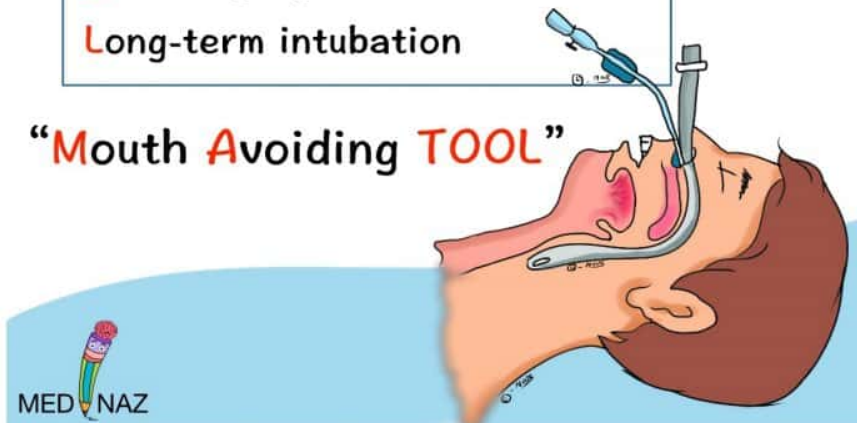


Nasal Intubation indications

www.medinaz.com

- Mandibular fracture
- Awake intubation
- TMJ dysfunction
- Obstructing mass in oral cavity
- Oral surgery
- Long-term intubation

“Mouth Avoiding TOOL”



MED NAZ



CO caine

CO nstricts blood vessels

unlike other local anesthetics
which cause vasodilation

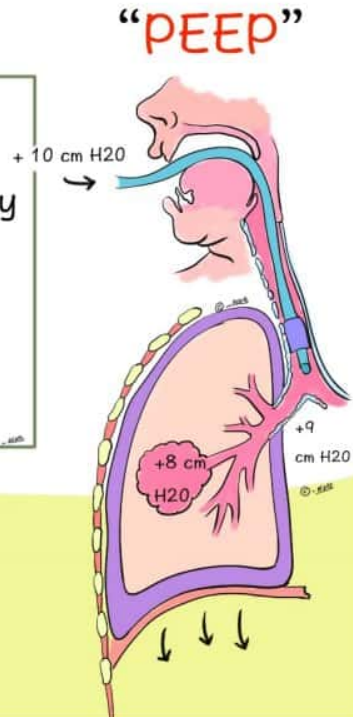
MED NAZ



Positive End-Expiratory Pressure (PEEP) Uses

www.medinaz.com

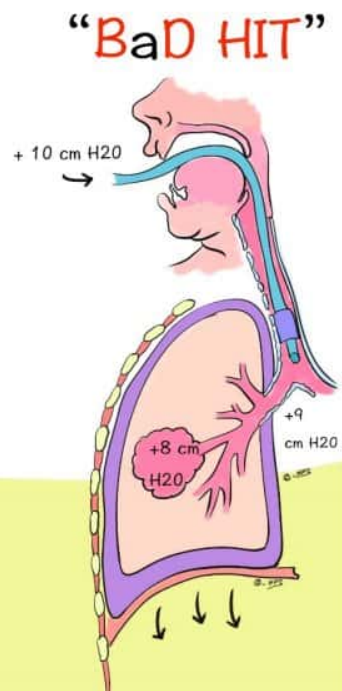
Pulmonary edema
Emergency thoracic surgery
Emergency in ARDS
Prevent atelectasis,
 $\text{PaO}_2 < 60\text{mmHg}$



Positive End-Expiratory Pressure adverse effects

www.medinaz.com

Barotrauma
Decrease preload, CO,
space ventilation
Hypotension
Increased ICP, intra
thoracic pressure
Tension pneumothorax

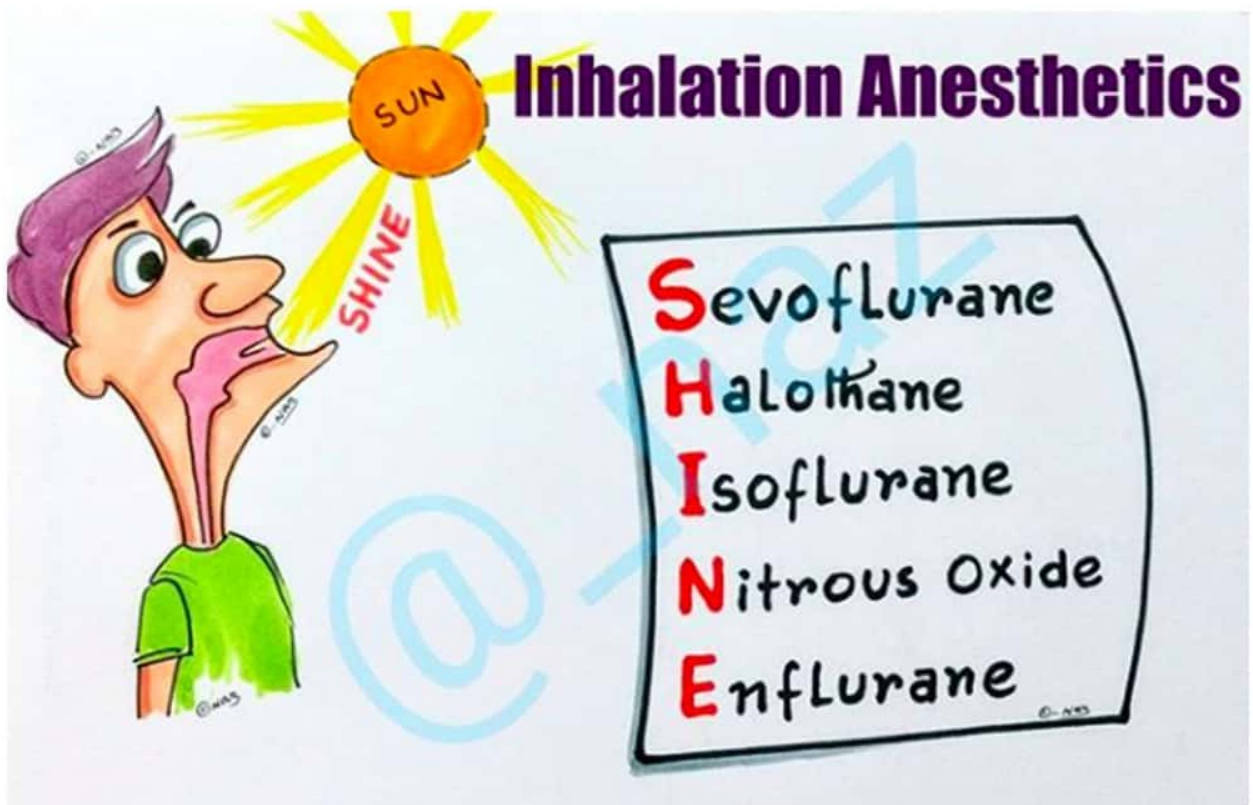




XENON

www.medinaz.com

- Xtremely safe agent
- Elevated MAC(71), i.e. low potency
- NMDA antagonist
- Onset of anaesthesia is fastest, Oxygen carrier
- Nausea & vomiting





Lidocaine Toxicity

M → MUSCLE twitching
• Tremors



A → Altered Central Nervous System
• Drowsiness
• Dizziness
• Restlessness
• Confusion
• Arrhythmias



S → Slurred or Difficult Speech
• Paresthesia
• Numbness of Lips/Tongue



S → Seizures
• Convulsions
• Respiratory depression
• Respiratory & Cardiac Arrest





HEMATOLOGY

@NEETPGSURGEON

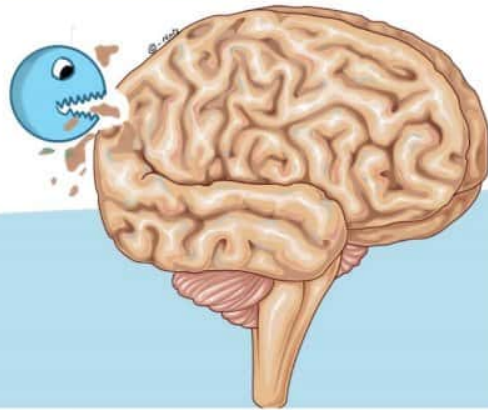


Contraindications to Fibrinolysis

www.medinaz.com

Brain tumor and aneurysms
Recent ischemic stroke & trauma
Aortic dissection
Intracranial haemorrhage
Noncompressible vascular punctures

“**BRAIN**”



Heparin side-effects & contraindications

www.medinaz.com

Side-effects

Alopecia
Hyperkalemia
Haemorrhage
Osteoporosis
Thrombocytopenia

Contraindications

Thrombocytopenia
Endocarditis
Alcoholics
Cirrhosis of liver
Hypertension
pEptic ulcer
Renal failure

“**A HOT TEACHER**”

Heparin





Megaloblastic Anemia causing Drugs

www.medinaz.com

Methotrexate
AZT = zidovudine
Phenytoin
Liver disease
Ethanol

“MAPLE”

