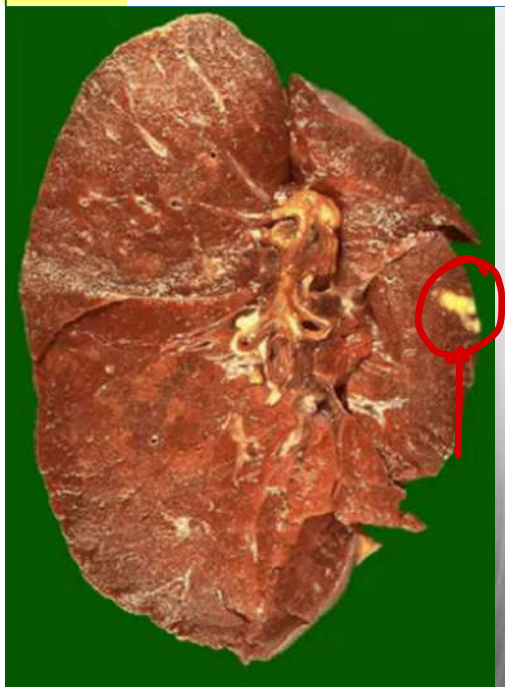
INFECTIONS COMPILED

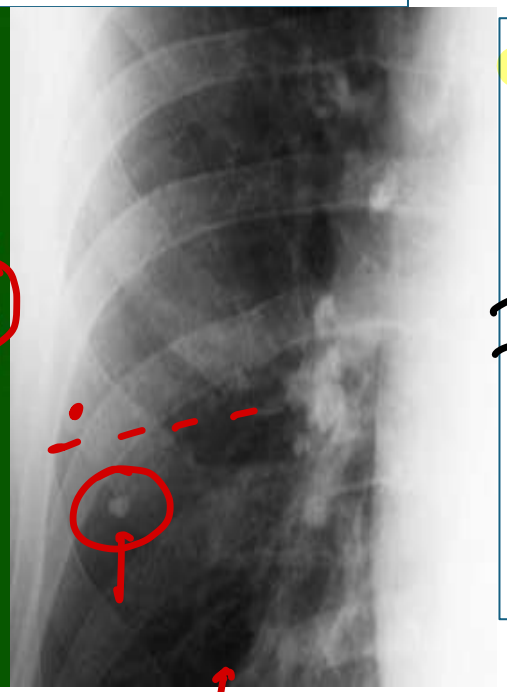
INTEGRATED MODULE

TB

PATHOPHYSIOLOGY

PRIMARY TB



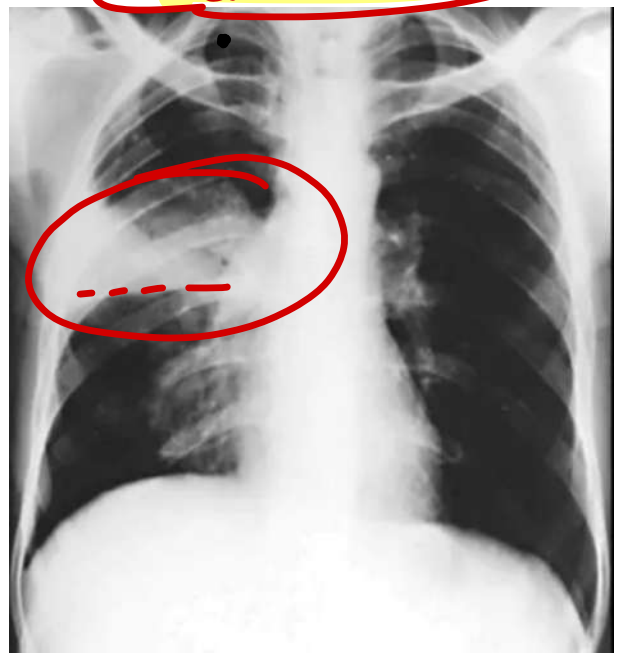


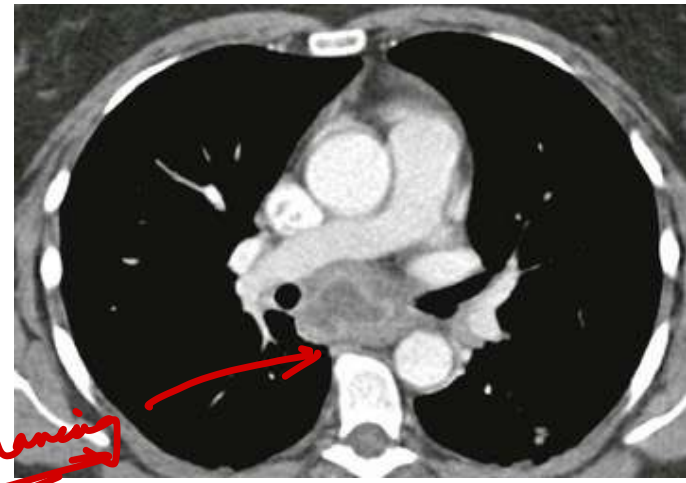
Ranke

- Ghon focus: 1st focus : subpleural
- Ghon complex: FOCUS + LN
- Ranke complex: Calcified GHON Cx
- Simon focus: apex
- Puhl focus: supraclav
- Assman focus: infraclav
- Simmond: LIVER
- Rich: meninges
- Weigert: Pulm veins
- MC focus in congenital TB: Liver

Horiz fissure

Consolidation



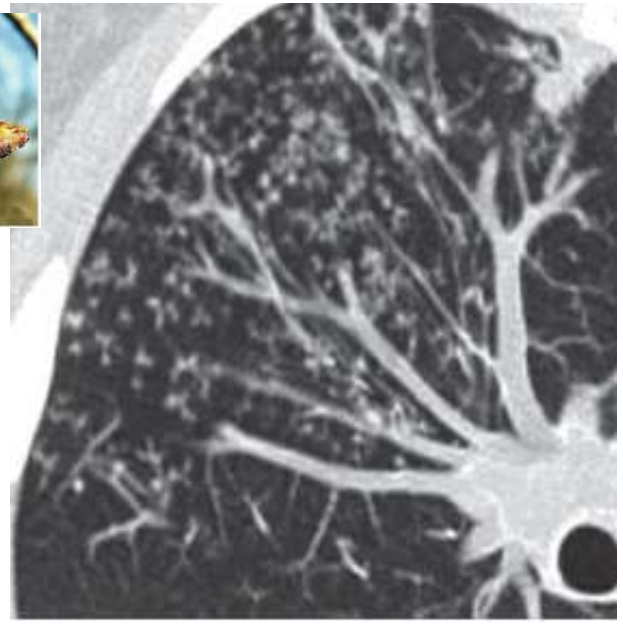


Caseous necrosis

Necrotic LN

Rim-enhancing

POST-PRIMARY TB

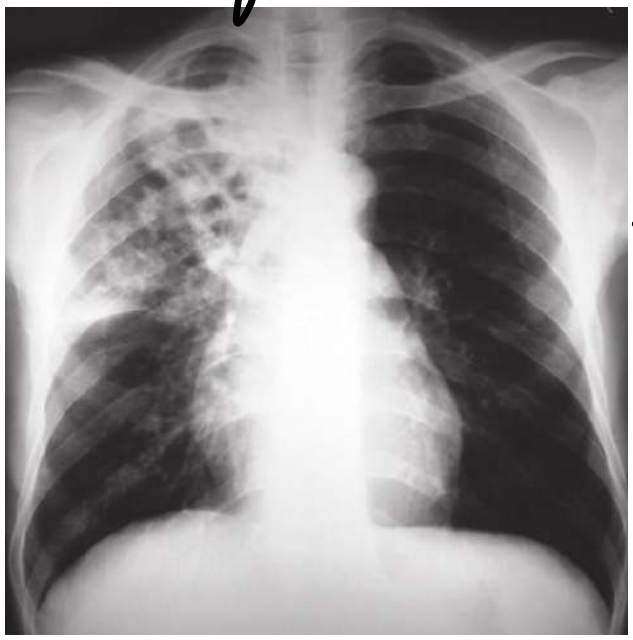


Tree-in-bud (endobronchial spread)

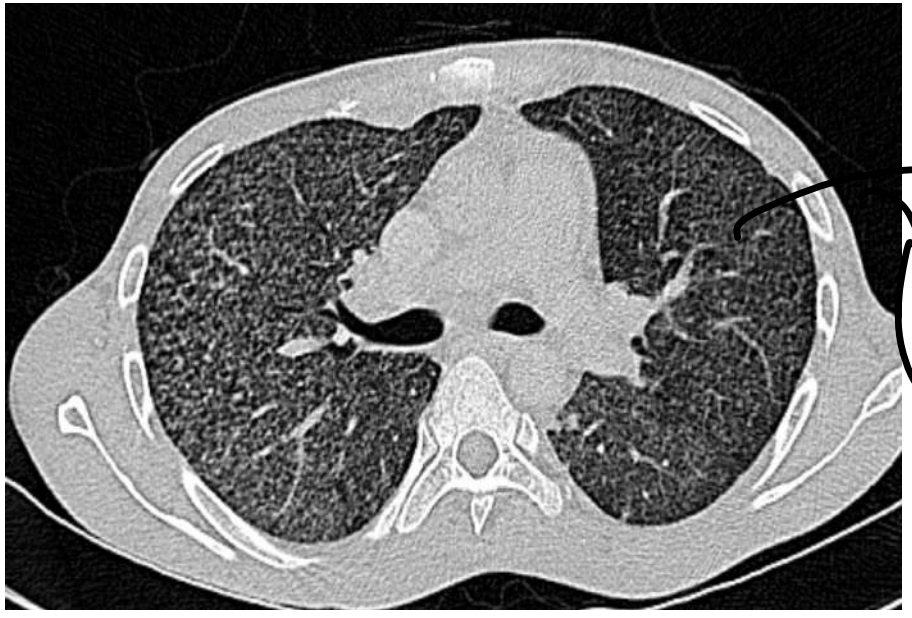
Active TB

→

Sequalae:

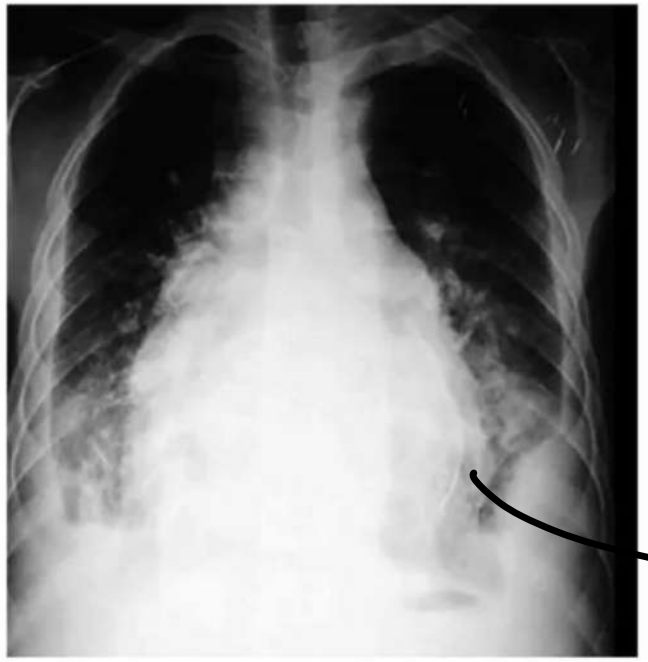


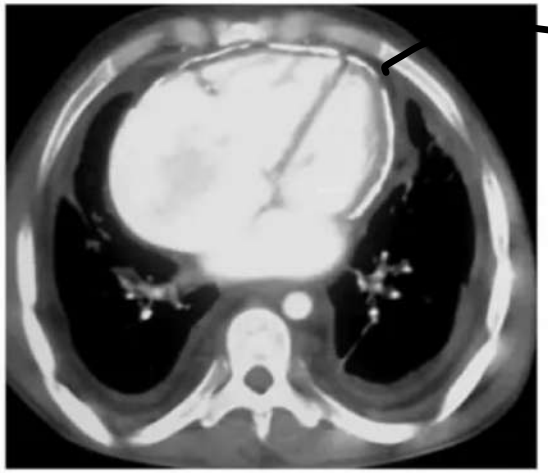
- fibrosis
- bronchiectasis
- cavity



Miliary TB

- B/L
- Hematogenous
- 1° / post-1°





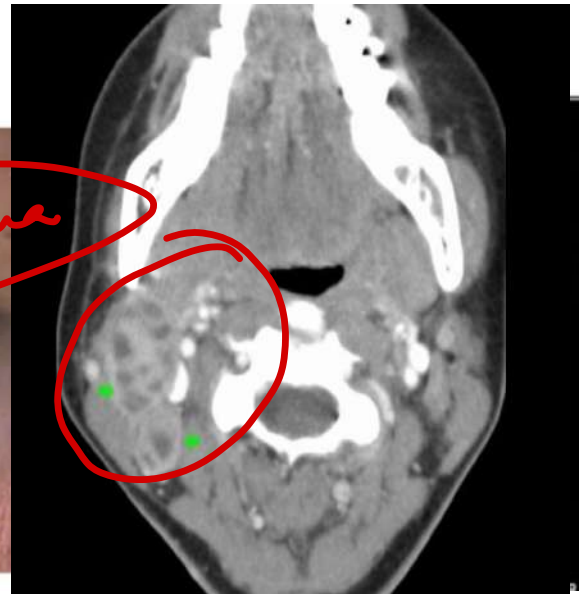
egg in cup sign

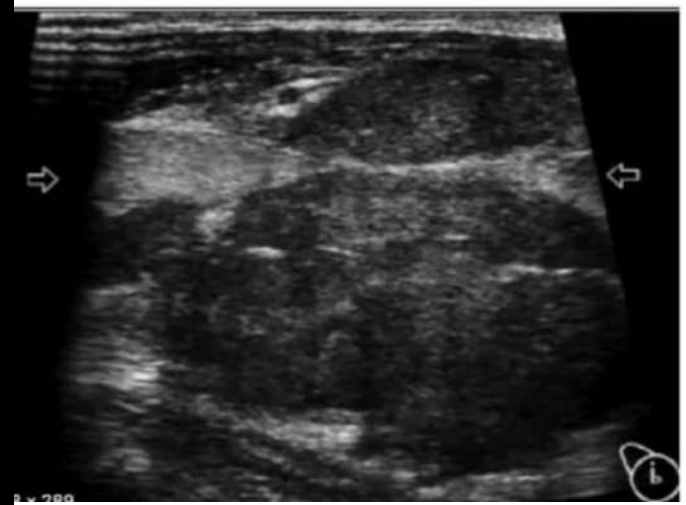
calcific constrictive pericarditis

↳ TB / uremia / post-RT

cold abscess

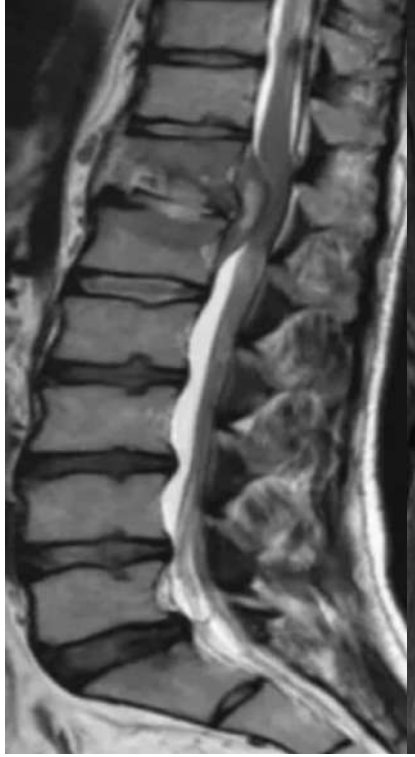
scrofuloderma

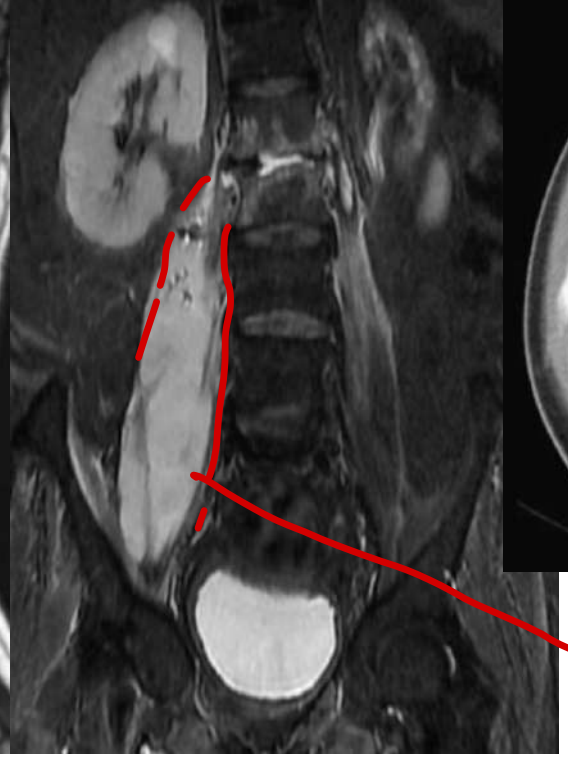


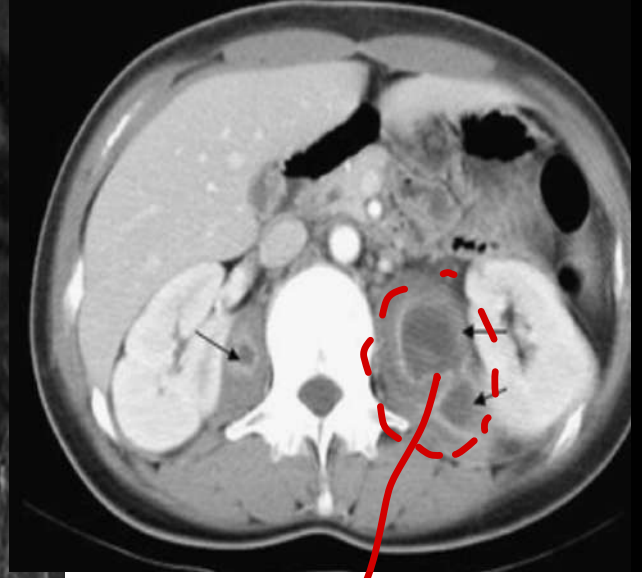


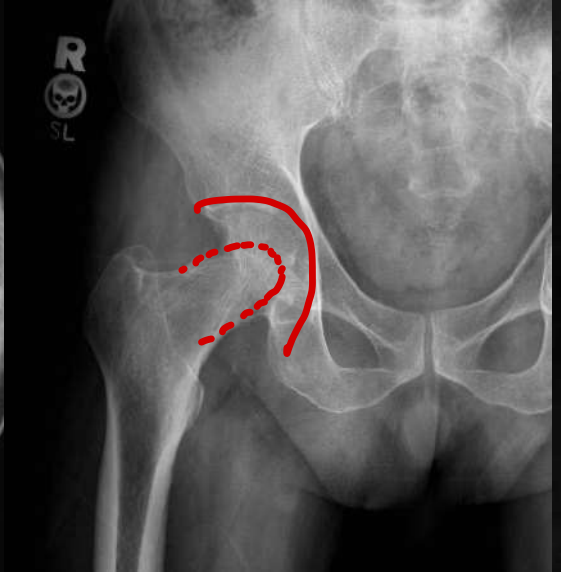
CONGLOMERATION (+)

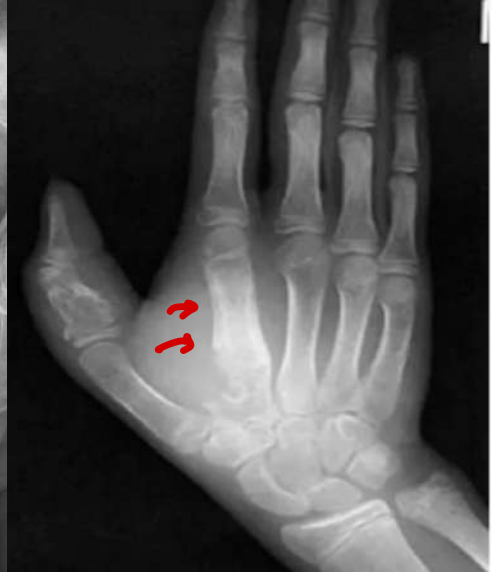
matted LN (+)











Pott spine

Paradiscal

MC

Middle path regimen

ATT → x

not resolving
- neurol
- BB

→ Bx / Sx

Psoas abscess

mortar-pestle

Sclerotic:

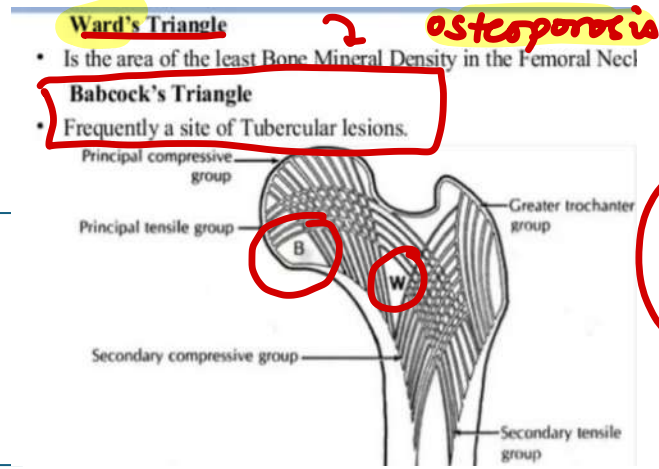
Spina ventosa

MC SITE in spine: Dorsal spine

Least common: Facet jt

MC JOINT: HIP → Acetabulum

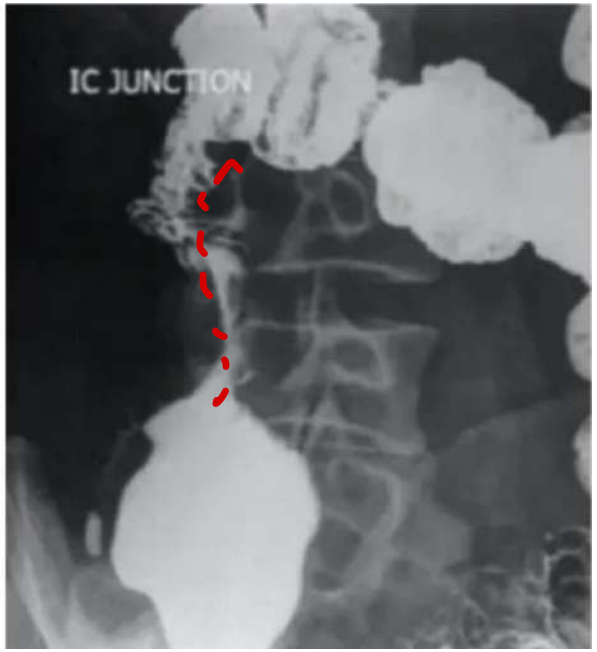
Triad: Osteopenia / erosions / jt space ↓



osteoporosis

Cong coxa vara:

Fairbank Δ



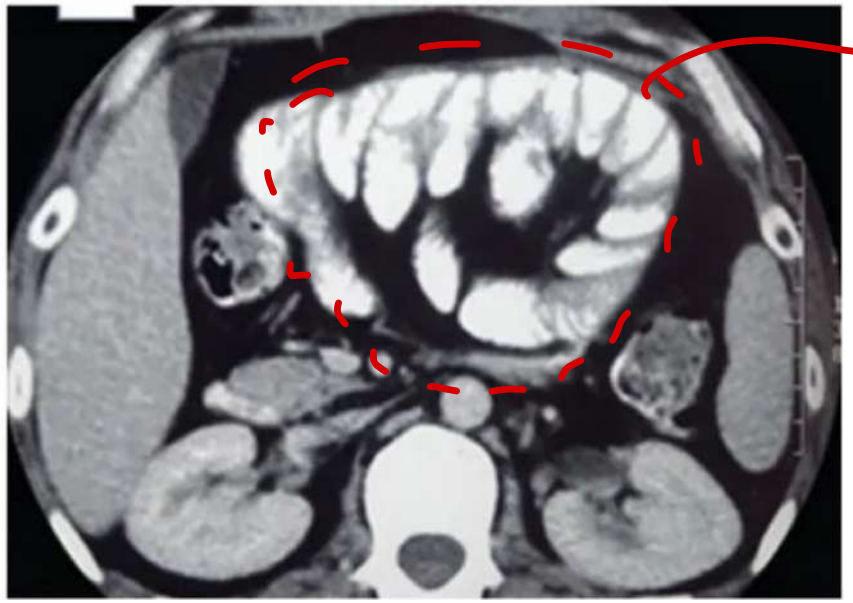
mc: IC jn

pulled up cecum

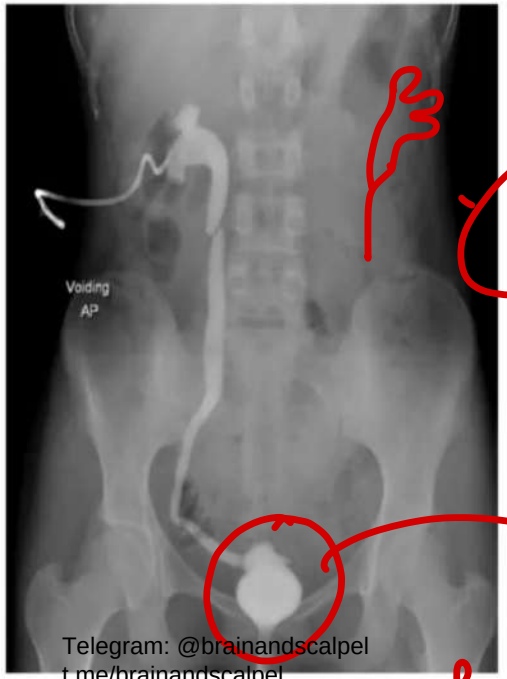
inv umbrella/ goosenech

String sign

CD/ TB



Cocoon formation



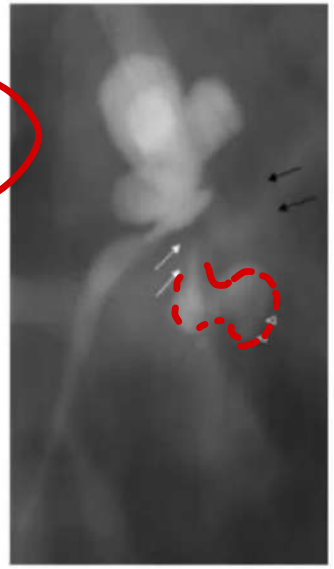
Stenle pyuria

mc C/F:

↑freq urine

Thumble bladder

IVP



IVP

Most sn Ix:

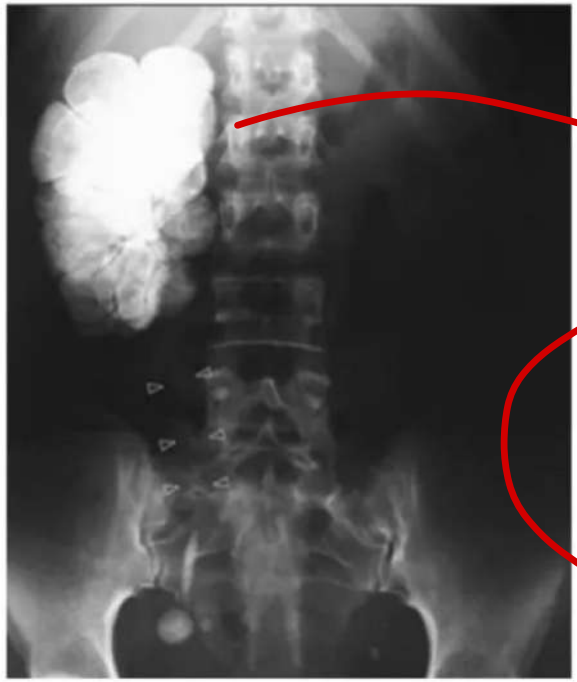
IVP

Doc: CT

distorted moth eaten

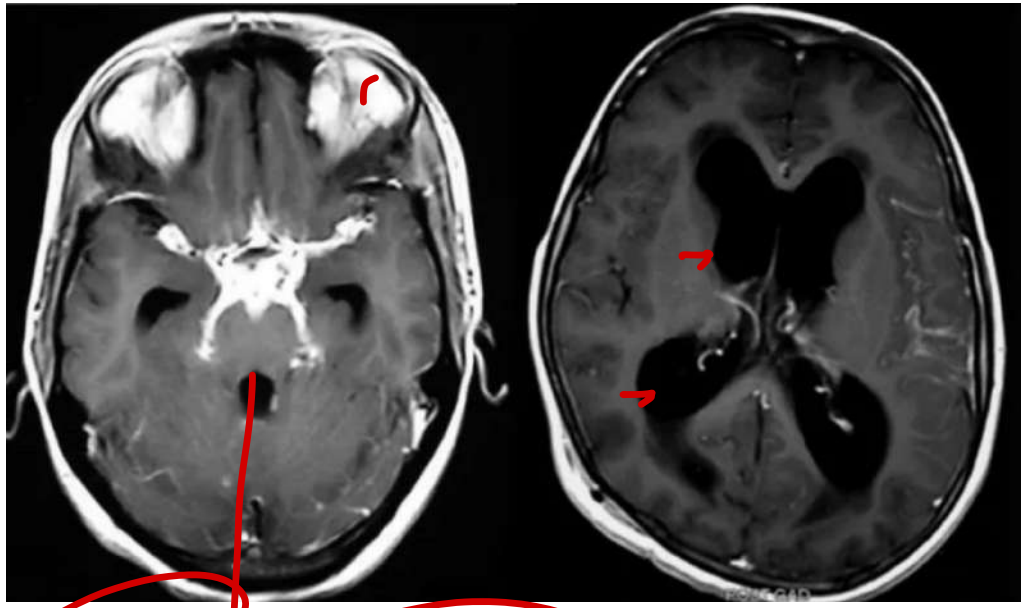
Calyx ↓

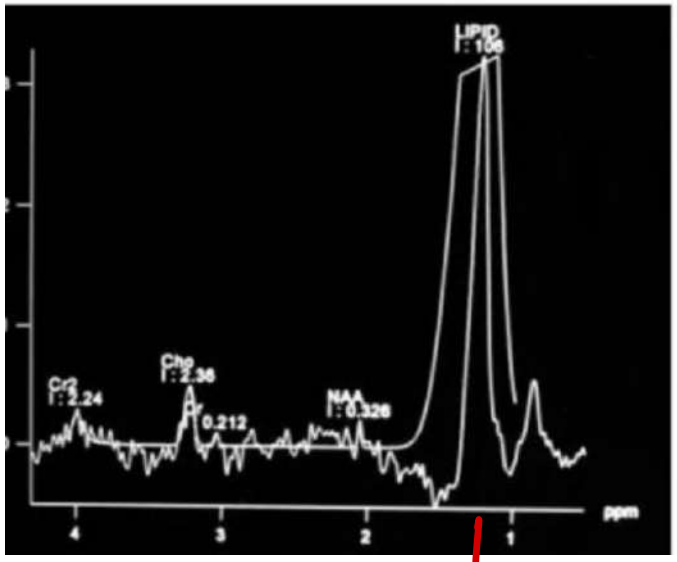
earliest finding IVP

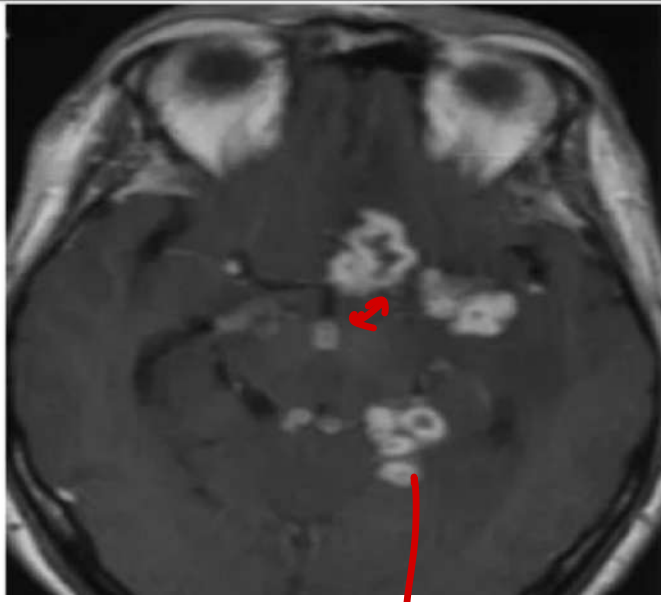


End stage:

Pulty kidney







CE-MRI

basilar exudates + vasculitis → ischemia + Hydrocephalus

'TBM' ML △

NCCT - star - SAH

LSF:
- Cobweb
- L ↑↑
- ADA ↑↑

MRS: Lipid-lactate peak

Vs

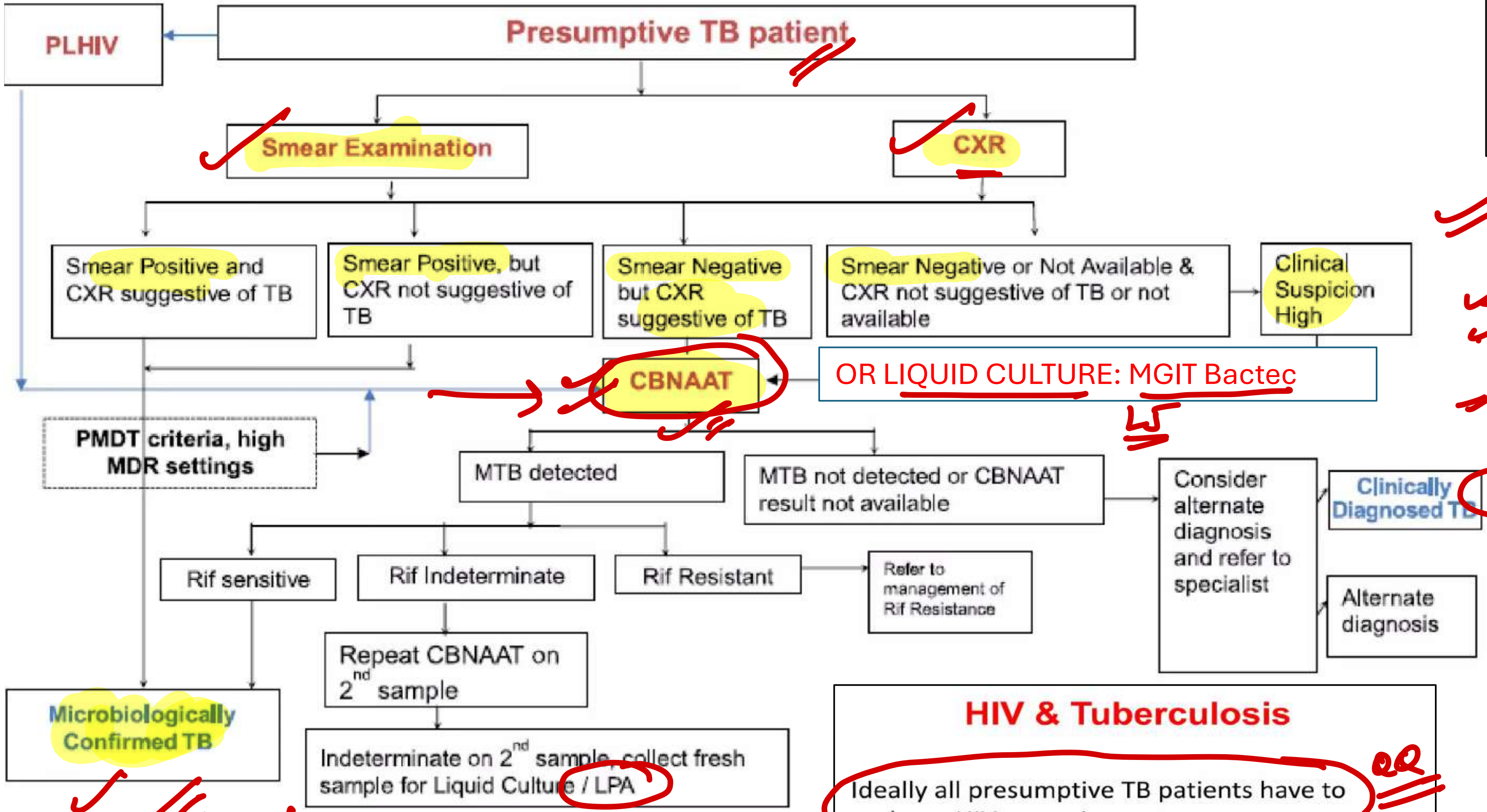
NCC

Tuberculomas

Conglomerates

NTEP

Diagnostic algorithm for pulmonary TB



1st line:

2 HRZE + 4 HRE

PRESUMPTIVE TB CASES

- Presumptive Pulmonary TB –
  - Cough for > 2 weeks
  - Fever for > 2 weeks
  - Significant weight loss
  - Haemoptysis
  - Any abnormality in Chest Radiograph

No. of sputum samples: 2 (spot, early morning)

Test within: 24 hrs

Gene Xpert MTB/RIF } 2 hrs

TruNAAT 1 hr

LPA – drug sn test (sputum, CSF/etc)

Quantiferon GOLD: ↑ sn

Interferon γ assay → BLOOD only

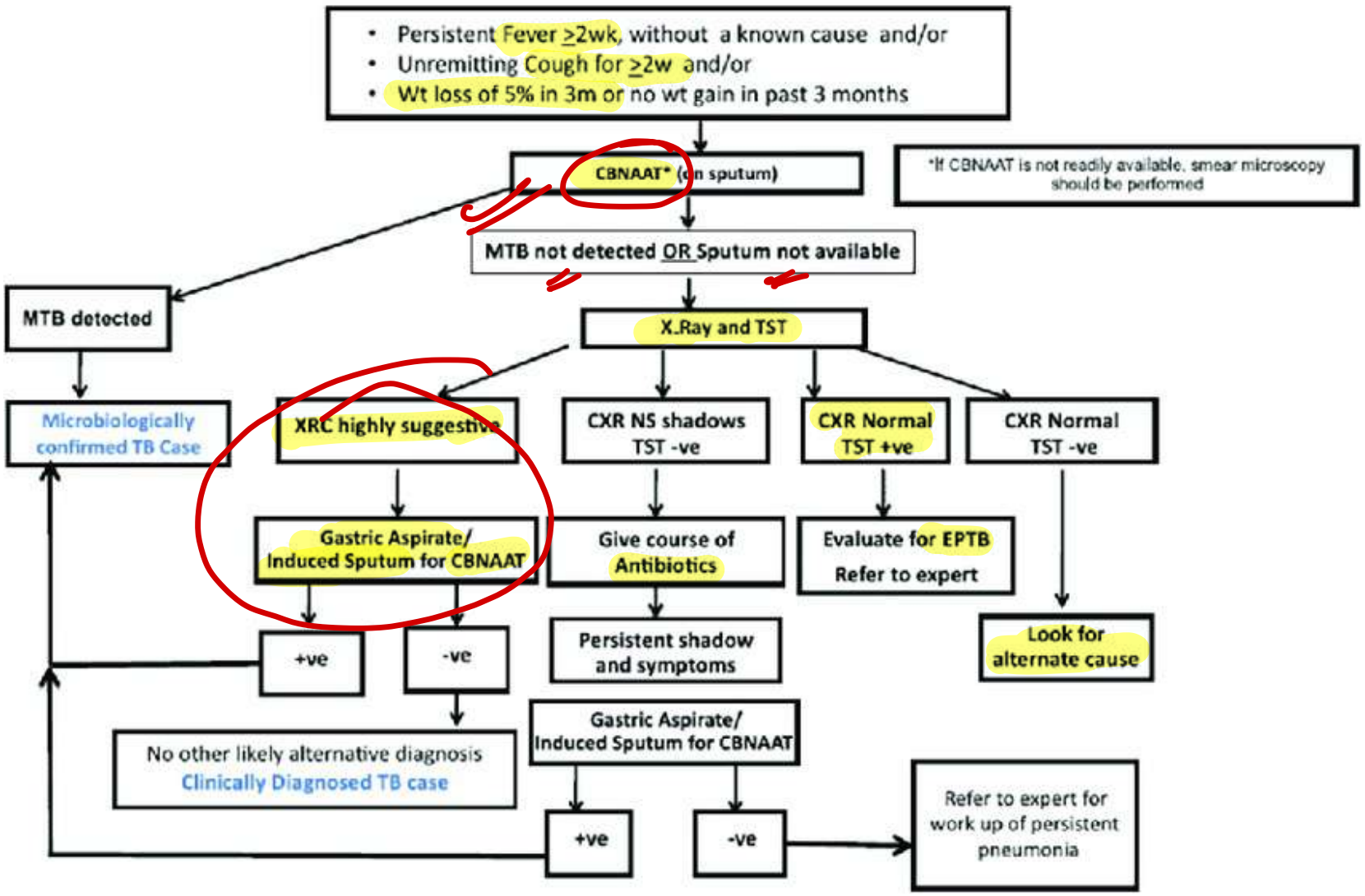
PPD / tuberculin

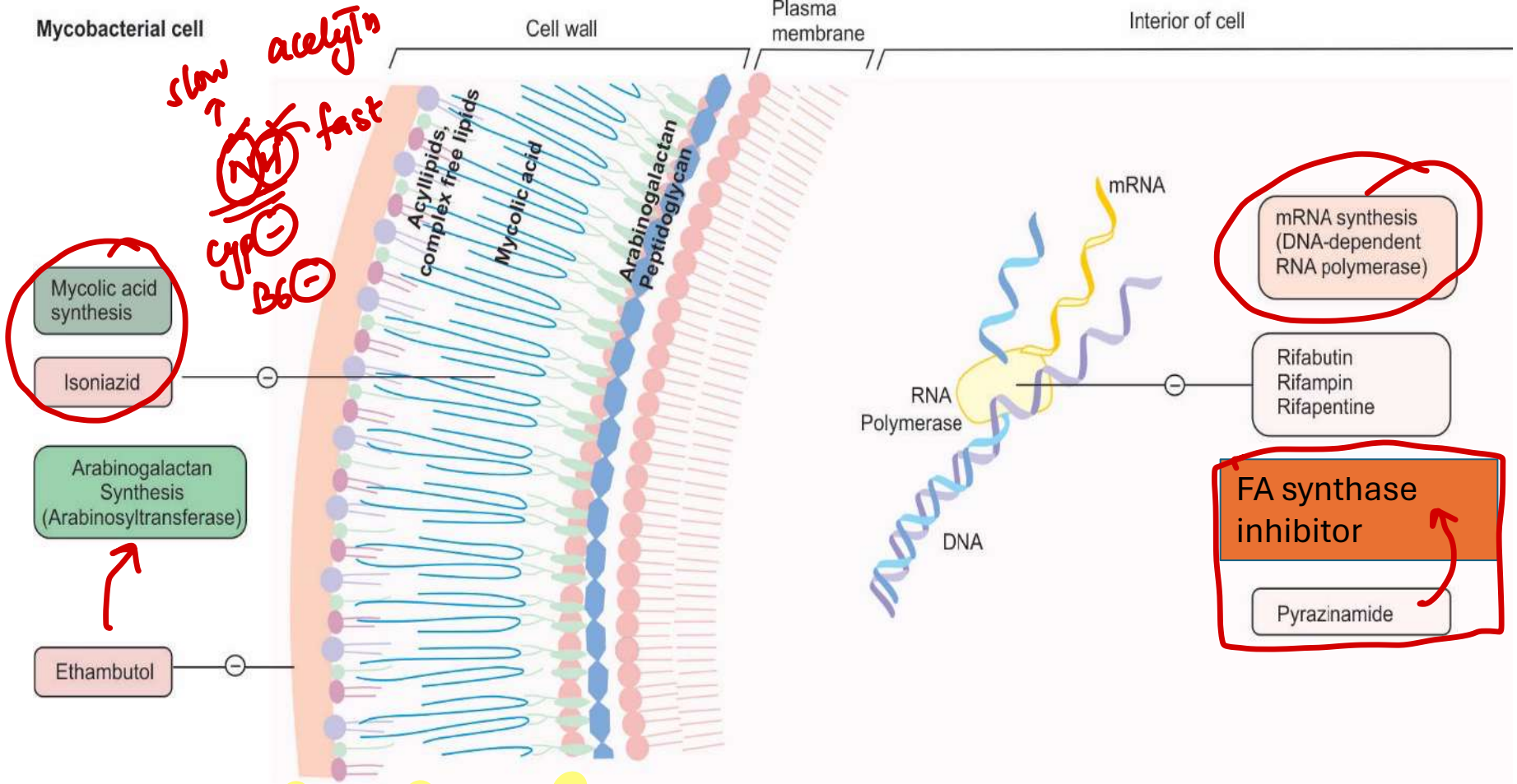
HIV & Tuberculosis

Ideally all presumptive TB patients have to undergo HIV screening.

This is important to ensure all HIV positive TB patients receive ART irrespective of CD_4 count and Chemo Prophylaxis (CPT).

Diagnostic algorithm for Pediatric Pulmonary TB





- Most hepatotoxic:
- Hyperuricemia:
- Red-green colour blindness:
- Max cidal action, inducer of enzymes, Pulmonary syndrome, orange urine:
- Safest in renal failure:
- Pseudojaundice, uveitis, min inducer of enzyme:
- Shoulder hand syndrome, Neuropathy:
- Max CSF action, Prodrug, Safest in pregnancy:
- Kat G mutation:

Grouping of anti-TB drugs and steps for designing longer MDR-TB regimen

GROUPS & STEPS	MEDICINE	ABBREVIATION
Group A Include all three medicines	Levofloxacin or	Lfx
	Moxifloxacin	Mfx
	Bedaquiline	Bdq
	Linezolid	Lzd
Group B Add one or both medicines	Clofazimine	Cfz
	Cycloserine or	Cs
	Terizidone	Trd
Group C Add to complete the regimen and when medicines from Group A and B cannot be used	Ethambutol	E
	Delamanid	
	Pyrazinamide	Z
	Imipenem-cilastatin or	Ipm-Cln
	Meropenem	Mpm
	Amikacin	Am
	(OR Streptomycin)	(S)
	Ethionamide or	Eto
	Prothionamide	Pto
	p-aminosalicylic acid	PAS

Pretomanid

- Hepatitis, hypothyroidism, visual issues: Ethionamide
- ATP synthase inhibitor: Bedaquiline
- QT prolongation
- Mycolic acid synthesis inhibitor: nitro → Pretomanid

QT

- **Multi Drug Resistant (MDR): INH + Rifampicin**
- **Extensively Drug Resistant (XDR):**
  MDR TB + fluoroquinolone (ofloxacin, levofloxacin, or moxifloxacin) + second line injectable drug (kanamycin, amikacin, or capreomycin)

Gp A

(4-6) Bdq, H^h, Eto, Lfx, Cfz, Z, E	(5) Lfx, Cfz, Z, E

6mon : B Pa Lzd Moxy

Bedaq Pretom Linz

PROPHYLAXIS:
Household contacts
AntiTNF/ immunosupressants
Dialysis
Silicosis

Rifapentin+INH x3mon weekly (>2yrs)
INH x 6m (<2yrs)

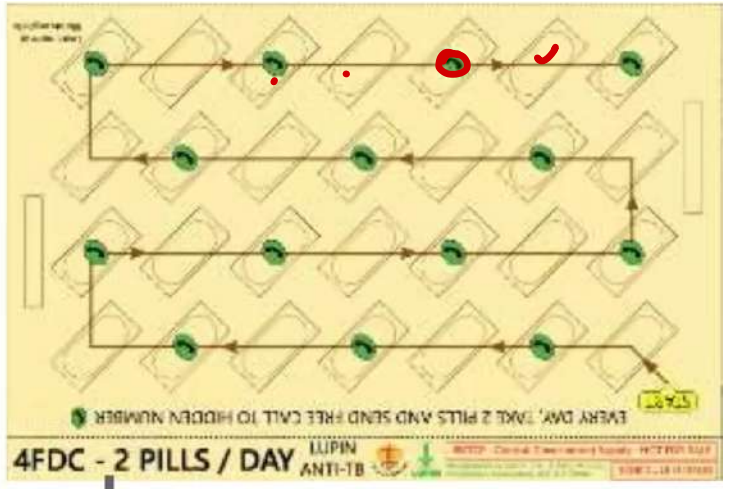
TB in pregnancy: 2 HRE + 7 HR
MDR-TB/ XDR-TB: MTP → MDR/XDR
CI in pregnancy : Ethionamide / Kanamycin CI (Bq / Pretom)

GOALS-2025
No of TB deaths: 90 %
TB incidence: 80 %
Catastrophic costs: zero
World TB day: 24 March

ni-kshay

- Launched from 01st April 2018
- Nutritional support through Direct Benefit Transfer of 500 INR per month
- For all patients on TB treatment throughout duration of treatment

ICT-enabled adherence system:



DOTS 99 Compliance

A MASS CAMPAIGN TO ELIMINATE TB

Take Pledge to Help Persons with TB

Join as Ni-Kshay Mitra

"I urge every person, every organization and representatives associated with the civil society to take up this resolution of playing an active role in building a TB free India."
- Narendra Modi, Prime Minister

PRADHAN MANTRI TB MUKT BHARAT ABHIYAAN

Join as Ni-Kshay Mitra and take pledge to help persons with TB.
Any Individual, NGO, Elected Representative or Corporate Institute can become Ni-Kshay Mitra.