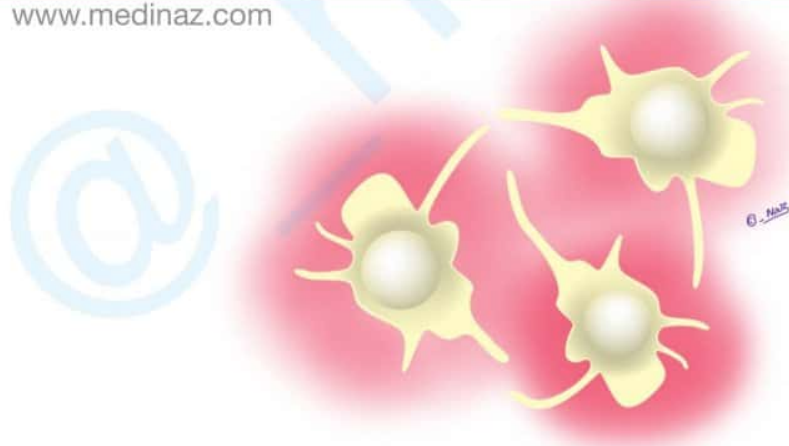


PGI₂ Vs THA₂

PGI₂ **I**hibits platelet aggregation

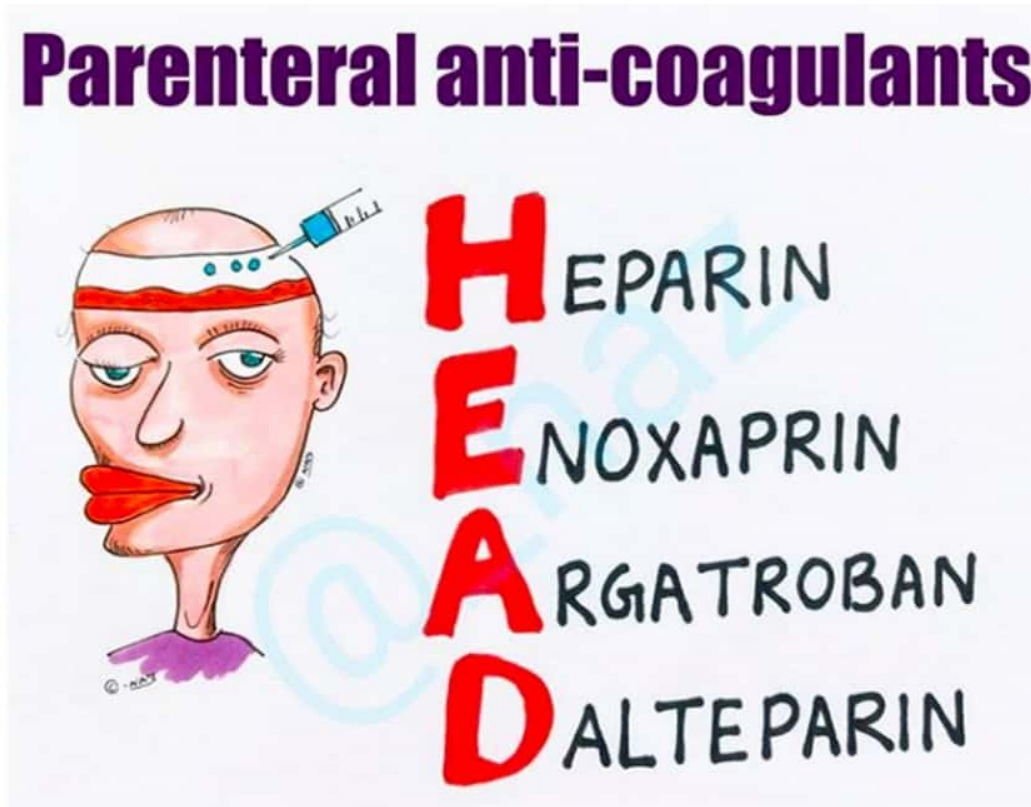
TXA₂ is a potent platelet **A**ggregator

www.medinaz.com





Parenteral anti-coagulants



Thrombolytic Agents

www.medinaz.com

Urokinase
Streptokinase
Alteplase (tPA)

“USA”





NSAIDS

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Aspirin Side-effects

www.medinaz.com

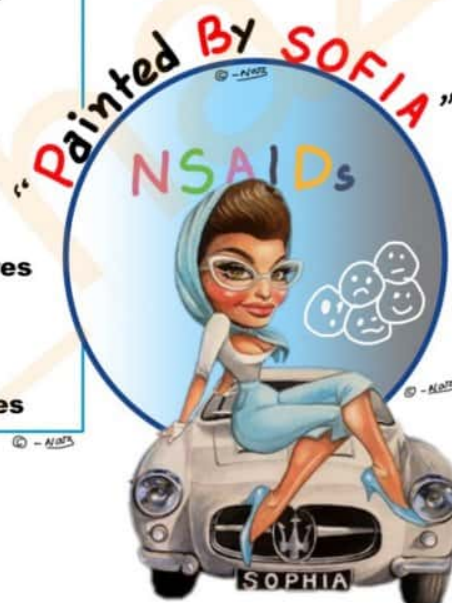
Allergy like reactions (Urticaria)
Susceptibility to bleeding
Peptic ulcer
Idiosyncratic reactions
Reye's syndrome
ringing in ear (Tinnitus)
Nephropathy

“ASPIRIN”



NSAIDs Classification

Propionic acid derivatives
Pyrrole derivatives
Pyrazolone derivatives
Benzoxazocin derivatives
Salicylates
Oxicam derivatives
meFenamic acid derivatives
Indol derivatives
Aryl acetic acid &
Anthranilic acid derivatives





NSAIDs Contraindication

Bleeding
Asthma
Renal disease
Stomach (peptic ulcer)

"BARS"



NSAIDs

(Beneficial effects of inhibition of prostaglandin synthesis)

Analgesia
Antipyretic
Anti-inflammatory
Antithrombotic
Arteriosus
(Close patent ductus arteriosus)

5 'A's



GASTROINTESTINAL TRACT

@NEETPGSURGEON



Aluminum hydroxide causes **Constipation**
Magnesium hydroxide causes **Diarrhoea**

Aluminum hydroxide
Alu**minum** amount of feces

Magnesium hydroxide
Mg²⁺ = **M**ust **g**o **t**o the bathroom.



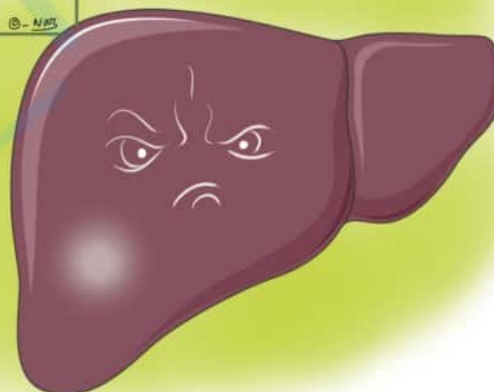
MED  NAZ

Hepatic Necrosis Causing Drugs

www.mednaz.com

Valproic acid
Acetaminophen
Halothane

"**V**ery **A**ngry **H**epatocytes"



MED  NAZ



HMG-CoA reductase inhibitors

www.medinaz.com

Side-effects:

Hepatotoxicity
Myositis (rhabdomyolysis)

© - NMS

Contraindications:

Girl during pregnancy
Growing children

© - NMS

Interactions:

Coumarin
Cyclosporine

“HMG-CoA”



Misoprostol Vs Indomethacin

www.medinaz.com

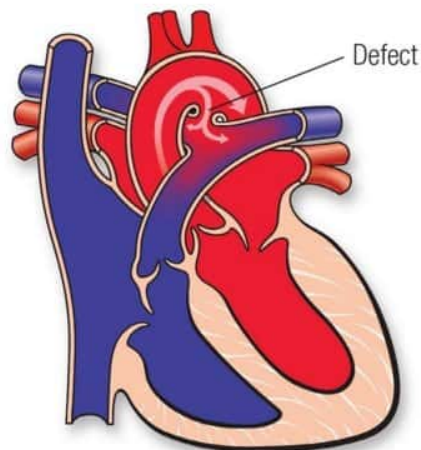
MisOprostol

Open PDA

Patent Ductus Arteriosus

IndomethaCin

Close PDA



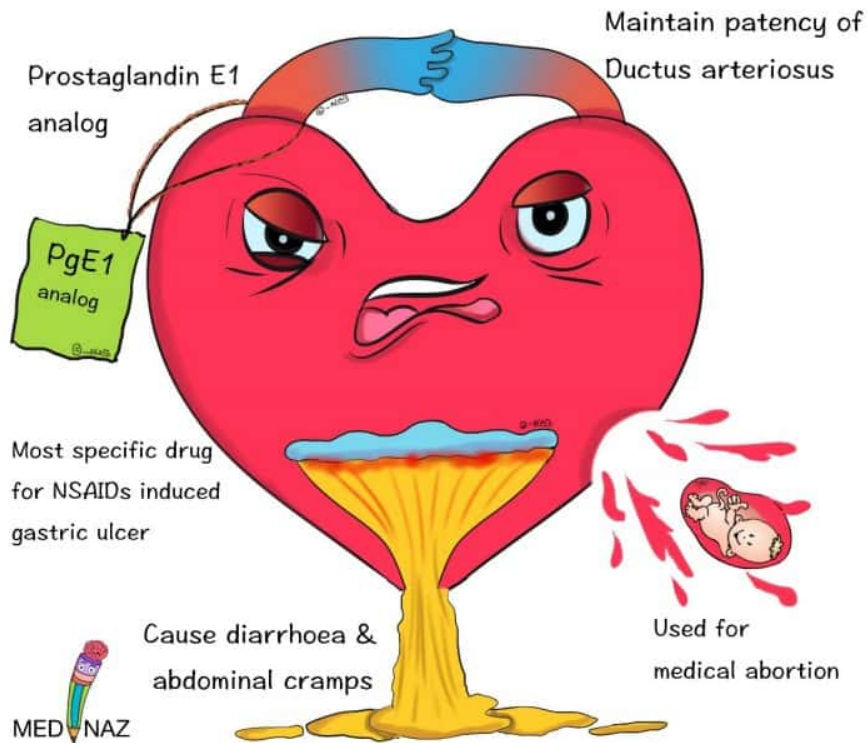
MED NAZ

MED NAZ



Misoprostol

www.medinaz.com



Misoprostol Pharmacology

www.medinaz.com

Mis O Pro Sto L

Miss carriage

Contraindicated in women of childbearing potential (abortifacient)

Open PDA

Protect stomach against NSAIDs

PGE1 analog
Increase production and secretion of gastric mucous barrier,
Decrease acid production.