TO JOIN AS NI-KSHAY MITRA

- Log on https://communitysupport.nikshay.in
- Click on "Pradhan Mantri TB Mukt Bharat Abhiyaan"
- Fill-up Ni-Kshay Mitra Registration Form
- Choose persons with TB you would like to support
- Contribute by providing monthly Nutrition Kit, Diagnostic Help and Vocational Support

pradhan mantri टीबी मुक्त भारत अभियान

MOHFW
CENTRAL TB DIVISION
STATE TB CELL
DISTRICT TB CENTRE
TB UNIT: 1/1.5-2.5lakh
DMC: 1/50K-1LAKH
PHI

Tuberculosis unit

- It is the nodal point for TB control activities in the sub-district.
- In urban areas 1 TU per 2,00,000 population (range 1.5-2.5laks)
- Manned by designated
  1. Medical Officer –Tuberculosis Control (MO-TC)
  2. Senior Treatment Supervisor (STS)
  3. Senior TB Laboratory Supervisor (STLS) per 5 lakh population
  4. 1 TBHV per 1 lakh urban population

Initiation of first-line ART in relation to anti-TB therapy

Clinical staging	CD4 cell count (cells/mm3)	Timing of ART in relation to initiation of TB treatment
Start ART irrespective of any clinical stage	CD4 count of any value	• Start ATT first • Start ART as soon as TB treatment is tolerated(between2 weeks and 2 months)

2 wks

IRIS

CMV 1 2w

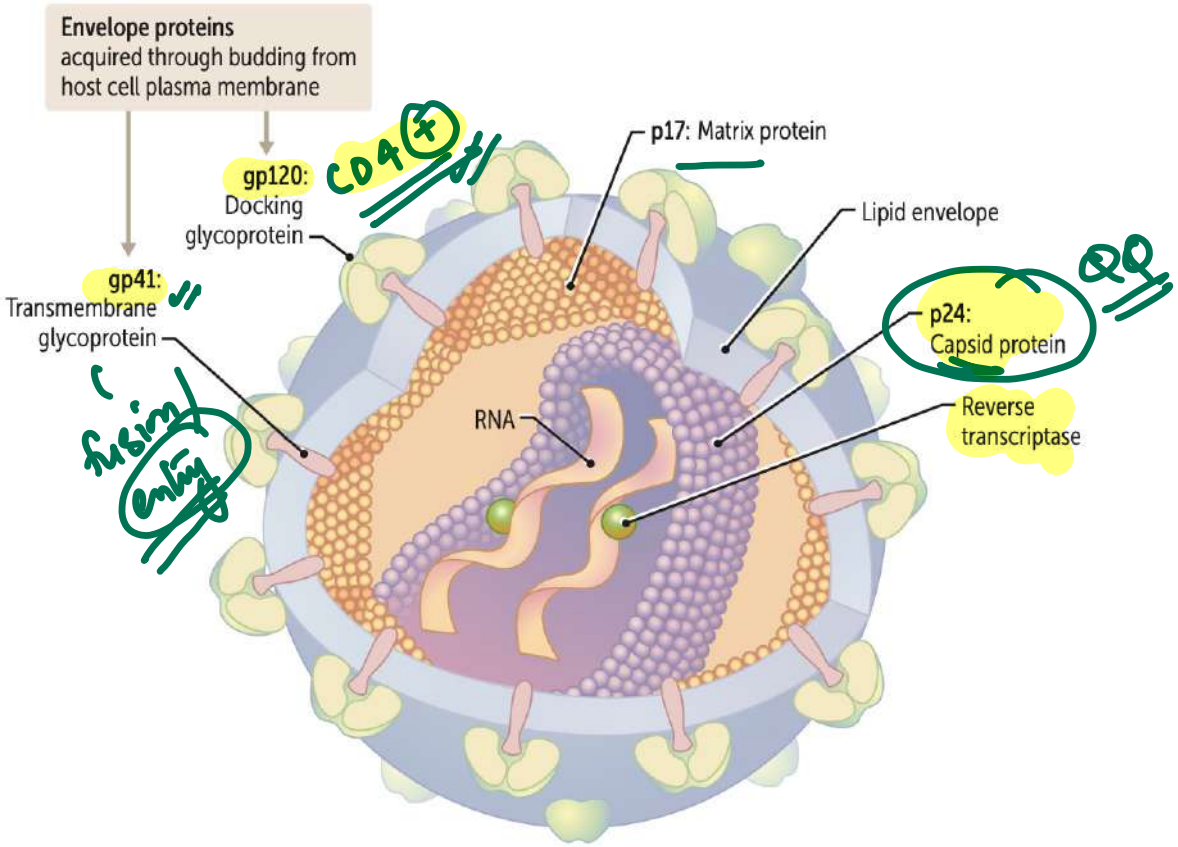
Cryptoc 1 4w

Toxo 1 6w

Rifabutin

NTEP-High priority TB-HIV district: >10%

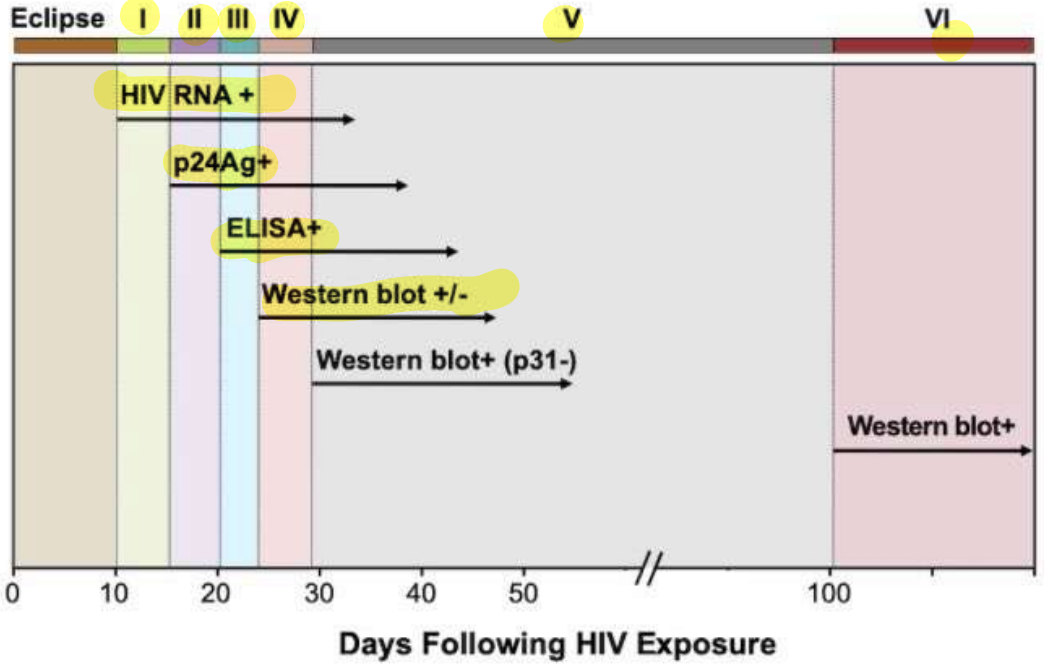
HIV / AIDS

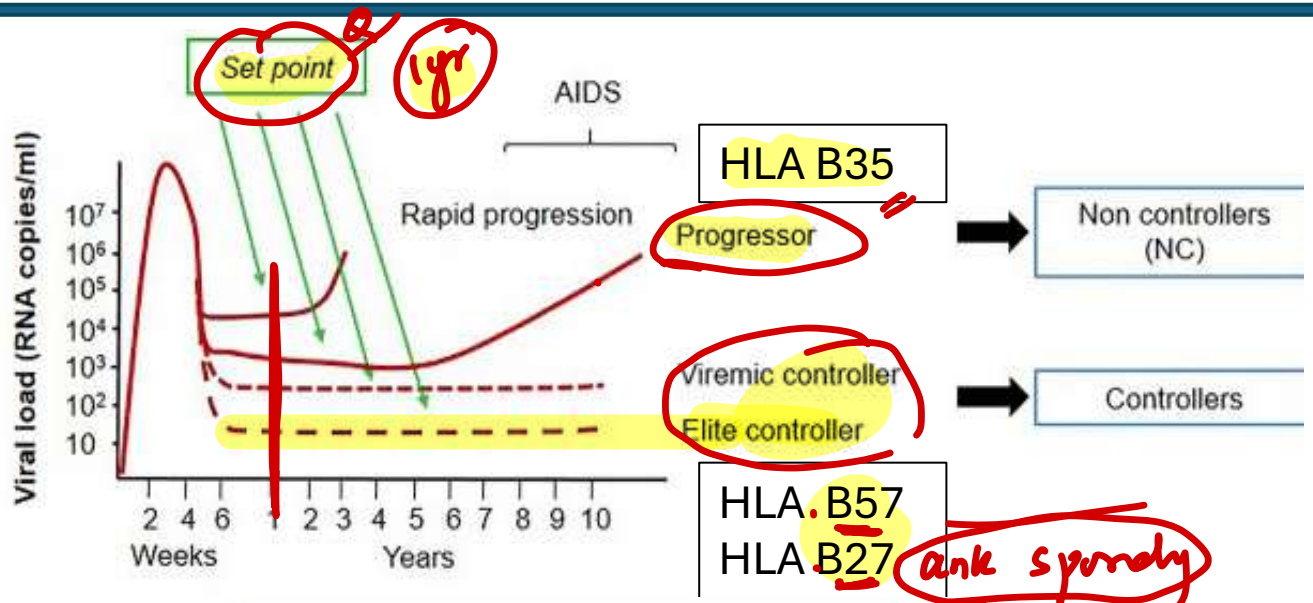


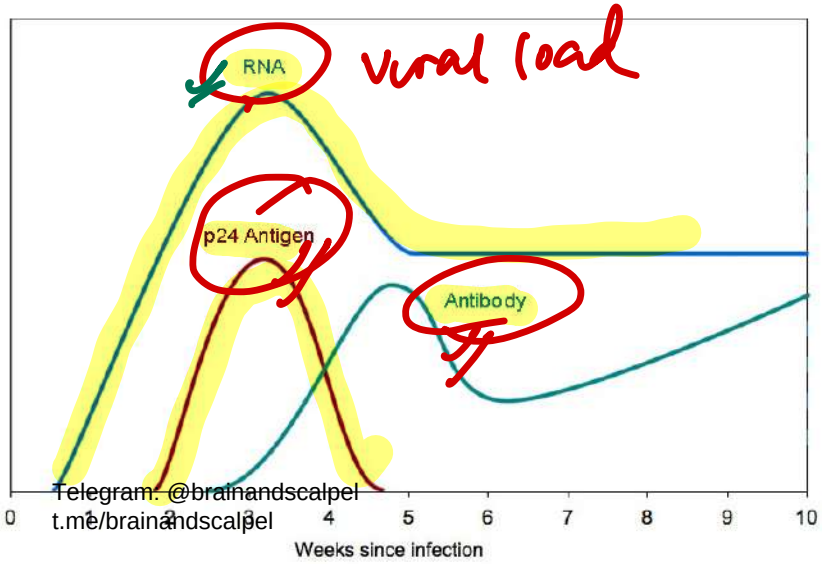
Coreceptor, either CCR5 on macrophages (early infection) or CXCR4 on T cells (late infection)
CCR5 (delta 32) mutation =
MC strain in india:

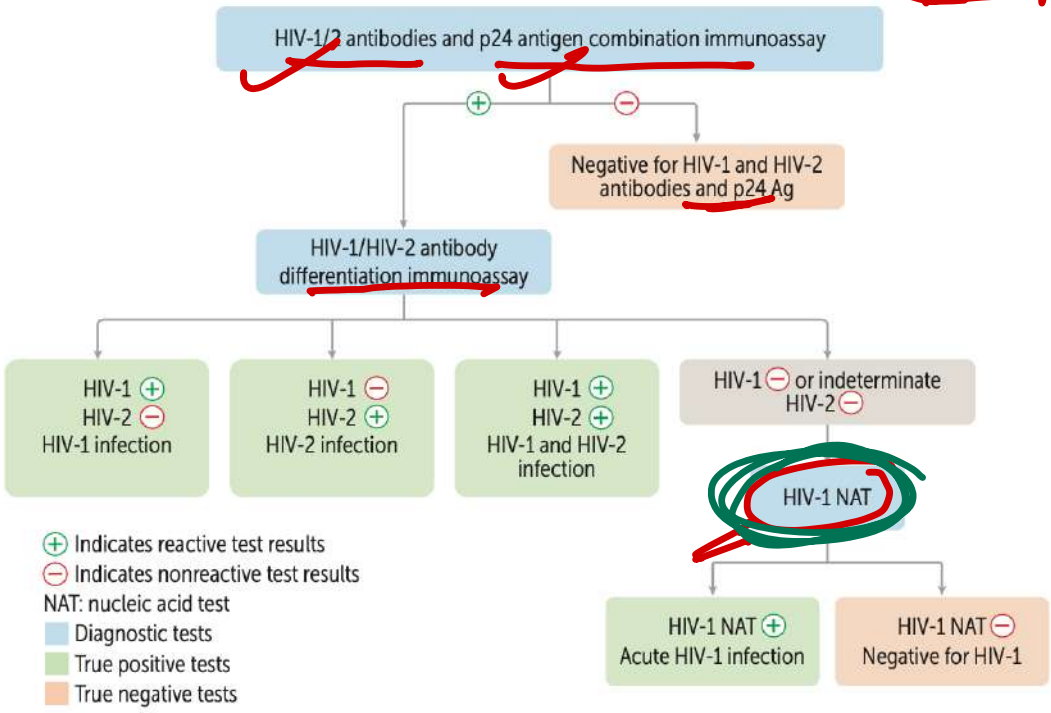
Telegram: @brainandscalpel
t.me/brainandscalpel

Acute HIV : Feiberg classifn.