MED NAZ

MED NAZ



Serotonin Syndrome

www.medinaz.com

Shivering

Hyperreflexia + myoclonus

Increased temperature ($> 41^{\circ}\text{C}$)

Vital signs instability

(HR \uparrow , RR \uparrow , BP \downarrow)

Encephalopathy

Restlessness

Sweating

“SHIVERS”





AUTACOIDS AND IMMUNOMODULATORS

@NEETPGSURGEON



Anti-TNF drugs

www.medinaz.com

GoLimumab

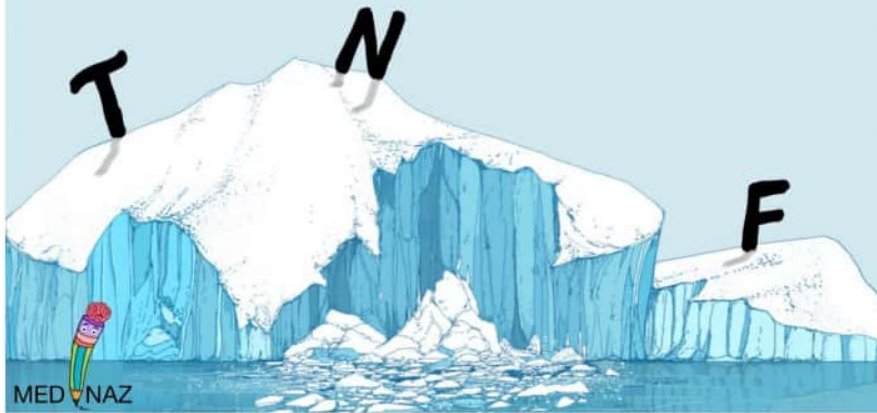
Adalimumab

Certolizumab

Infiximab

EtaneRcept

“GLACIER”



Antihistaminics given only by topical route

www.medinaz.com

Dibenzoxepins

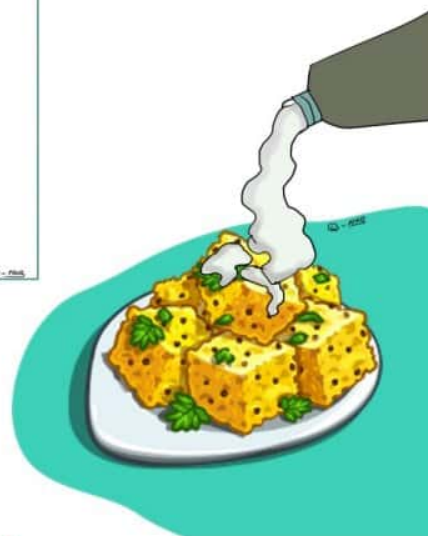
Olpatidine

Ketotifen

Levocarbastine

Azelastine

“DOKLA”



MED NAZ

MED NAZ



Antihistaminics

(Given only by topical route)

www.medinaz.com

Ketotifen
Levocarbastine
Olpatidine
Azelastine
Dibenzoxepins

“Killing LOAD”



Uses of H1 Blockers (1st generation) Based on Anti-cholinergic properties

Parkinsonism
Acute muscular dystonia
Common cold
Prophylaxis of motion sickness

www.medinaz.com

“Process Anti
Cholinergic Properties”





HMG-CoA reductase inhibitors (statins):

side effects, contraindications, interactions

www.medinaz.com

Side effects:

Hepatotoxicity

Myositis [aka rhabdomyolysis]

Contraindications:

Girl during pregnancy/ Growing children

Interactions:

Coumarin/ Cyclosporine

“HMG-CoA”



Thalidomide uses

www.medinaz.com

Sarcoidosis

CLL, Crowe Fukase syndrome

Pancreatic cancer, Pyoderma gangrenosum

Renal cell cancer

Oro-ocular genital syndrome (Bechet's disease)

GVHD

cRohn's disease

AIDS related aphthous ulcer & wasting

Multiple myeloma, Melanoma

Myelodysplasia

ENL

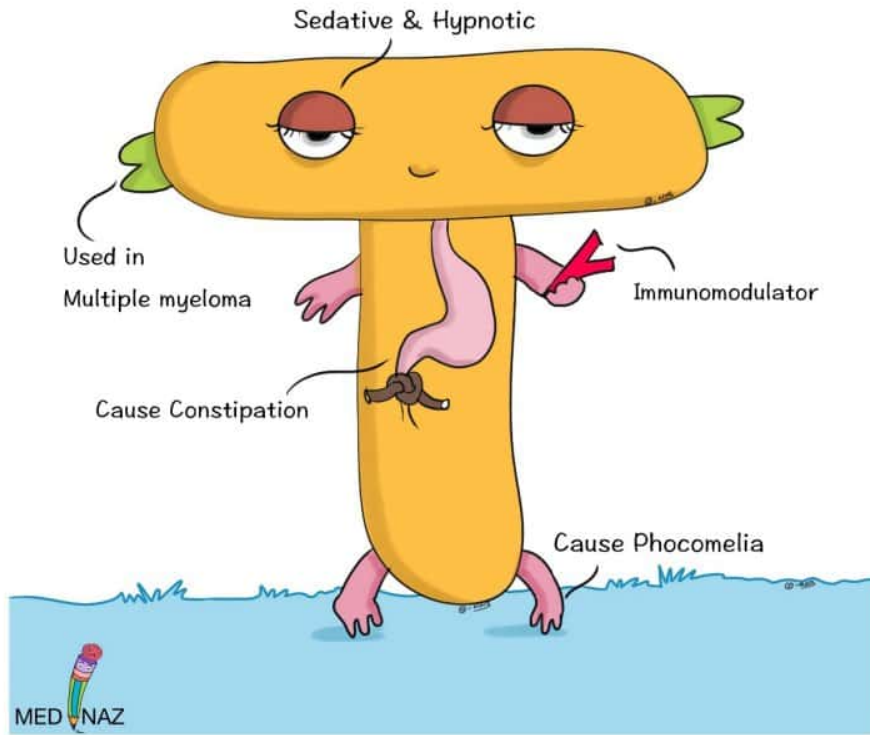
“Search Computer PROGRAMME”





Thalidomide

www.medinaz.com



Thalidomide side-effects

www.medinaz.com

Sedation

PhOcomelia, Peripheral neuropathy

Rash

Thrombosis

Constipation



MED NAZ



ANTIMICROBIAL AGENTS

@NEETPGSURGEON



Penicillinase resistant Penicillins

www.medinaz.com



“CONDOM”

- C**loxacilin
- O**xacillin
- N**afcillin
- D**icloxacillin
- O**xacillin
- M**ethicillin

Instagram naz_artonomy

Acid resistant Penicillin

www.medinaz.com



- V** = **V**- Penicillin
- O** = **O**xacillin
- D** = **D**icloxacillin
- K** = **K**(c)Loxacillin
- A** = **A**moxylin & Ampicillin

MED NAZ

Instagram naz_artonomy

MED NAZ



Anti-Pseudomonal Penicillin

Piperacillin

Ticarcillin

Carbenicillin



Cefoperazone

www.medinaz.com

Pseudo people are not allowed in my **zone**

Pseudomonas



Third generation Cephalosporin active against **pseudomonas**





Cephalosporin Generations

1ST Generation

Cefazoline *cef*
Cefalexin
Cefalothin
Cefaloridine
Cefadroxil

2ND Generation

Cefuroxime *Me*
Cefoxitin *One*
Cefmetazole *Ten*
Cefomandole
ex- Cefaclor

3RD Generation

Cefoperazone
Ceftriaxone
Cefotaxime
Ceftizoxime
Cefpodoxime
Ceftazidime
Ceftibuten
Cefexime
✓ Moxalactam

4th Generation

Cefepime *Pi*
Cefpirome
no 'a'

5th Generation

Ceftibiprole
Ceftaroline
no 'a'

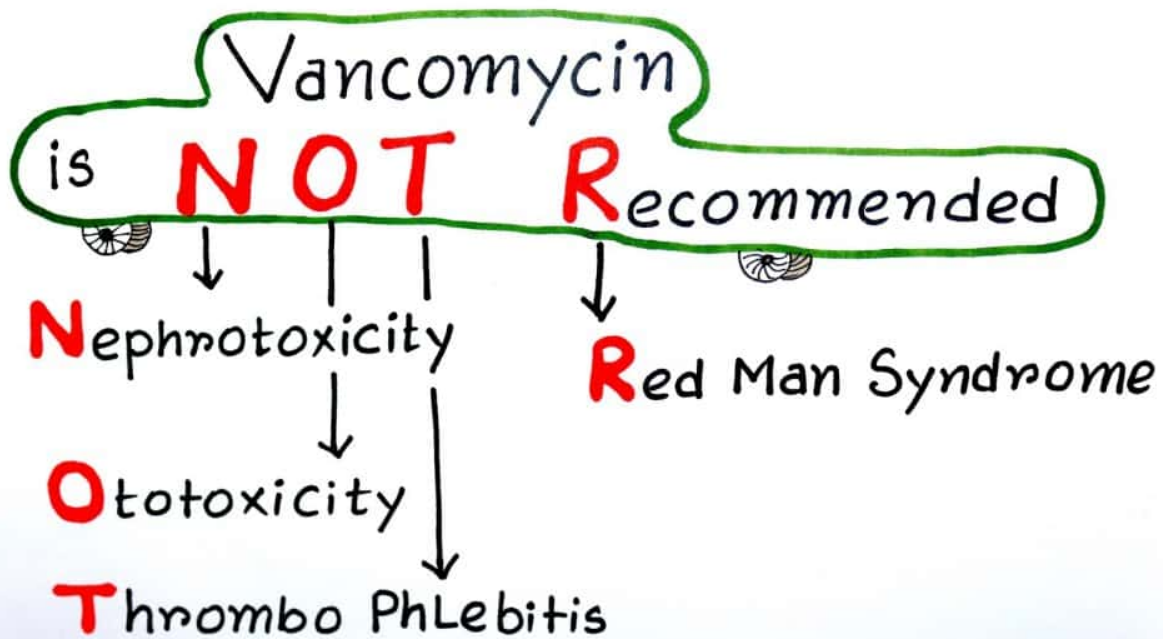
Amphotericin B Toxicities

www.medinaz.com

Anemia
 Muscle spasm
 Phlebitis
 Headache, Hypotension, Hypokalemia
 Thrombocytopenia
 Emesis, Encephalopathy

“AMPHoTEricin”





Quinolones side effects

The → **T**endinitis
Good → **G**I discomfort
Clinical → **C**helation of ions
Practice → **P**hototoxicity





Doxycycline is DOC for..

www.medinaz.com

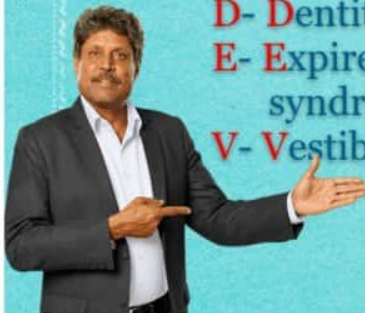
Mycoplasma hominis
(urogenital)
Plague prophylaxis
Rickettsia
Borrelia, Brucella
Chlamydia, Cholera

“My Pink RBC”



TETRACYCLINE Adverse Effects

- K- Kidney failure (contraindicated)**
- A- Antianabolic effect**
- P- Photosensitivity**
- I- Insipidus (Diabetes)**
- L- Liver toxicity**
- D- Dentition and Bone defects**
- E- Expired drug can cause Fanconi's syndrome**
- V- Vestibular dysfunction**





Chloroquine Uses

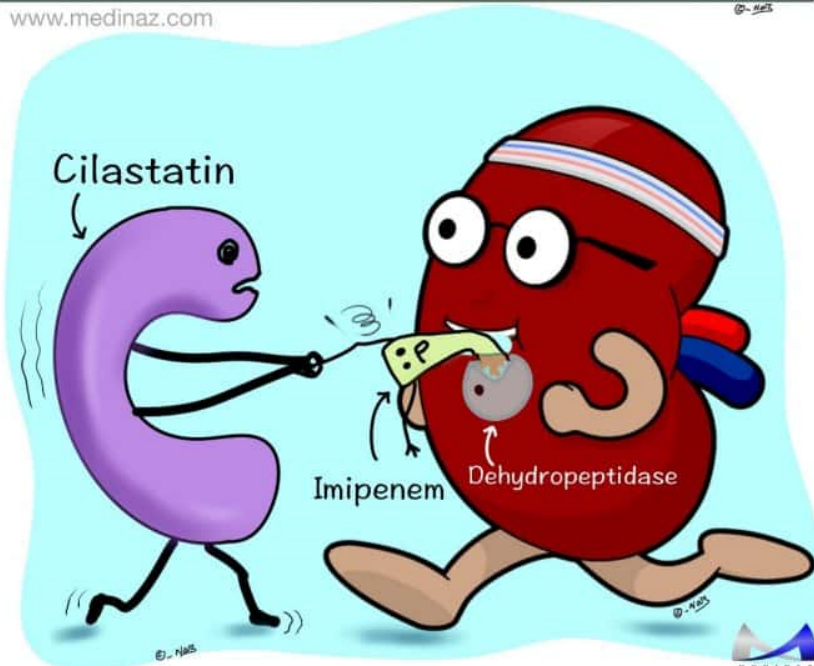


My RED LIP

- Malaria**
- Rheumatoid arthritis**
- Extra intestinal amoebiasis**
- DLE**
- Lepra reaction**
- Infectious mononucleosis**
- Photogenic reactions**

Combination of **Cilastatin** & **Imipenem** inhibits **metabolism** of Imipenem and increases it's effect