NACP

Commonly used screening tests are:

- Enzyme Linked Immunosorbent Assay (ELISA)
- Rapid tests
  - Immunoconcentration/Dot Blot assay (vertical flow)
  - Agglutination assay
  - Immunochromatographic assay (lateral flow)
  - Dipstick and comb assay based on Enzyme Immune Assay (EIA)

Confirmatory:
Western Blot
HIV DNA PCR
P24 viral Ag test

90% of people living with HIV know their status → 90% of people who know their HIV-positive status are on antiretroviral therapy → 90% of people on antiretroviral therapy are virally suppressed

Blood donation:
Symptomatic:
Asymptomatic:
ANC-Opt out test

	Efficiency/Risk
Sexual transmission	0.01-1%
Blood	90%
Needles	0.3%
Vertical	30% (max: during delivery)

All in initiative
Nirantar scheme
SUNRISE project

HIV sentinel surveillance:
NOT:
Biennel-Unlinked, anonymous
Proxy for general population :
High-risk : CSW MSM TG iv drug abusers
Bridge group: Single male migrants, Truck drivers

MTCT

HIV + Pregnant female: start ART

Delivery: LSCS (viral copies : <1000 /ml - vag delivery)

Most important prognostic factor: MATERNAL VIRAL LOAD

Newborn of mother on ART: 6 wks - Nevirapine

High-risk newborn: 12 wks - N + Z

Bf ✓

Early infant diagnosis: RT PCR - 6 wks → -ve → 6 monthly (2 yrs)

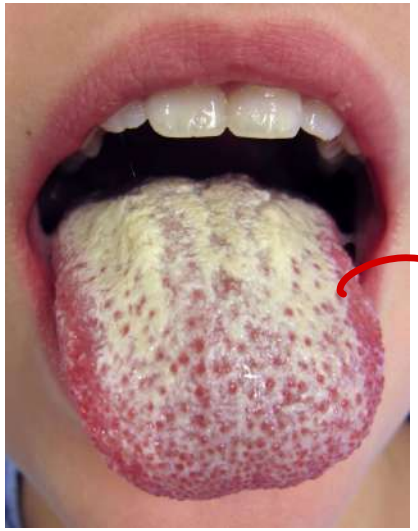
Stage 1 Asymptomatic	Stage 2 Mild disease	Stage 3 Moderate disease	Stage 4 Severe disease (AIDS)
No symptoms	Wt. loss>5–10%	Wt. loss>10%	HIV wasting syndrome
	Sore or cracks around the lip	Oral thrush	Esophageal thrush
Or only persistent generalized lymphadenopathy	Seborrhea	Oral hairy Leukoplakia	More than 1 month: Herpes simplex ulceration
	Persistent parotid enlargement: BLEL	More than 1 month	Lymphoma
	Recurrent URTI	• Diarrhea	Kaposi sarcoma
	Recurrent mouth ulcer	• Unexplained fever	Invasive cervicalcancer
	Persistent HSM	• Severe bacterial infection	Pneumocystic pneumonia
	Idiopathic pruritus	• Pneumonia	Extrapulmonary TB
	MCV	• Muscle infection	Cryptococcal meningitis
	Viral warts	Pulmonary TB	Toxoplasma brain abscess
		TB lymphadenopathy	Visceral leishmaniasis
		Acute necrotizing ulcerative gingivitis	HIV encephalopathy
		Pancytopenia	

Benign lymphoepithelial lesions

AIDS defining
>10% wt loss +
>1m d/f/wt loss

OPPORTUNISTIC INFECTIONS

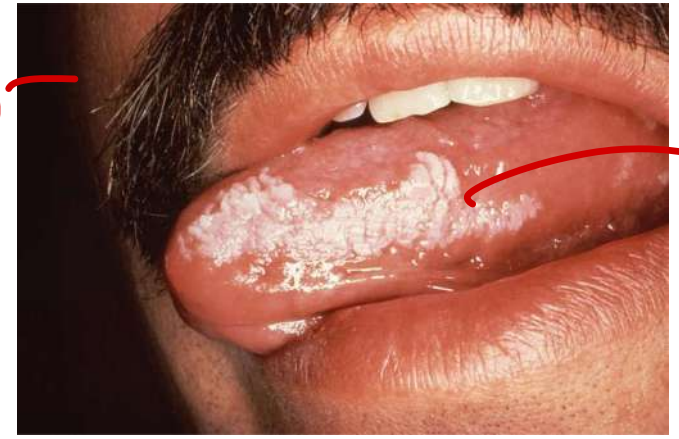
CD4 <500



candidiasis

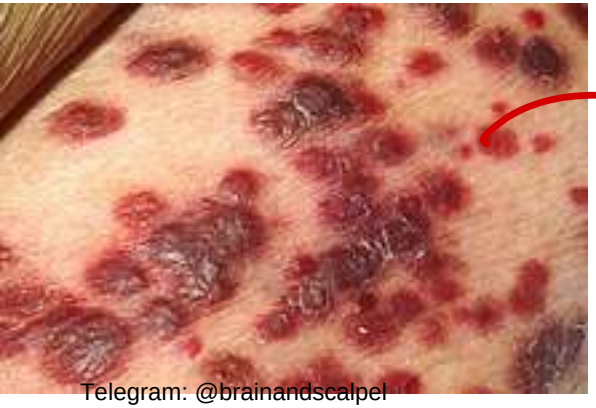
st 3

thrush



OHL

EBV



KS

"violaceous"

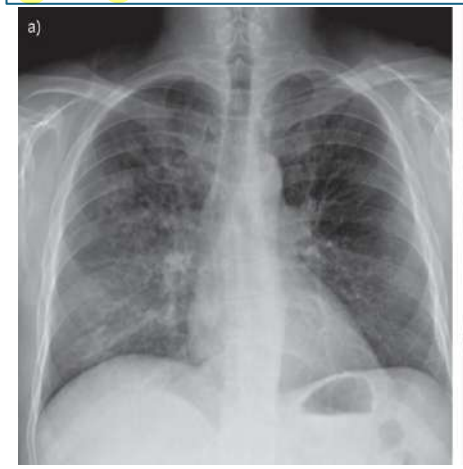
"spindle cell"

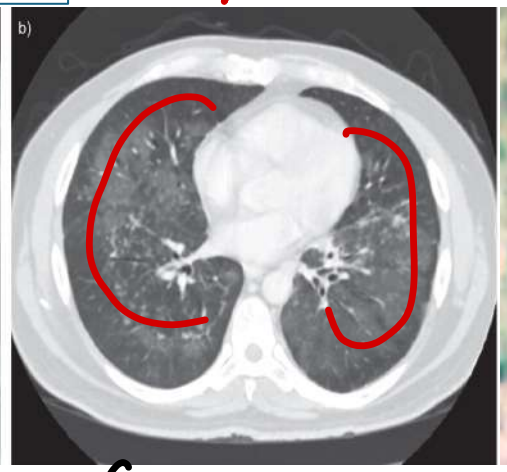
HHV 8

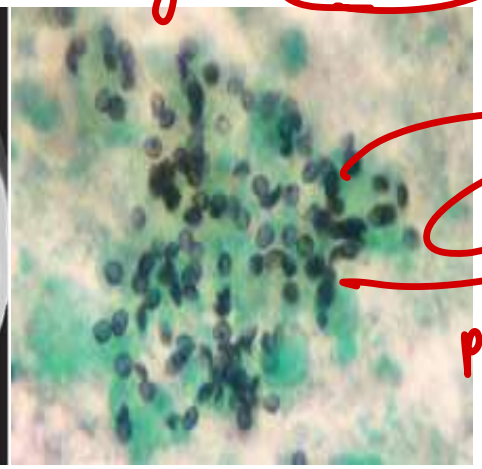
- TB (MC)
- HIV associated DCM
- Most common cardiac complication: coronary art disease
- Least common cardiac complication: pericarditis
- HIV associated FSGS - collapsing
- Anemia
- Ca cervix
- MC neuropathy: distal sensory N

CD4 <200

B/L GGO central + cystic — PCP



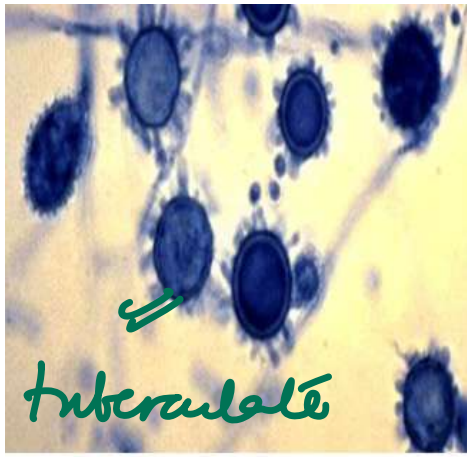




BAL

GMS

ping pong appearance



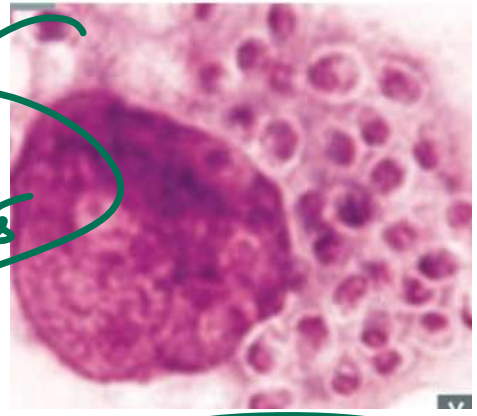
tuberculate

Rx: TMP-SMX DS (160mg-800mg)

Severe disease: pO_2 < 70mm — Steroids ++

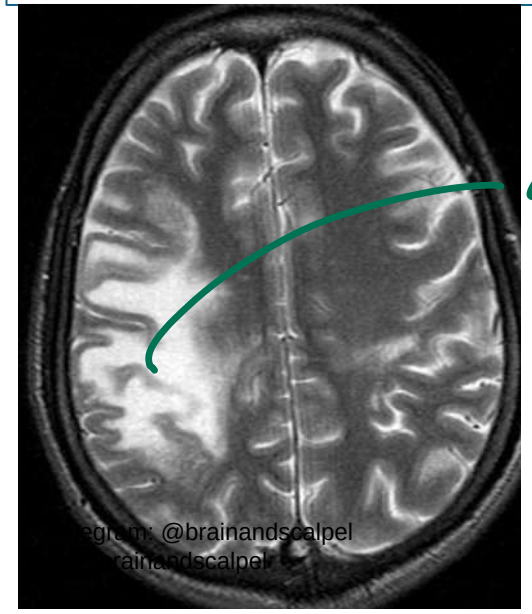
Prevention: TMP-SMX — WHO: CD4 < 350 / candidiasis

Stop: >350 x 6mm



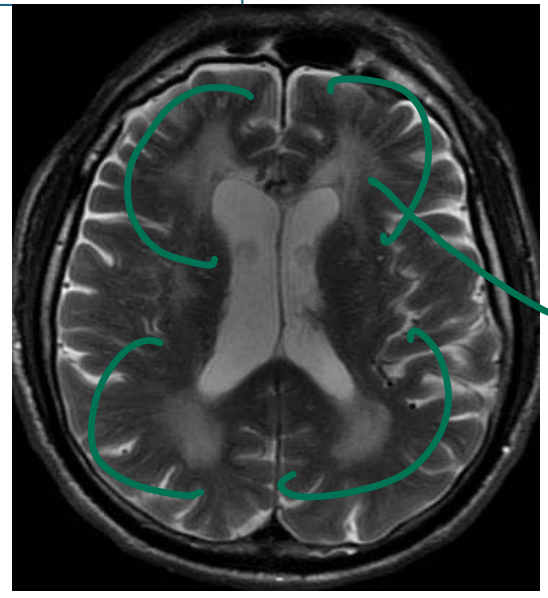
ic yeasts

Histoplasmosis



asymmetric WM

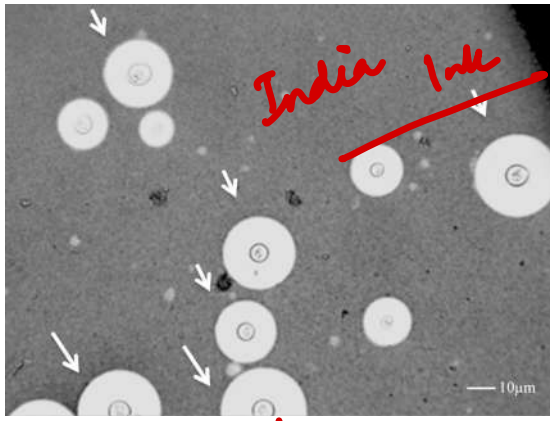
PML — JC virus



HIV ass neurocognitive disorder (HAND)

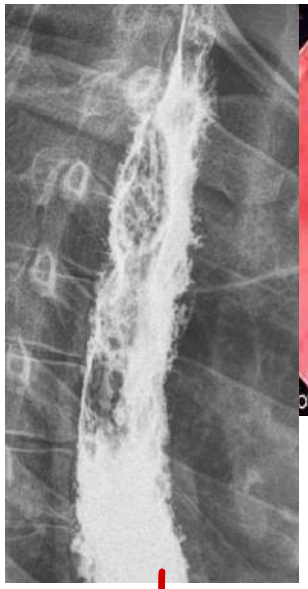
Frascati classific?

CD4 <100

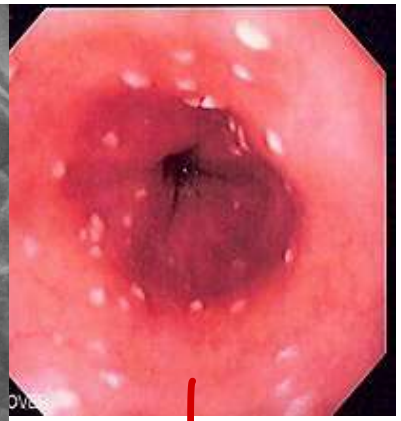


Cryptococcal meningitis

most sn – Latex aggl

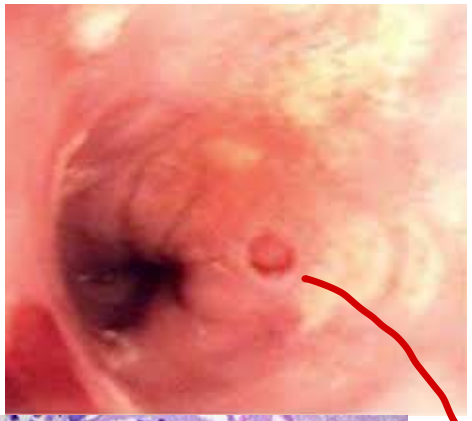


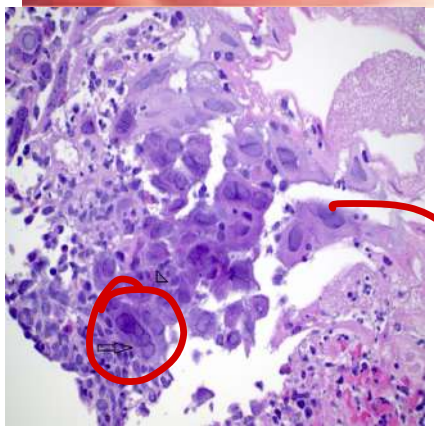
Shaggy



White

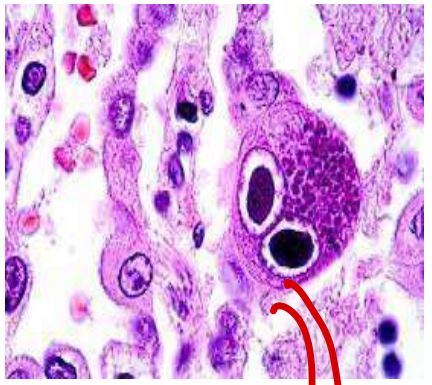
Candida





punched out

HSVI



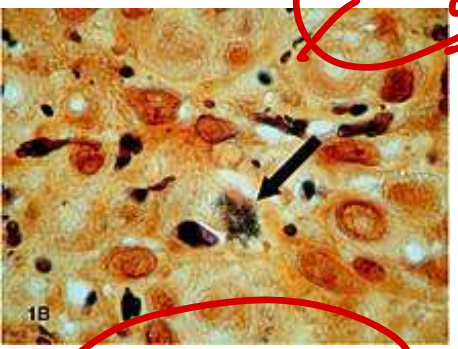
serpiginous ulcer

CMV

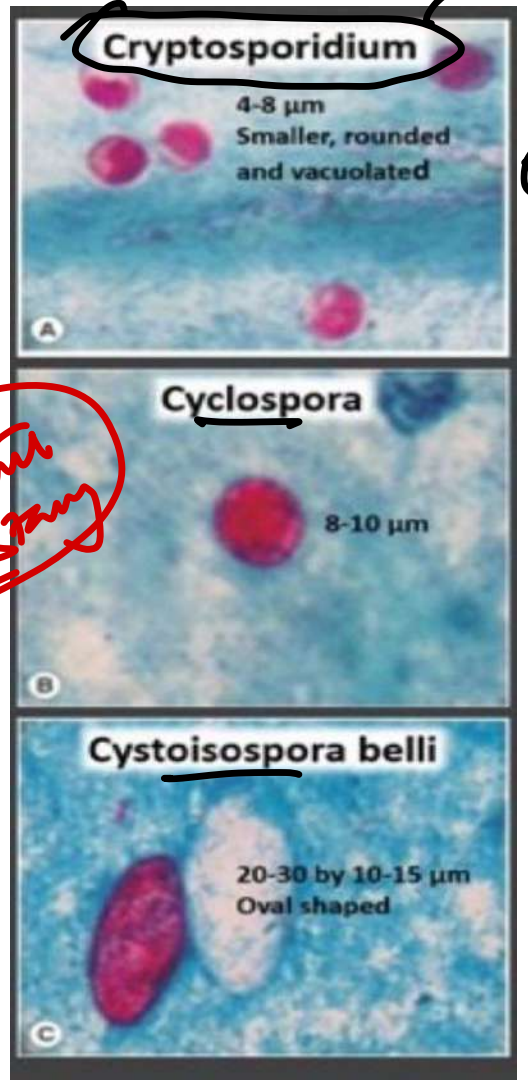
Rx: Amp B + Flucytosine x 2wks → Fluconazole x 6mon