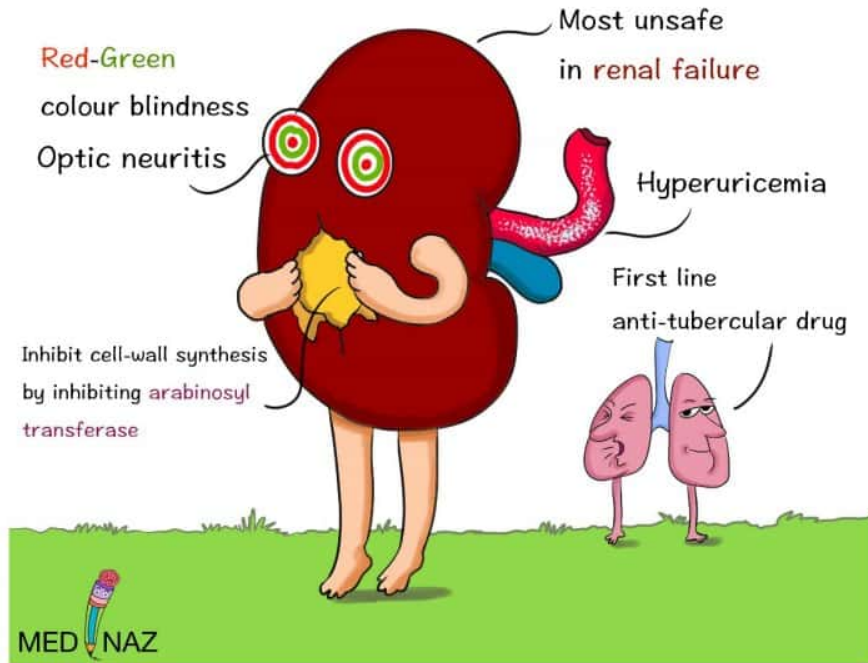
www.medinaz.com





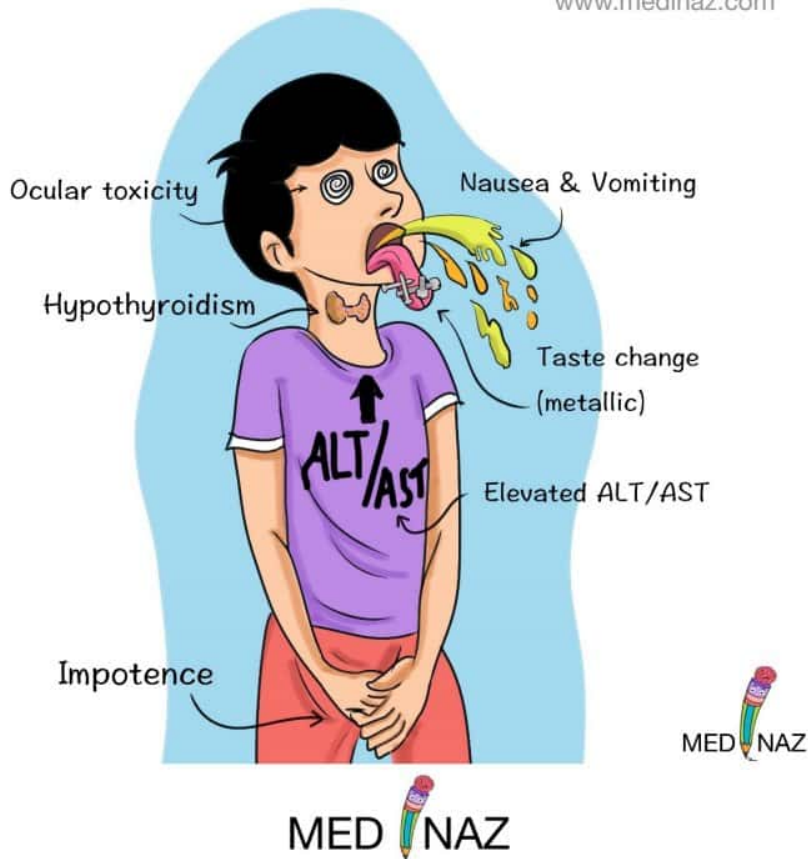
Ethambutol

www.medinaz.com



Ethionamide side-effects

www.medinaz.com





Imipenem

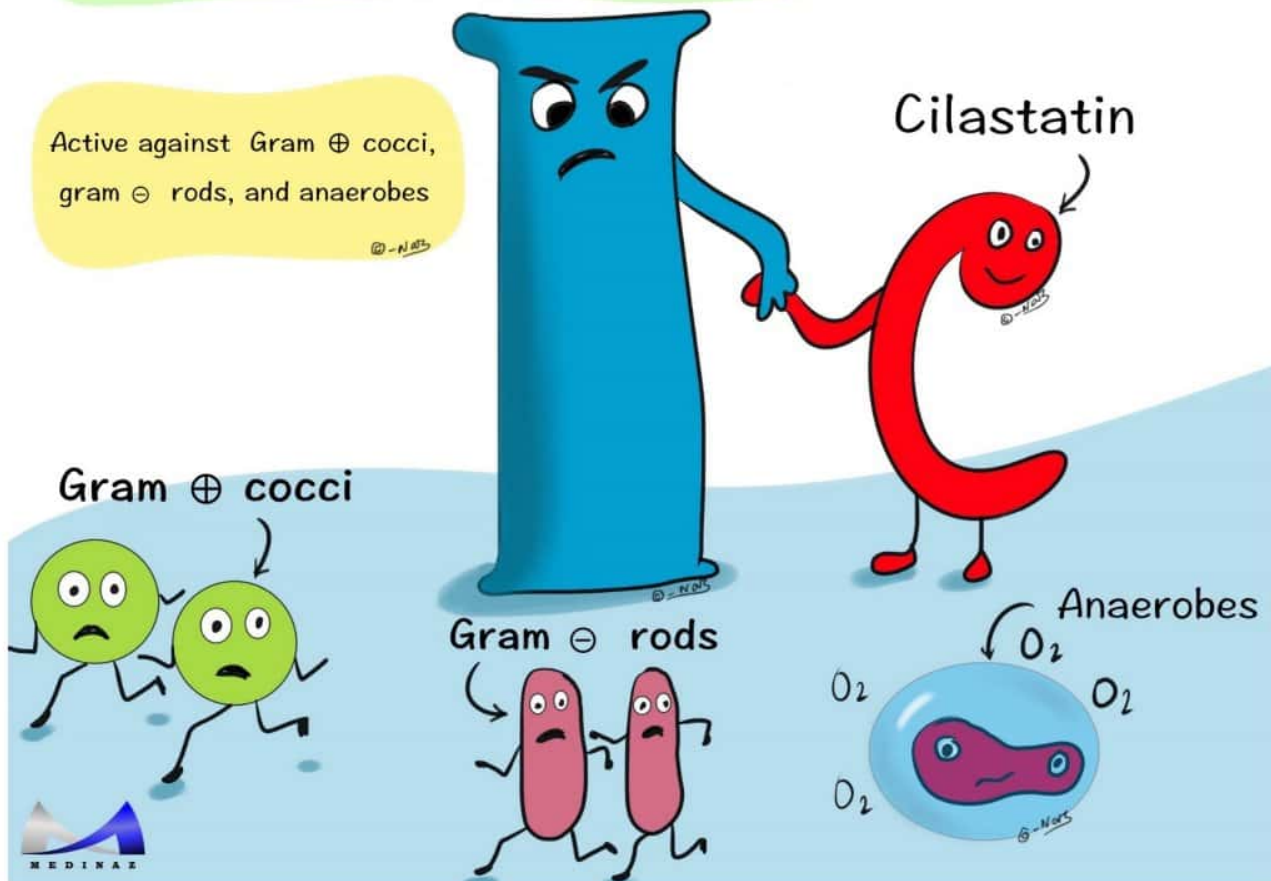
www.medinaz.com

Imipenem is a broad-spectrum, β -lactamase-resistant carbapenem. Always administered with **cilastatin** (inhibitor of renal **dehydropeptidase I**) to decrease inactivation of drug in renal tubules.

©-MED

Active against Gram \oplus cocci,
gram \ominus rods, and anaerobes

©-MED





INH Side-effects

www.medinaz.com

“CHANGE”

Change in memory
Hepatotoxic, **H**allucinations
Anemia, **A**rthritis
Neuropathy
Gynecomastia
Euphoria, **E**pilepsy



INH Side effects



Inducer of Lupus
Inhibitor of cytochrome P450

Neuropathy (peripheral)

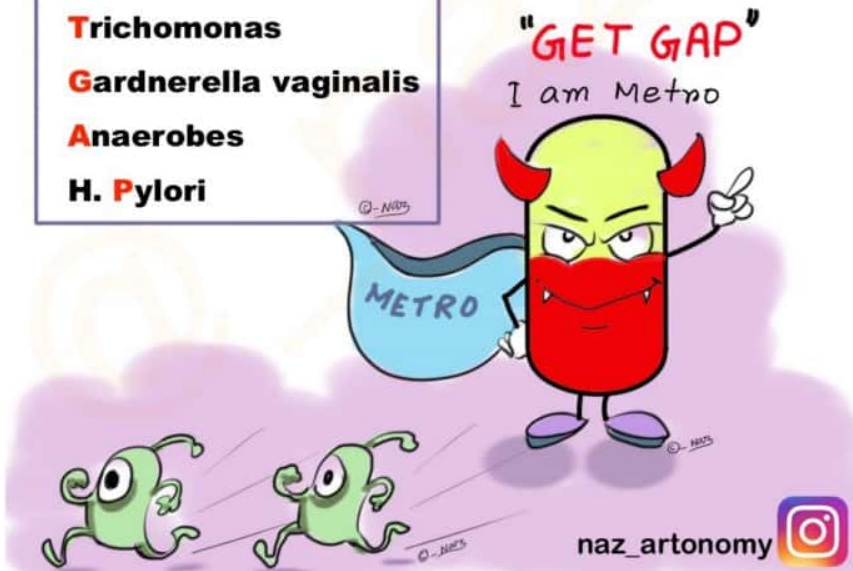
Hepatotoxicity
Hemolysis in G6PD deficiency



METRONIDAZOLE

Clinical uses

Giardia
Entamoeba
Trichomonas
Gardnerella vaginalis
Anaerobes
H. Pylori



Antimicrobial drugs contraindicated in Pregnancy

Sulfonamides
Aminoglycosides
Fluoroquinolones
Erythromycin
Metronidazole
Tetracyclines
Ribavirin
Griseofulvin
Chloramphenicol

**"SAFE Moms Take Really
Good Care"**



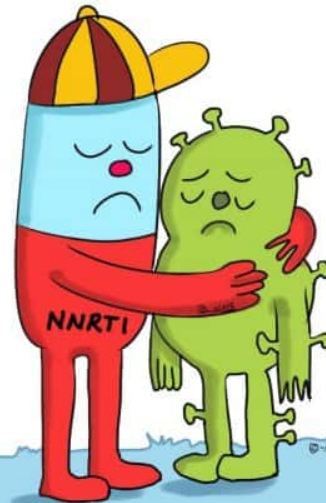


NNRTI

www.medinaz.com

Nevirapine
Efavirenz
Etravirine
Delaviridine

“NEED”



MED NAZ

Ribavirin Indications

RSV
Influenza B
Arenaviruses
(Lassa, Bolivian, etc)

“RIBAvirin”

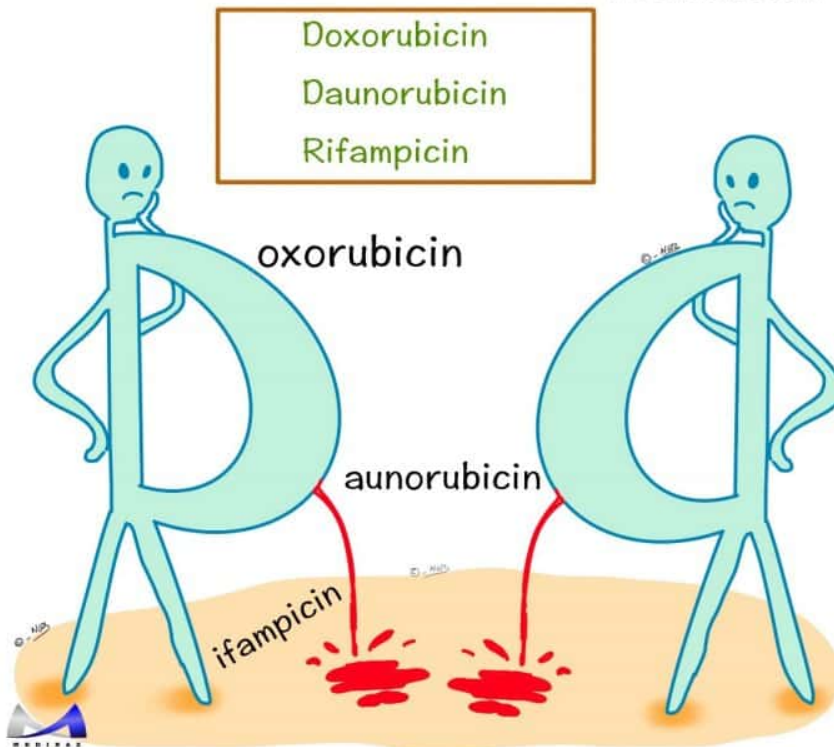


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Red discolouration of urine

www.medinaz.com



Rifampicin Important points


www.medinaz.com

- RNA polymerase inhibitor, Reddish-orange discolouration
- Interstitial nephritis
- Flu like symptoms
- Anemia
- Maximum cidal & sterilizing effect
- Platelet count decrease
- Inducer of enzyme
- Contraceptive failure
- INR deranged with warfarin
- NNRTI & PI failure

“RIFAMPICIN”




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Macrolides

DOC for

- C** → Corynebacterium, Campylobacter
- L** → Legionella infection
- A** → Atypical Pneumonia
- W** → Whooping cough



Anti-retroviral drugs (fusion inhibitors)




ROCK

Fusion Inhibitor

Maraviroc

tid

Enfuvirtide





Topical antifungals

www.medinaz.com

- Butenafine
- Halprogin
- Undencyclenic acid
- Tolnaftate, Terbinafine
- Azoles
- Nystatin, Naftifine

“BHUTAN”



Tuberculosis: treatment

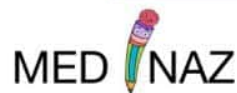
www.medinaz.com

TB

“If you forget your TB drugs,
you'll die and might need a

PRIEST”

- Pyrazinamide
- Rifampin
- Isoniazid (INH)
- Ethambutol
- STreptomycin





CHEMOTHERAPEUTIC AGENTS

@NEETPGSURGEON



ALL regimen of choice

www.medinaz.com

Vincristine

Prednisolone

Asparaginase

Daunorubicin

“VPAD”

CLL regimen of choice

Fludarabine

Cyclophosphamide

Rituximab

“FCR”



Anticancer drugs cause Cardiotoxicity

www.medinaz.com

5FU

(coronary vasospasm, precipitate ischemia)

Anthracyclines

(max with Doxorubicin & Daunorubicin)

Trastuzumab

Cyclophosphamide at high dose

“FAT Cardio”





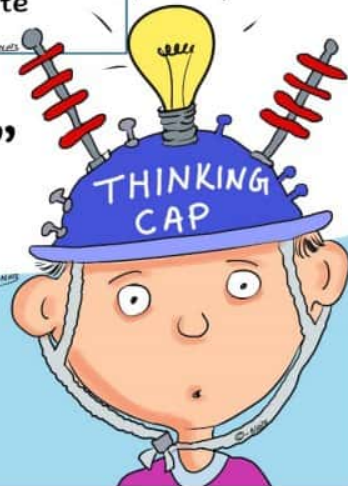
Anticancer drugs cause Mucositis

www.medinaz.com

Hydroxyurea
Alkylating agents
Dactinomycin, Doxorubicin, Daunorubicin
Metabolic antagonists
(5-FU, Cytarabine & Methotrexate)



“HAD Mucositis”

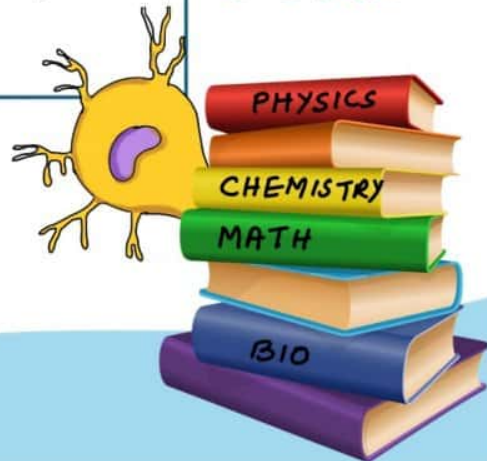


Anticancer drugs cause neuropathy

www.medinaz.com

Primidine analogs
(Fludarabine & Nelarabine)
Cisplatin & Oxaliplatin
(sensory & motor)
M phase specific drugs
(vincristine, vinblastine, Nab paclitaxel)
Bortezomib

“PCMB”





Anticancer drugs cause Radiation Recall Syndrome

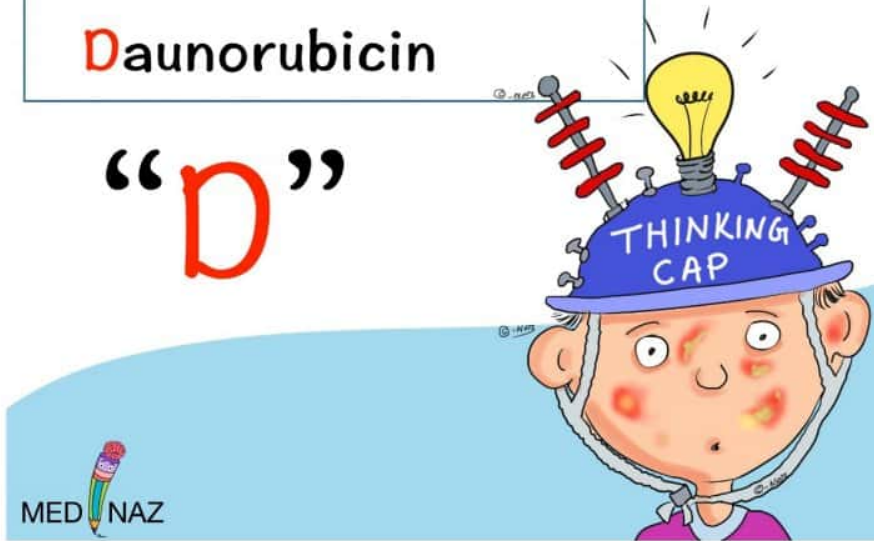
www.medinaz.com

Dactinomycin

Doxorubicin

Daunorubicin

“**D**”



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Anticancer drugs cause Raynaud's disease

www.medinaz.com

Bleomycin

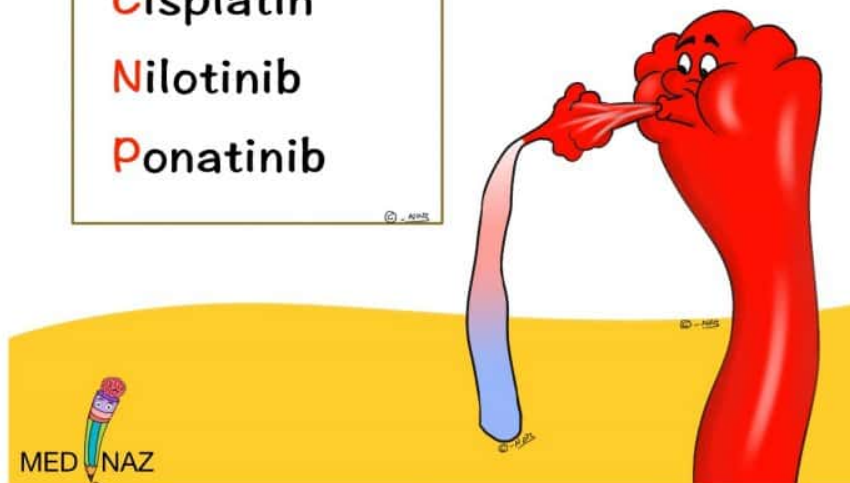
Vinblastine

Cisplatin

Nilotinib

Ponatinib

“**B**lood **V**essels **C**an
Not **P**ass blood”



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Chemotoxicities

METHOTREXATE

M Stomatitis

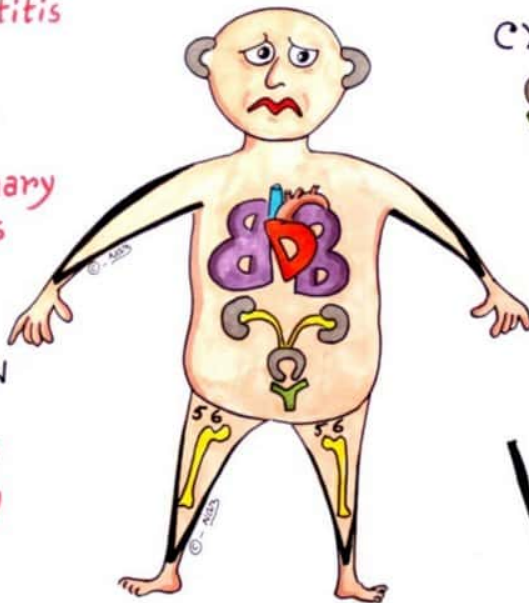
BLEOMYCIN

B Pulmonary Fibrosis

DOXORUBICIN

D Cardiac toxicity

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CISPLATIN/CARBOPLATIN

C Ototoxicity & Nephrotoxicity

CYCLOPHOSPHAMIDE

C Hemorrhagic Cystitis

5-FU
6-MP > Myelosuppression

V INCRISTINE

Peripheral Neuropathy

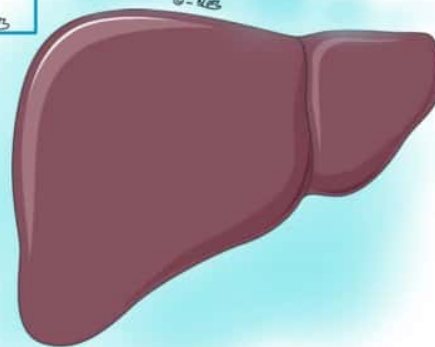


Cyclosporine Side-effects

www.medinaz.com

“4 H”

Hirsutism
Hyperplasia of gums
Hypertension
Hepatotoxicity



Disease modifying Anti-Rheumatoid Drugs (DMARDs)

www.medinaz.com

Golimumab, Gold compounds
Etanercept
Tofacitinib, Tocilizumab
Sulfasalazine
Methotrexate, minocycline
Abatacept, Azathioprine
Leflunamide
Cyclophosphamide, cyclosporine
Hydroxychloroquine
Anakinra, Adalimumab
Infliximab
Rituximab

“GET SMALL
CHAIR”



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Doxorubicin & Doxorubicin

www.medinaz.com

Anticancer drugs cause maximum Cardiotoxicity
Doxorubicin & Doxorubicin



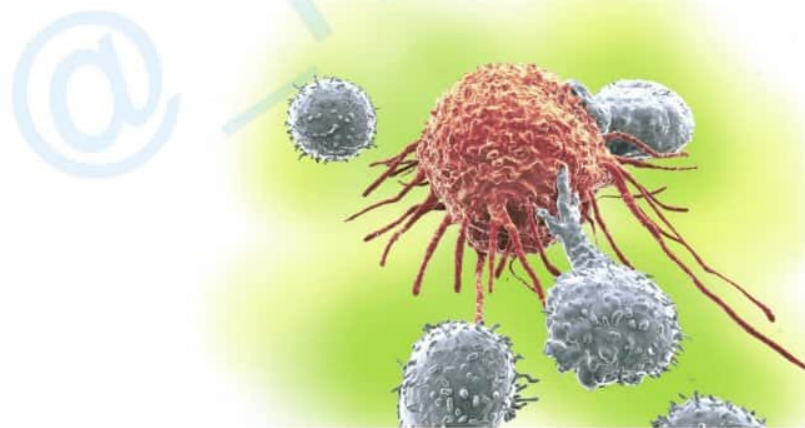
EGFR Antagonists

www.medinaz.com

“EGFR”

Erlotinib

Geftinib



MED  NAZ



ETOPOSIDE

www.medinaz.com

Action:

Inhibits **TOP**oisomerase II

Indications:

Testicular carcinoma

Ota cell carcinoma of lung

Prostate carcinoma

© - NAZ

Side-effects:

Affects **TOP** of your head,
cause alopecia

© - NAZ

“e**TOP**oside”



Hodgkin's disease regimen of choice

www.medinaz.com

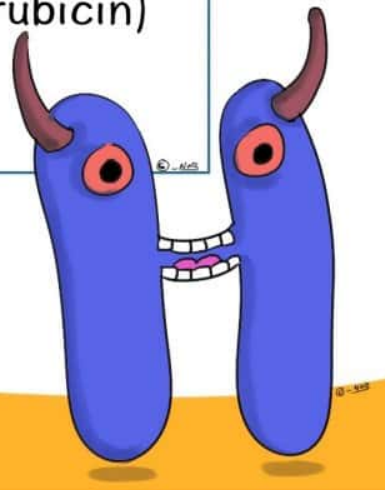
Vincristine

Bleomycin

Adriamycin (doxorubicin)