Prevention: CD4 <100 – Fluconazole

CD4 <100



Bacillary angiomatosis
B. henselae

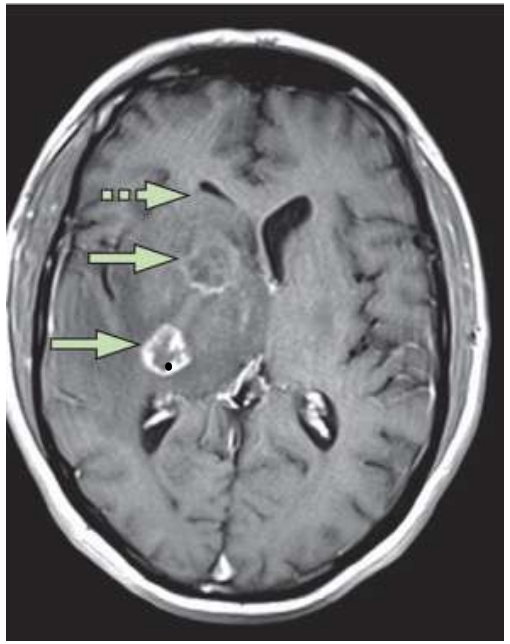


Nitazoxanide

4-8 M

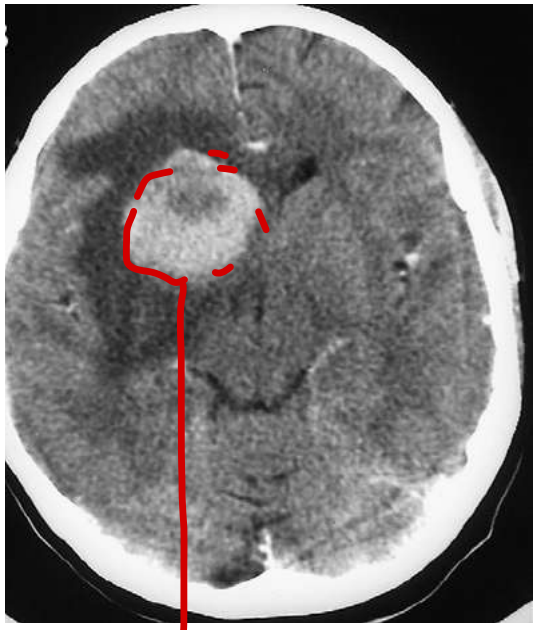
8-10 M

TMP: SMX



Target

TOXO



PCNS Lymphoma

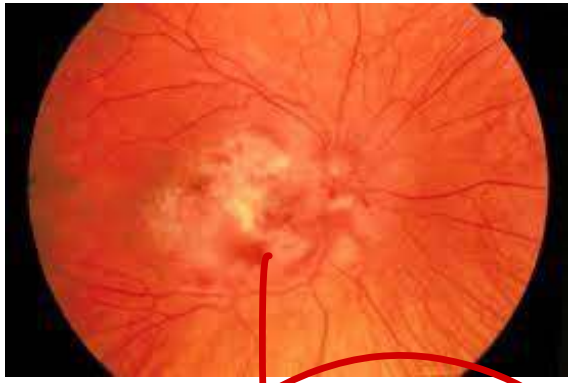
· periventricular

HIV associated enteropathy:

diarrhea >1mon + no dx of infx

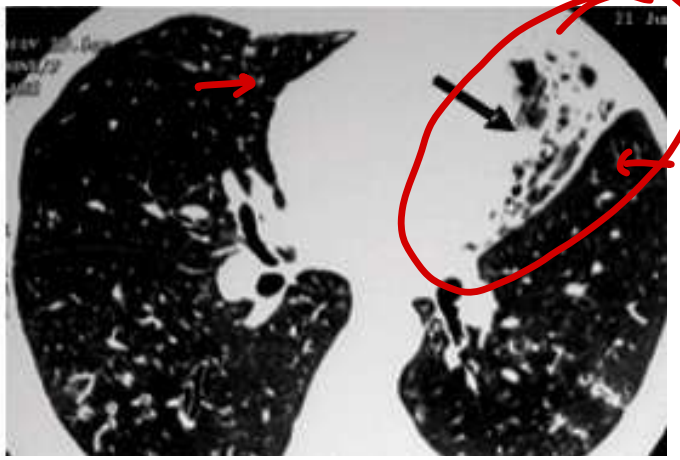
Ingestion-
Cat feces: oocyst
Meat: bradyzoite
Vertical: tachyzoite
Frenkel test

CD4 <50



Pizza pie

CMV retinitis

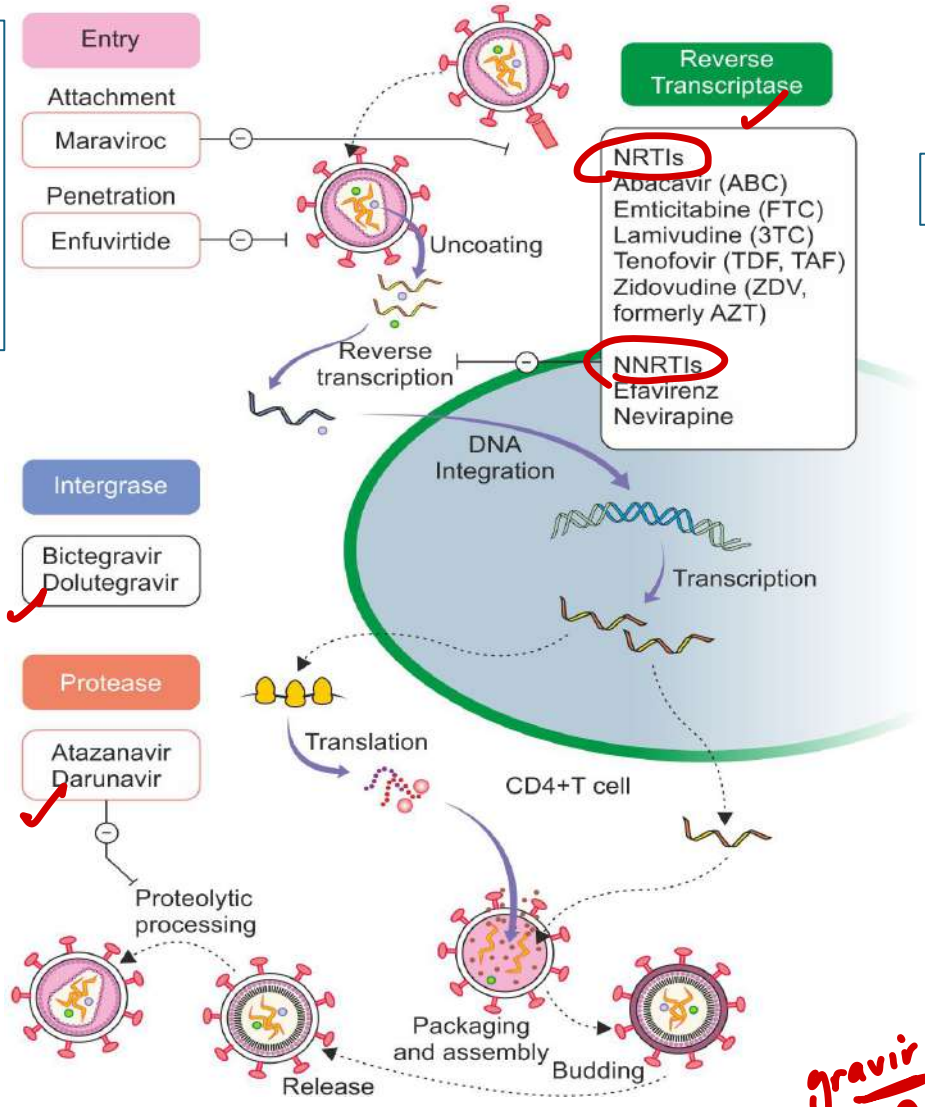


Middle lobes

MAC

Anti-Viral drugs

gp120-
Fostemsavir (oral)
gp41-
Enfuviritide
CD4:
Ibalizumab
CCR5:
Maraviroc (oral)



[a]All protease inhibitors require boosting with either ritonavir (protease inhibitor only used as a boosting agent) or cobicistat (cytochrome P450 inhibitor).

ART / PEP :

Tenofovir 300 mg + Lamivudine 300 mg + Dolutegravir 50 mg

CHILDREN <30 kg / renal failure :

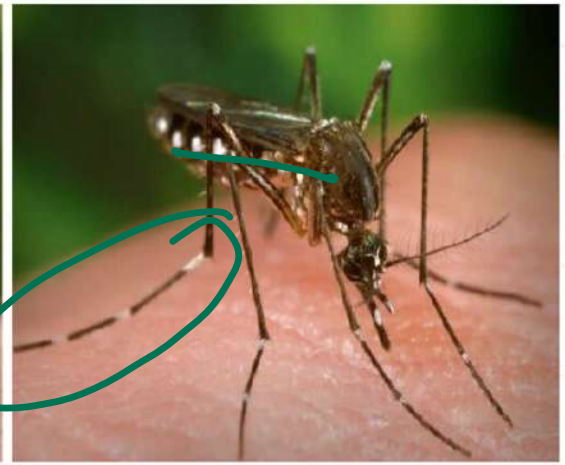
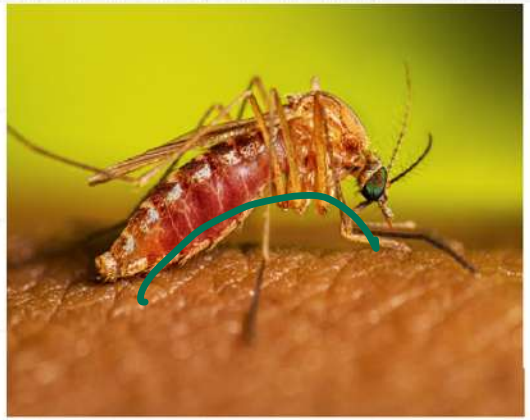
Abacavir + Lamivudine + Efavirenz

Max neuropathy- stavudine
Max pancreatitis- didanosine
BM suppression, Hepatotoxic- zidovudine
Nephrotoxic- Tenofovir
MI- Abacavir
Pigmentation in palms and soles- Enfuviculatide
Safest- Lamivudine
Hep B- LET

Best to prevent vertical transmission- Nevirapine
Teratogenic, Vivid dreams- Efavirenz

Min lipodystrophy- Atazan
Ritonavir boosting not with- Nelfinavir
Stones, hyperbilirubinemia- Indinavir
Intracranial hemorrhage- Tipranavir

NVBDCP

Anopheles → Malaria

Aedes → Dengue, Chikungunya

Culex → JE, West Nile

Mansonia → Bugia

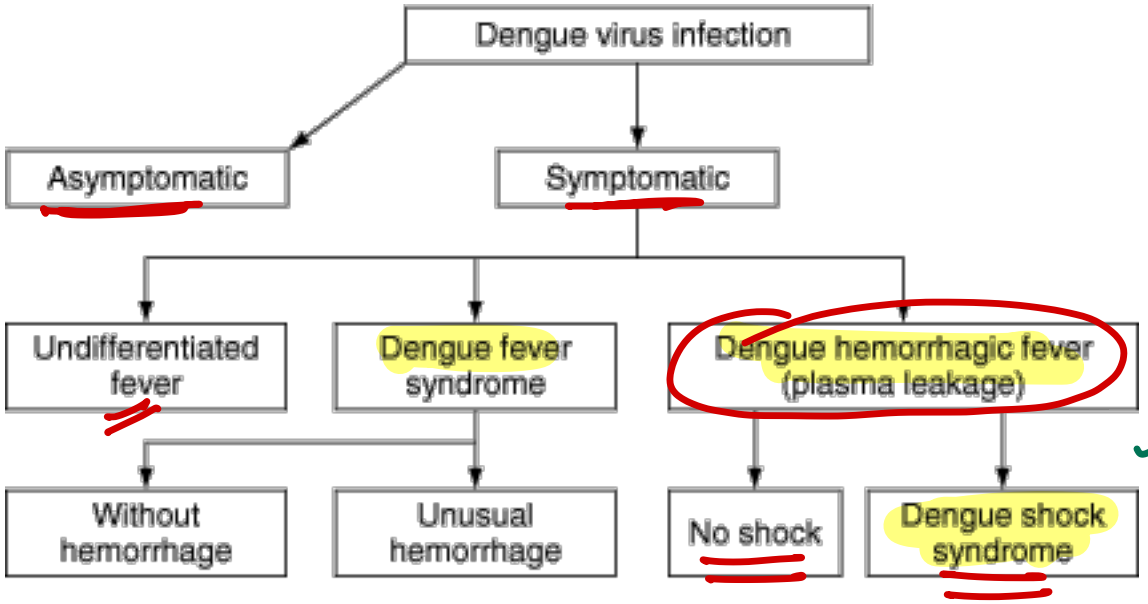
Sandfly → Kala azar

Wuchereria

- Zika
- YF
- Rift valley

Targets:
API: <1
ABER: >10%
Reduce lifespan of mosquito to: 10 days
Microfilaremia: <1%

Dengue: Flaviviridae



*DF: Fever of 2-7 days with two or more of following- Headache, Retro orbital pain, Myalgia, Arthralgia with or without leukopenia, thrombocytopenia and no evidence of plasma leakage.

DHFI: Above criteria plus positive tourniquet test and evidence of plasma leakage. Thrombocytopenia with platelet count less than 100000/ cu.mm and Hct rise more than 20% over baseline.

DHFII: Above plus some evidence of spontaneous bleeding in skin or other organs (black tarry stool, epistaxis, gum bleeds) and abdominal pain. Thrombocytopenia with platelet count less than 100000/ cu.mm and Hct rise more than 20% over baseline.

DHFIII (DSS): Above plus circulatory failure (weak rapid pulse, narrow pulse pressure < 20 mm Hg, Hypotension, cold clammy skin, restlessness). Thrombocytopenia with platelet count less than 100000/ cu.mm and Hct rise more than 20% over baseline.

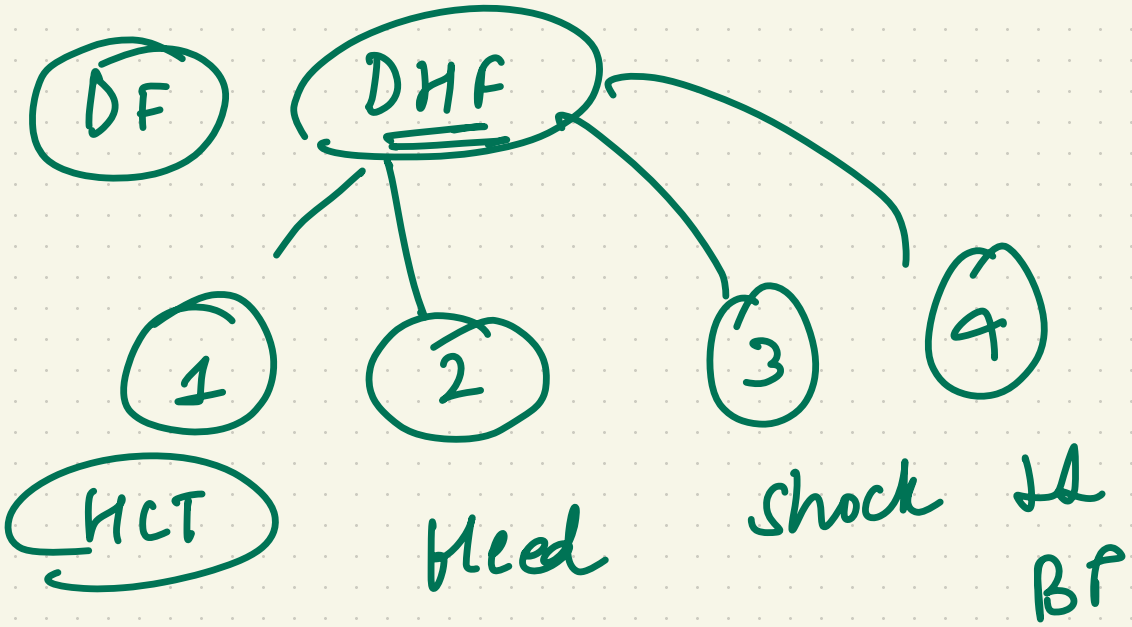
DHFIV (DSS): Profound shock with undetectable blood pressure or pulse. Thrombocytopenia with platelet count less than 100000/ cu.mm and Hct rise more than 20% over baseline.