Dacarbazine

“**V**ery **BAD**”



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Hydroxyurea uses

www.medinaz.com

PCV

Anemia (sickle cell)

CML

Essential thrombocytosis



L-Asparaginase Side-effects

www.medinaz.com

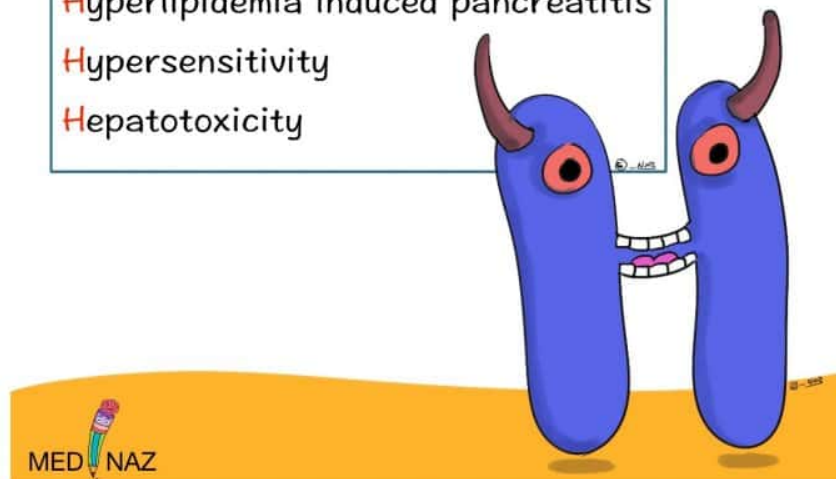
Hyperglycaemia

Haemorrhage or thrombosis

Hyperlipidemia induced pancreatitis

Hypersensitivity

Hepatotoxicity





Hydroxyurea uses

www.medinaz.com

PCV

Anemia (sickle cell)

CML

Essential thrombocytosis



L-Asparaginase Side-effects

www.medinaz.com

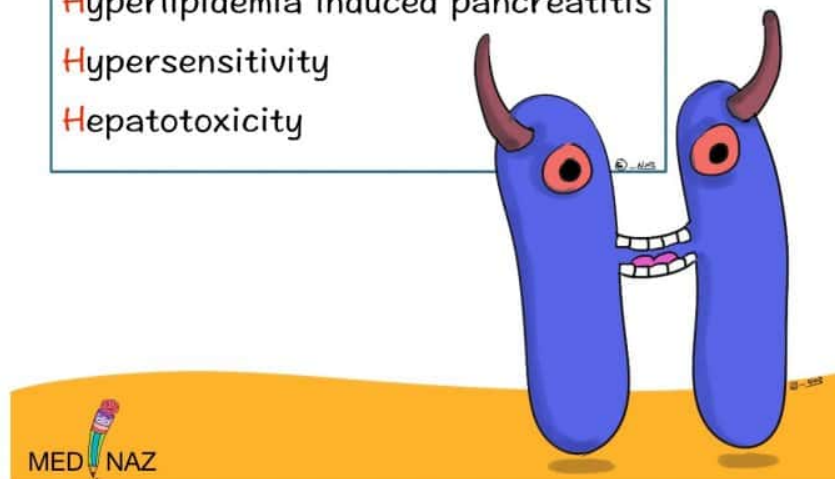
Hyperglycaemia

Haemorrhage or thrombosis

Hyperlipidemia induced pancreatitis

Hypersensitivity

Hepatotoxicity



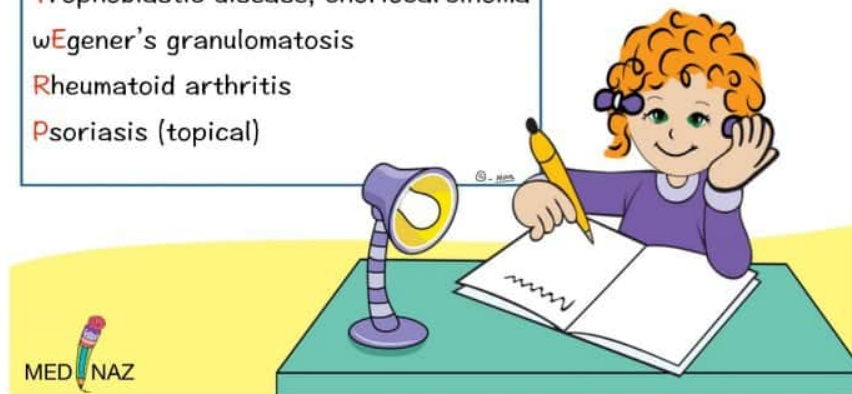


Methotrexate use

www.medinaz.com

Osteosarcoma
Crohn's disease
Transplant rejection (GVHD)
ALL
Multiple sclerosis
Ectopic pregnancy
Trophoblastic disease, choriocarcinoma
Wegener's granulomatosis
Rheumatoid arthritis
Psoriasis (topical)

"OCTAMETER
in Poetry"



Non-Hodgkin's lymphoma treatment of choice for High/Intermediate grade

www.medinaz.com

Cyclophosphamide
Hydroxy-doxorubicin
Oncovin (vincristine)
Prednisolone
Rituximab

"CHOP-R"





Rituximab Uses

www.medinaz.com

CLL

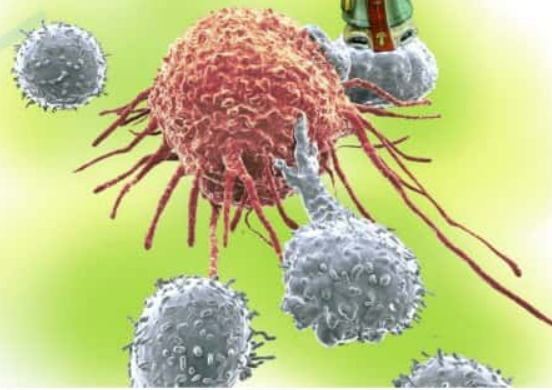
Haemolytic anemia

Idiopathic Thrombocytopenic Purpura

Non-Hodgkin Lymphoma

Arthritis (Rheumatoid)

“CHINA”



Therapeutic use of Interferons

Interferon **Alpha** → **Viruses** HBV, HCV, HHV-8, HTLV-2

Interferon **3**eta → **m**ultiple Sclerosis

Interferon **G**amma → **G**ranulomatous (chronic) disease



ENDOCRINE SYSTEM

@NEETPGSURGEON

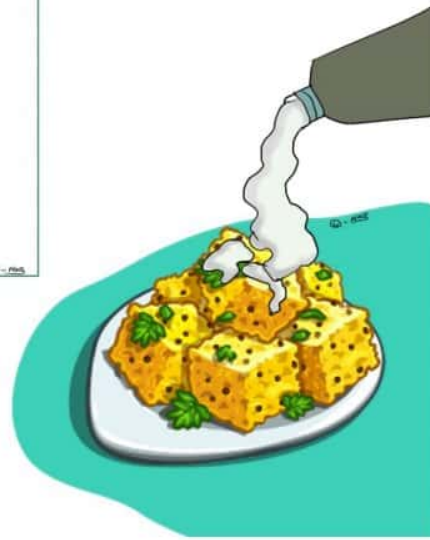


Antihistaminics given only by topical route

www.medinaz.com

Dibenzoxepins
Olpatidine
Ketotifen
Levocarbastine
Azelastine

“DOKLA”



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Drugs used in Erectile dysfunction

www.medinaz.com

Phentolamine
Bremelanotide
Naltrexone
Ketanserine
Sildenafil (DOC)
Alviptadil
Trazadone
Alprostadil

“P^yar **B**hi **N**ahi
Kar **SAKTA**”



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Side effects of iodides

www.medinaz.com

Idiosyncratic reaction (TTP, Periarteritis nodosa)

Oropharyngeal glands inflammation (Mimic mumps)

Dysgeusia

Iodism (Head cold – Headache)

Dermatological (Acneform rashes)

Edema of lungs and larynx (Angioedema)



“**IODIDE**”



Side effects of steroids

www.medinaz.com

Hyperglycemia, Hypokalemia, Hypertension
mYopathy

Disturbed mood [psychosis]

Retardation of growth

Osteoporosis

Cushing syndrome , cataract ,

Osteonecrosis

Redistribution of fat

Topical steroid – Glaucoma, teleangectasia

Infections, inflammation of follicles

Skin atrophy

“**HYDRACORTIS**”





MISCELLANEOUS

@NEETPGSURGEON



Drugs causing Stevens-Johnson Syndrome



Lame **E**SCAPE **P**lan **P**lan = **P**henobarbital

Lame = **L**amotrigine
E = **E**rythromycin
S = **S**ulfa drugs
C = **C**arbamazepine
A = **A**llopurinol
P = **P**enicillin
E = **E**rythromycin

ADVANTAGES OF CALCIUM HYDROXIDE



Police **P**H is high, acts as an acid neutraliser
Inspector **I**nternal resorption preventing agent
Having **H**ealing promoting agent
B **B**actericidal
R **R**epair promoting agent
I **I**ncexpensive
B **B**acteriostatic
E **E**asy to use



Drugs used in Rehabilitation of Alcoholism

www.medinaz.com



Acamprosate



Naltrexone



Disulfiram

ANTIGOUT DRUGS

Colchicine
Allopurinol
Probenecid
Sulfinpyrazone

“CAPS”





Copper Poisoning Treatment

www.medinaz.com

Penicillamine

“Copper penny”