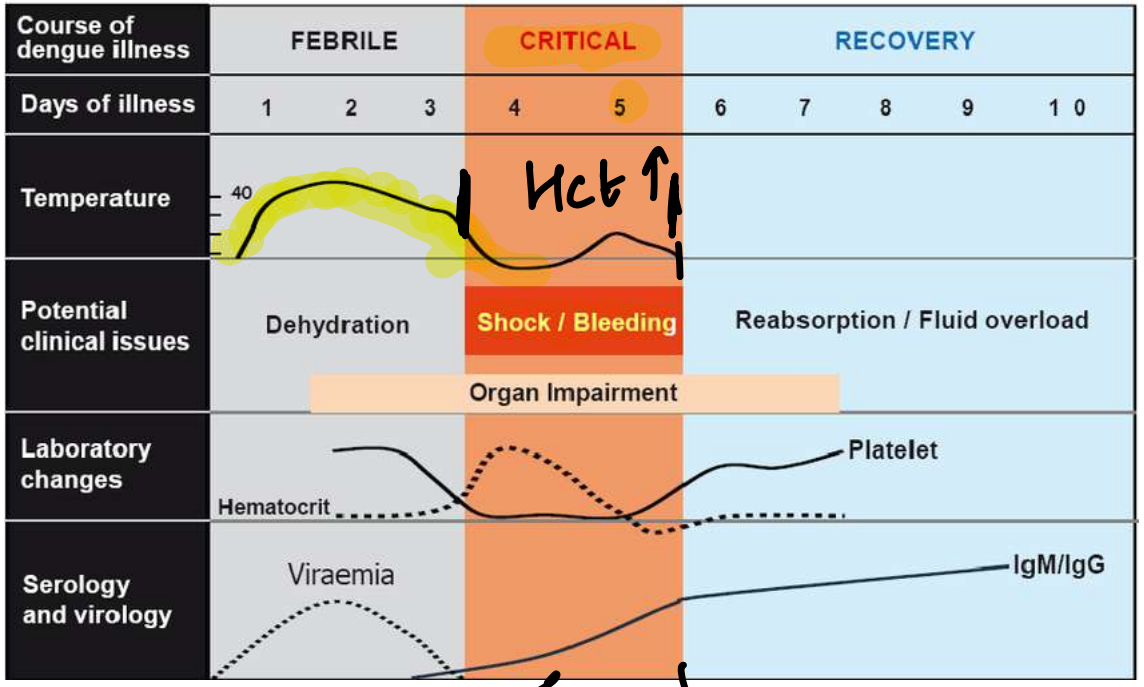
Conifrmed dengue Fever:
A case compatible with the clinical description of dengue fever with at least one of the following

- Isolation of the dengue virus (Virus culture +VE) from serum, plasma, leucocytes.
- Demonstration of IgM antibody titre by ELISA positive in single serum sample.
- Demonstration of dengue virus antigen in serum sample by NS1-ELISA.
- IgG seroconversion in paired sera after 2 weeks with Four fold increase of IgG titre.
- Detection of viral nucleic acid by polymerase chain reaction (PCR).

Breteau index: Aedes

$$= \frac{\text{no. of containers +}}{\text{no. of houses}}$$

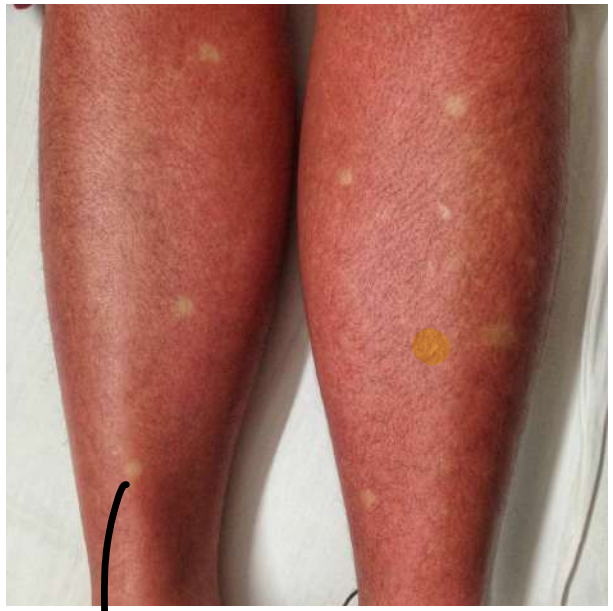




> 1 lakh

Plt

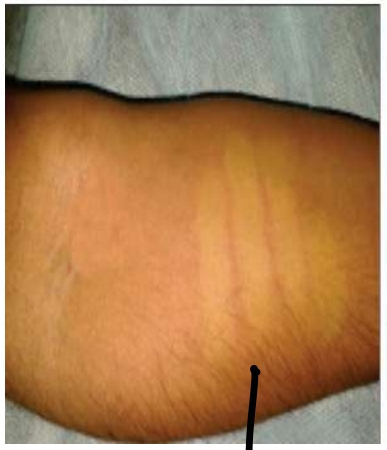
1 lakh 50k 20k 30k 50k

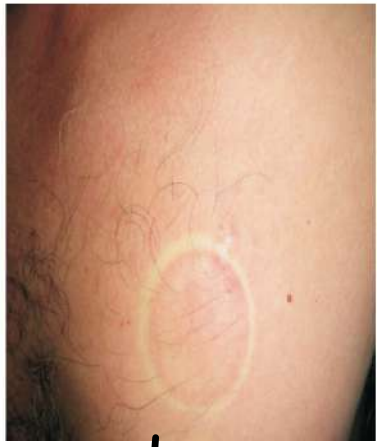


trunk → palms/soles

white island

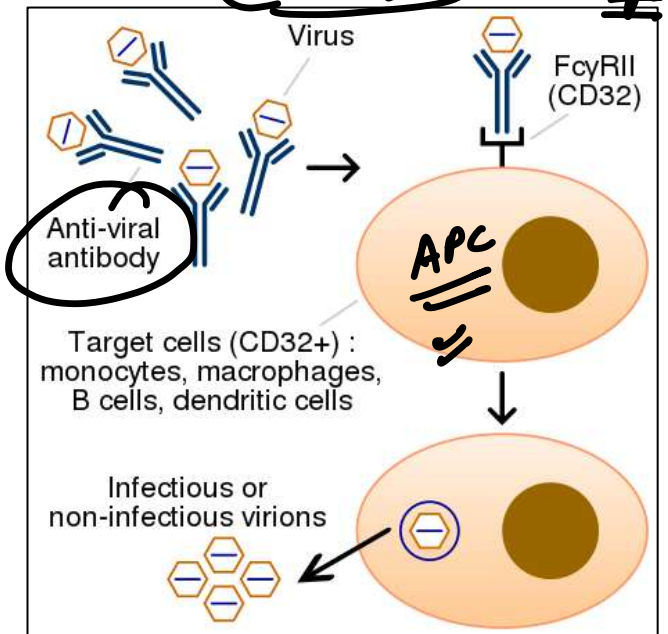
sea of red



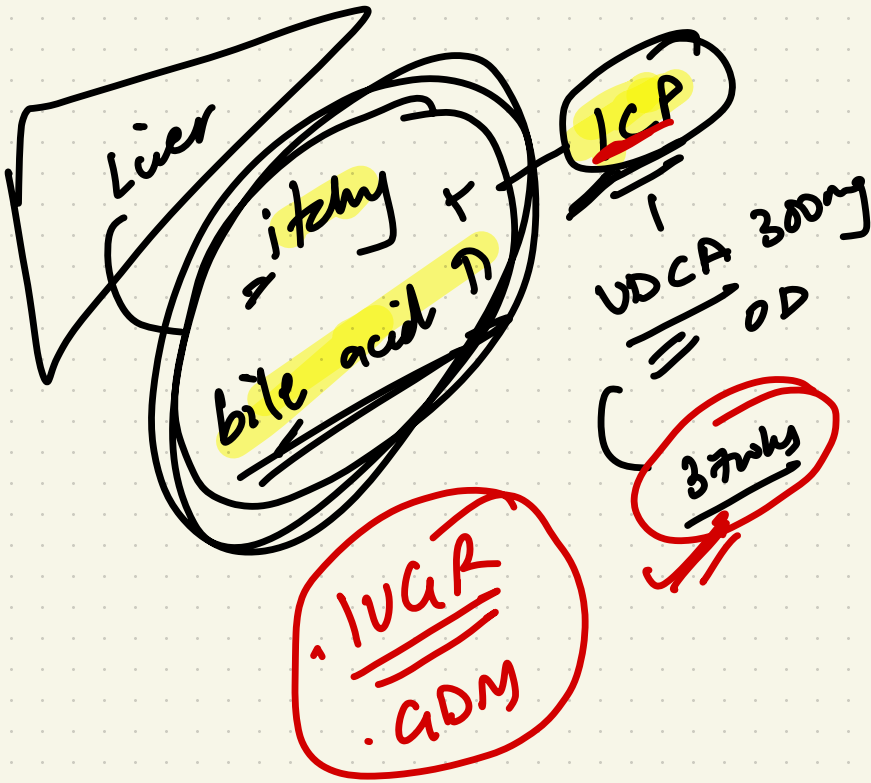


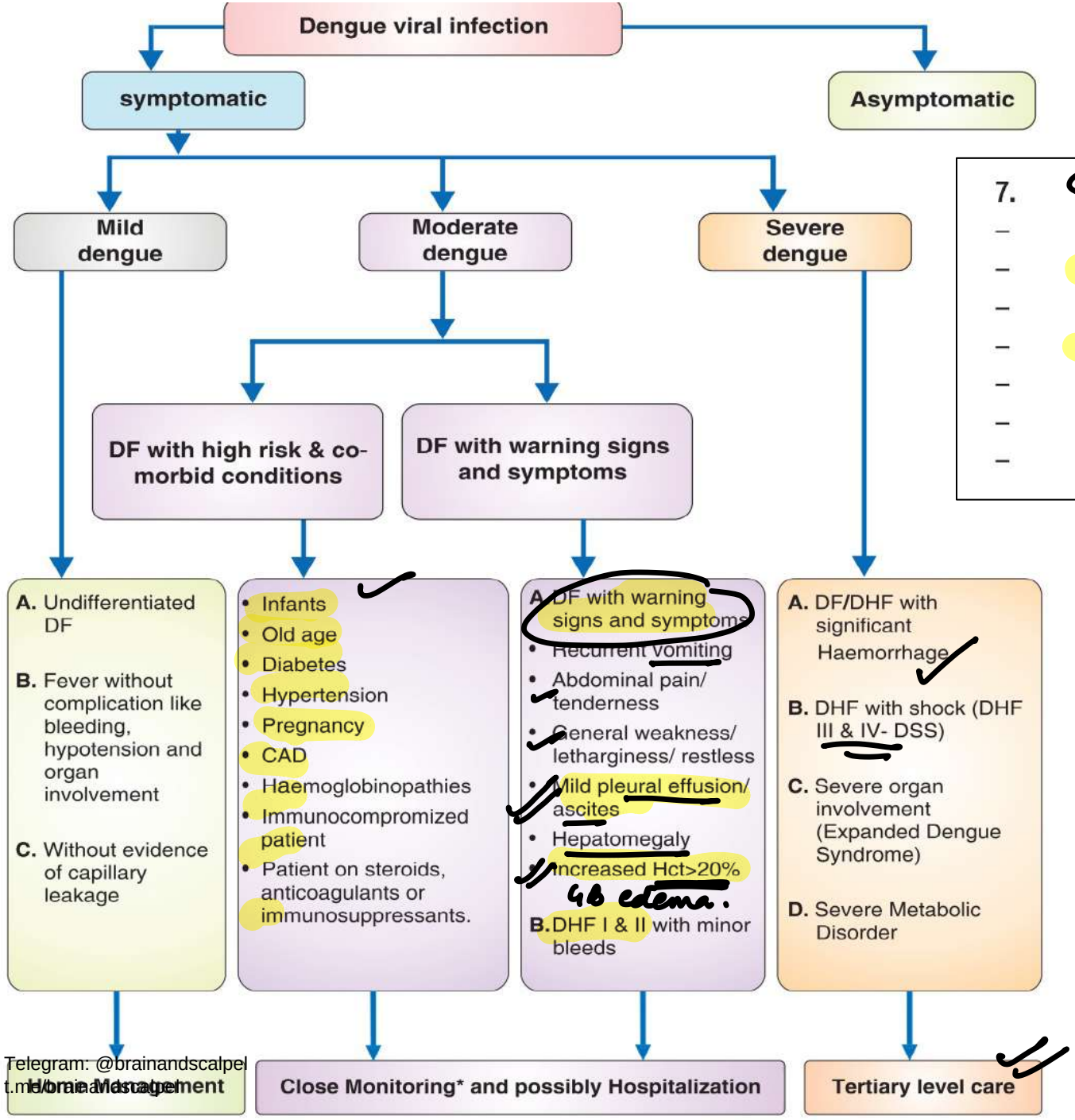
'Blanch'

ADE : ↑ r/o dengue



Tourniquet test: The tourniquet test is performed by inflating a blood pressure cuff to a midpoint between the systolic and diastolic pressure and maintain for five minutes. The test is considered positive when 10 or more petechiae per one square inch area over forearm are observed.[18] In DHF, the test usually gives a definite positive test with 20 petechiae or more. The test may be negative or only mildly positive during the phase of profound shock (DSS).



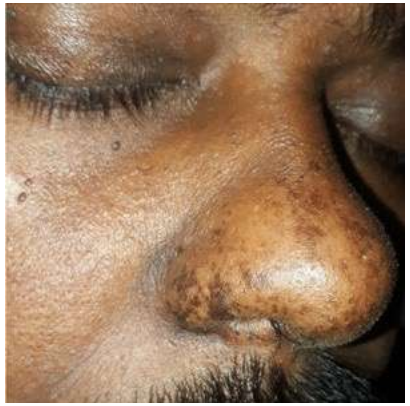


7. **Criteria for discharge of patients**
   - Absence of fever for at least 24 hours without the use of anti-fever therapy
   - No respiratory distress from pleural effusion or ascites
   - Platelet count > 50 000/mm^3
   - Return of appetite
   - Good urine output
   - Minimum of 2 to 3 days after recovery from shock
   - Visible clinical improvement.

- IV crystalloids
- Platelet: <10000/ bleeding

CHIKUNGUNYA

Sl. No.	Features	Chikungunya	Dengue
1.	Fever Onset Duration	Acute 2-4 days	Gradual 5-7 days
2.	Rash	Maculopapular	Petechiae maculopapular
3.	Arthralgia Frequency Duration	Frequent May last longer than a month	Less common Short duration
4.	Hypovolaemic shock	Rare	Common
5.	Leukopenia	Common	Infrequent
6.	Thrombocytopenia	Infrequent	Common
7.	Haematocrit	Normal	High



CHIK eg

FILARIASIS

The lymphoedema management involves the following components:

- Washing,
- Prevention and cure of entry lesions,
- Elevation of the foot,
- Exercise
- Wearing proper footwear,
- Management of acute attacks.

- The dose for different age groups is indicated below:

Age (in years)	DEC		Albendazole (400 mg)
	Dose	No of Tablets (100 mg)	
<2	Nil	Nil	Nil
2-5	100 mg	1 tablet	1 tablet
6-14	200 mg	2 tablets	1 tablet
15 & above	300 mg	3 tablets	1 tablet

10 Feb
10 Aug

Mass Drug Administration:

Administration of single dose of antifilarial drugs to the entire community (mass drug administration), yearly once for 5-6 years.

biannual

Who should take the drugs?

- Everybody in the community, except pregnant women, children below two years of age and persons who are very sick from other illness.

When should people take DEC tablets?

- DEC tablets should be taken once in a year on the identified day of MDA (National Filaria Day).