Cutaneous Flushing causing Drugs

www.medinaz.com

Vancomycin

Adenosine

Niacin

Ca²⁺ channel blockers,

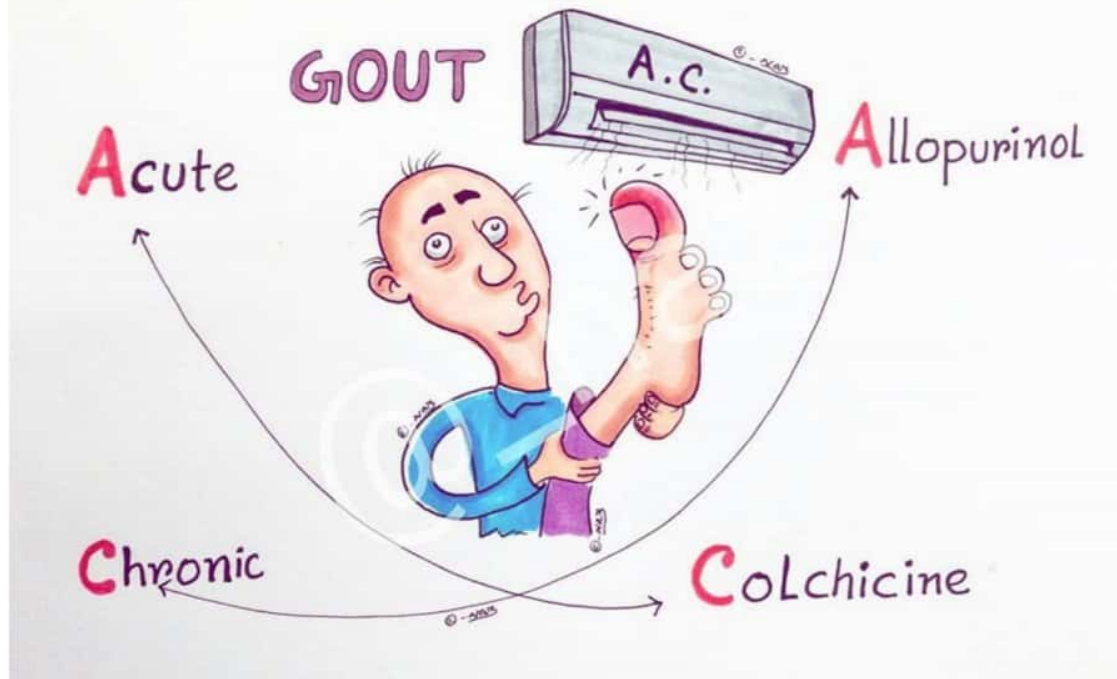
“VANC”

*Echinocandins, Nitrates also





Treatment of Acute & Chronic Gout



Drugs Causing Hyperuricemia

www.medinaz.com

L-Dopa
Ethambutol
Aspirin
Diuretic
Cyclosporine
Alcohol
Nicotinic acid
Pyrazinamide

"LEAD CAN Poison"





Iron Overload Treatment

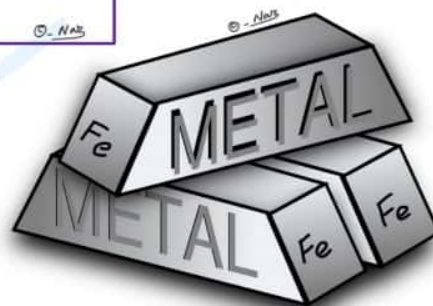
www.medinaz.com

Iron (**Fe**)

De**fer**oxamine

De**fer**asirox

De**fer**iprone



Mercury Poisoning Treatment

www.medinaz.com

Mercury

Di**mer**caprol

Succ**imer**





Narcotics Side-effects

www.medinaz.com

**Synergistic CNS depression
with other drugs**

Constipation

Respiratory depression

Addiction

Miosis

"SCReAM
if you see a
drug dealer"



Drugs used for Overactive bladder

Solefenacin

Oxybutynin

Flavoxate, Fesoterodine

Tolterodine, Trospium

Darifenacin

"SOFT BlADar"





GYNECOMASTIA CAUSING DRUGS



Kool = Ketoconazole

D = Digoxin

I = Isoniazid

S = Spironolactone

C = Cimetidine

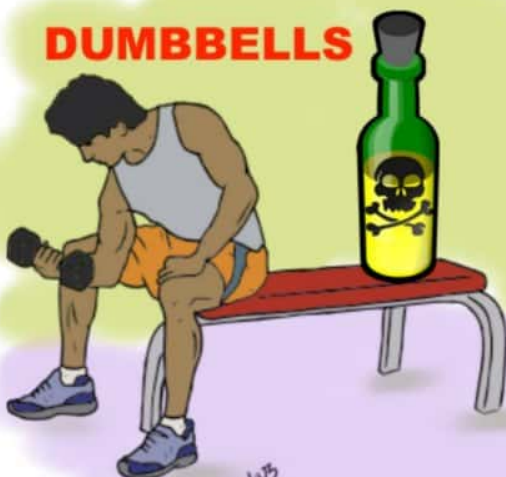
O = Oestrogens

S = Stilboestrol

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Signs of Organophosphate Poisoning

DUMBBELLS



Diarrhoea

Urination

Miosis

Bradycardia

Bronchospasm

Emesis

Lacrimation

Salivation

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Uterine Relaxants (Tocolytics)



It's → **I**ndomethacin
Not → **N**ifedipine
My → **M**agnesium Sulfate
Time → **T**erbutaline

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ANTIBIOTICS EXTRA MNEMONICS



Organisms not covered by 1st-4th gen Cephalosporins

- Organisms typically not covered by 1st–4th generation cephalosporins are **L**isteria, **A**typicals (Chlamydia, Mycoplasma), **M**RSA, and **E**nterococci (treated by **ceftaroline**).

“**LAME**”

Listeria

Atypicals (Chlamydia, Mycoplasma),

MRSA

Enterococci



30S inhibitors

Aminoglycosides, Tetracyclines

50S inhibitors

Chloramphenicol, Clindamycin Erythromycin
(macrolides) Linezolid

“Buy **AT 30**,
CCEL (sell) at **50.**”



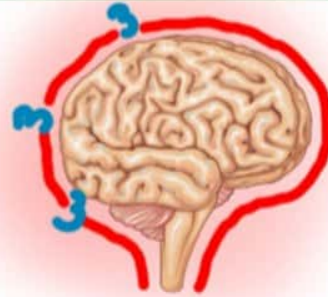


3rd & 5th generation Cephalosporins

- 3rd generation cephalosporin can cross blood-brain barrier (BBB)

BBB = 3 letters

3rd generation



- 5th generation cephalosporins are useful against MRSA
- Most nephrotoxic – Cephaloridine

CephaloRIDine = Renal Impairment



Aminoglycoside side-effects

Nephrotoxicity
Neuromuscular blockade,
Ototoxicity
Teratogen

“NOT”





Tetracycline uses

T
E
T } TETracyclines

R – Rickettsia, Relapsing fever
A – Atypical pneumonia
C – Cholera
Y – LYme’s disease
C – Chlamydia
L – LGV

I
N } INguinale (granuloma)

E – Epidemics of plague

- Azithromycin is DOC for Mycoplasma pneumoniae and genitalium, Campylobacter, Legionella and Chancroid

“CALM down Azithro is coming”

C - Campylobacter, Chancroid

A - Azithromycin

L - Legionella

M - Mycoplasma pneumoniae and genitalium





Clindamycin vs Metronidazole

- **Clindamycin** treats anaerobic infections **above** the **diaphragm** and **metronidazole** treats anaerobic infections **below** diaphragm.



Biofilm mechanism of resistance to Antibiotics

- **Biofilm mechanism of resistance** to antibiotics includes –

Mechanical barrier (exopolysaccharide matrix)

Growth rate decreased

Persisters: Bacteria undergoes phenotypic modification into dormant, spore like structures and survive antibiotic insult

Efflux pump which pump the drug out of the biofilm

Enzymatic inactivation

“My Green PEE”





Auditory toxicity is caused by

- Auditory toxicity is caused by – Kanamycin, Amikacin, Neomycin

Kanamycin	K	
Amikacin	A	
Neomycin	N	

Second line anti tubercular drugs

Second line antitubercular drugs

Two = Thioacetazone

P = PAS

E = Ethionamide

A = Amikacin

C = Capreomycin, Calithromycin

O = Ofloxacin

C = Ciprofloxacin, Cycloserine

K = Kanamycin

S = Streptomycin

Making = Moxifloxacin

Blind = Bedaquiline

Love = Linezolid

On

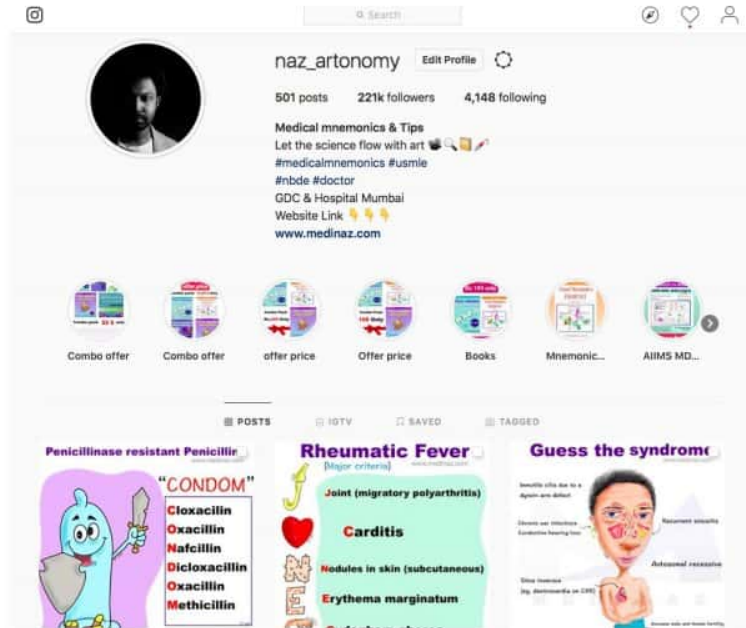
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