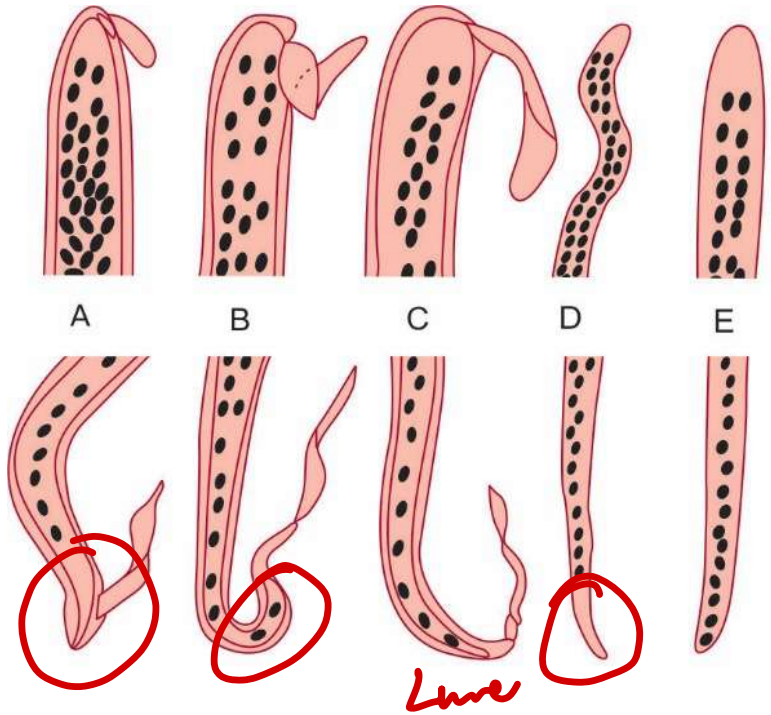
A. Wuchereria bancrofti

B. Brugia malayi

C. Loa loa

D. Onchocerca volvulus

E. Mansonella perstans



Transmission assessment survey

IOC: Periph blood smear – 10pm - 2am

DEC Provocation test

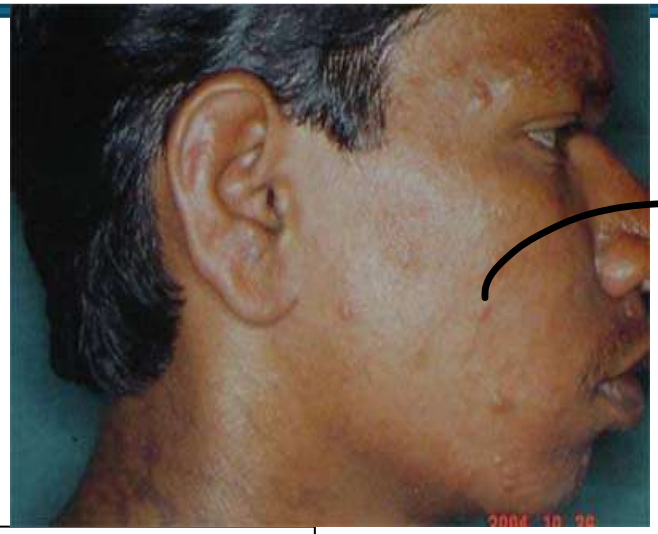
Concentration: Membrane filtration / Knott method (2% formalin)

DOC: DEC 6mg/kg - 12 doses + Alben + Ivermectin

KALA-AZAR

LD bodies

Gold std

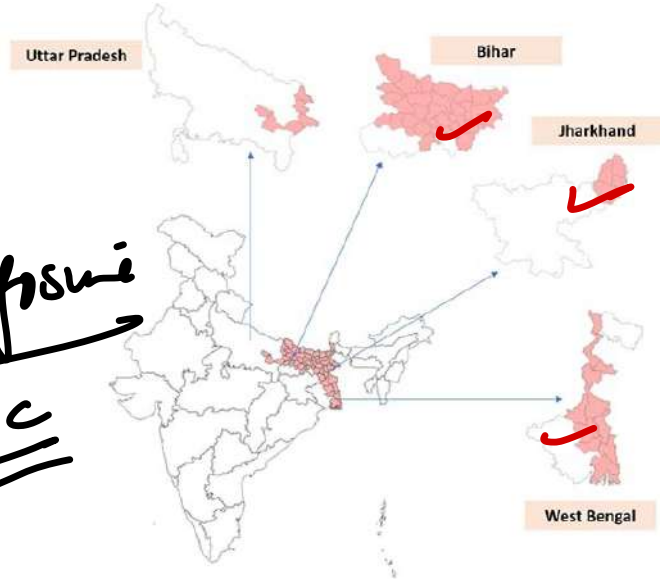


PKDL

nodular

multifocal

DOC



PUO+ HSM
Rk39 Ag Test
Napier's aldehyde test
Kinetoplast
Montenegro test
NNN medium

LOC

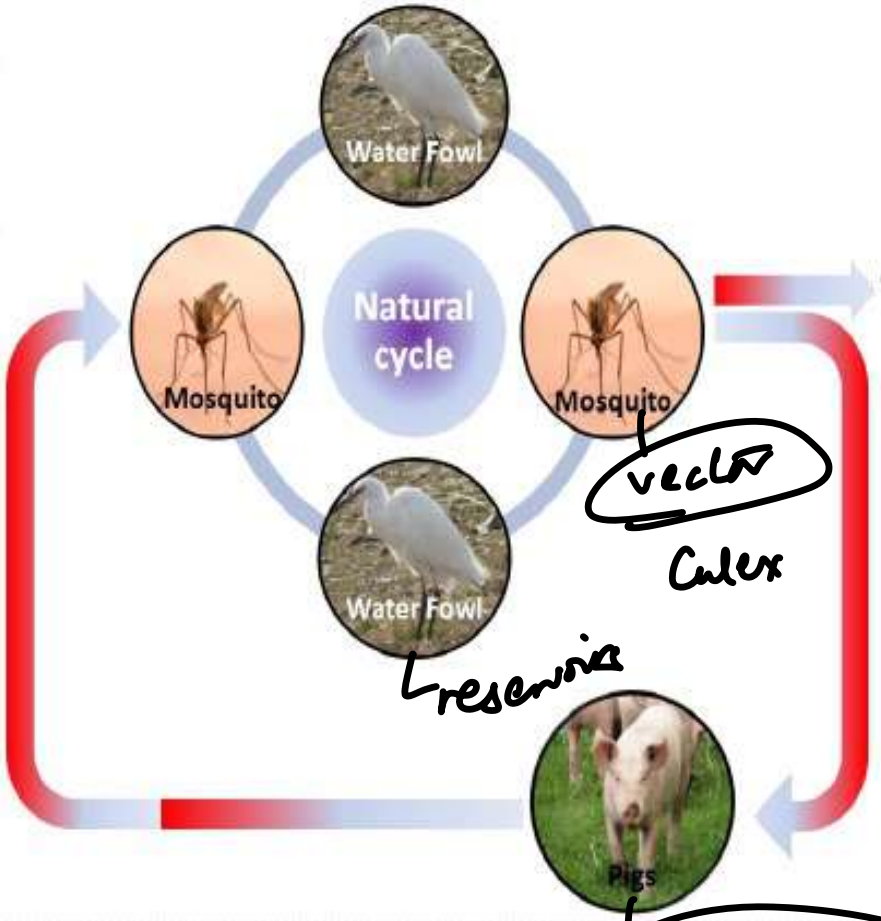
DOC: Liposomal Amp B → Miltefosine
Inj n

↓

Paromomycin

- Incentive to ASHA Rs. 500/- for Kala-azar and PKDL case identification, complete treatment & follow up
- One time Wage loss incentives/compensation of Rs 4000/- to each new PKDL patient and Rs 500 for Kala-azar patient
- Free diagnosis and treatment for KA and PKDL patients at all CHC/PHCs of the endemic blocks
- To generate healthy competition among states/districts/blocks and incentivize the well-performing states for achieving the target

JE



vector

Culex

dead-end

reservoir

Amplifier

vaccinate

- 2 doses of JE vaccine have been approved to be included in UIP to be given one along with measles at the age of 9 months and the second with DPT booster at the age of 16-24 months w.e.f. April, 2013.
- Killed vaccine 0.5ml: im; Open vial followed

Live attl SA 14-14-2 - ✗ open vial

The JE case is suspected as per clinical signs/symptoms and it has to be confirmed in laboratory as follows:-

Clinical: Acute onset of fever <7 days duration associated with change in mental status (may include irritability, somnolence or abnormal behavior greater than that seen with usual febrile illness) and/or new onset of seizures (excluding simple febrile seizures).

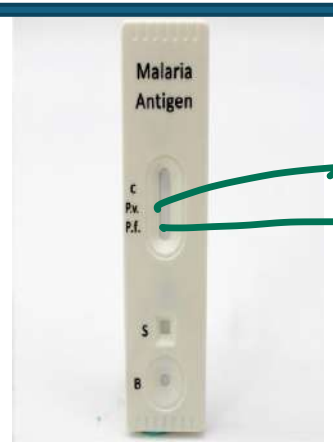
Confirmatory test:- It has to be laboratory confirmed with any one of the following markers:

- Presence of IgM antibody in serum and/ or CSF to JE Virus
- Four fold difference in IgG antibody titre in paired sera
- Virus isolation from brain tissue
- Antigen detection by immunofluroscence
- Nucleic acid detection by PCR

Malaria

Peripheral smear stain- JSB
Thin: species Thick: +/−
Fluorescent stain: Acridine orange
1 microscope: 1/25k
Most important measure of malaria control: API (<1)
Best indicator of operational efficiency: ABER
Best during outbreak: SPR
Absence of duffy Ag:
PvPo- CHLOROQUINE + PQ (prolerive, schizonts)
PfPm- ACT-SP + PQ (sd)
PfPm in NE- Artemether + Lumefantrine
Severe malaria- IV Quinine / Artesunate
CI in pregnancy: PQ
Prophylaxis- Doxy OD / Mefloquine wkly → continue : 4 wks
Mw vaccine extracted from: M. indicus pranii (Leprosy)

1st T: Quinine
2nd T : ACT
3rd

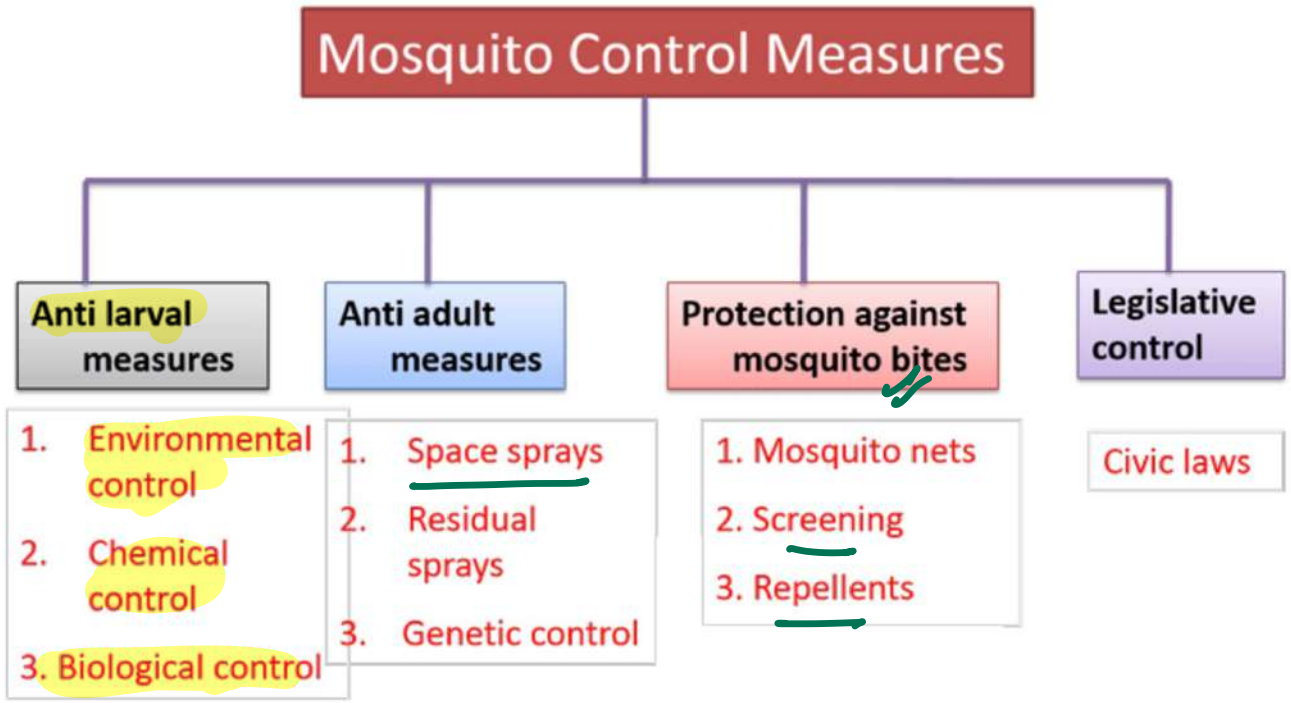


LDH / aldolase
Hrp 2

S. No.	Categories of states/UTs	Definition
1.	**Category 0:** Prevention of re-establishment phase	States/UTs with zero indigenous cases of malaria.
2.	**Category 1:** Elimination phase	States/UTs (15) including their districts reporting an API of less than 1 case per 1000 population at risk . <1
3.	**Category 2:** Pre-elimination phase	States/UTs (11) with an API of less than 1 case per 1000 population at risk, but some of their districts are reporting an API of 1 case per 1000 population at risk or above.
4.	**Category 3:** Intensified control phase	States/UTs (10) with an API of 1 case per 1000 population at risk or above. >1

Mosquito bite: sporozoite
Transfusion: trophozoite
Placental transfer: merozoite

Integrated vector control approach for mosquito



Urban Malaria scheme:

- Source Reduction
- Use of larvicides
- Use of larvivorous fish
- Space spray
- Minor engineering
- Legislative measure

Key points

- Under programme, IRS and LLIN are recommended for adult control in routine for the areas qualifying for such intervention (API>1).
- Larval Source Management was recommended earlier for urban areas/towns covered under Urban Malaria Scheme/National Filaria Control Programme.
- Currently, Larval Source Management is recommended for *Aedes* mosquitoes (vectors of dengue, chikungunya, Zika) and *An. stephensi* (Malaria vector) in urban areas and urbanized rural areas.
- Fogging (Thermal/Cold) is recommended for outbreak containment and not as a routine vector control measure.
- Approved insecticides under programme need to be used only.
- Insecticide resistance Monitoring by entomologists is crucial for change of insecticide and therefore data need to be generated on yearly basis.

Chemical:
Paris green= Stomach poison
Temephos/Abate = Contact poison

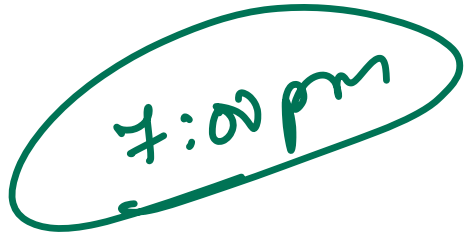
Biological: Gambisia / GUupy
Bacillus thuringiensis

Space spray: API <2
Malathion
Cyphenothrin
Pyrethrum

Residual spray: API >2:
DDT (2 rounds)
Malathion (3 rounds)
Deltamethrin (2 rounds)

RURAL

Deltamethrin
-ITBN: 6mon (AP 2-5)
-LLIN:3yrs (API >5)
0.0475inch
>150 holes/ich

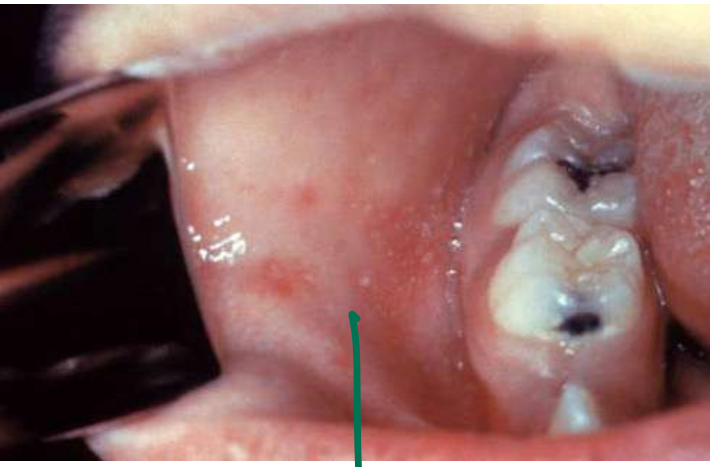


RESPIRATORY ILLNESS

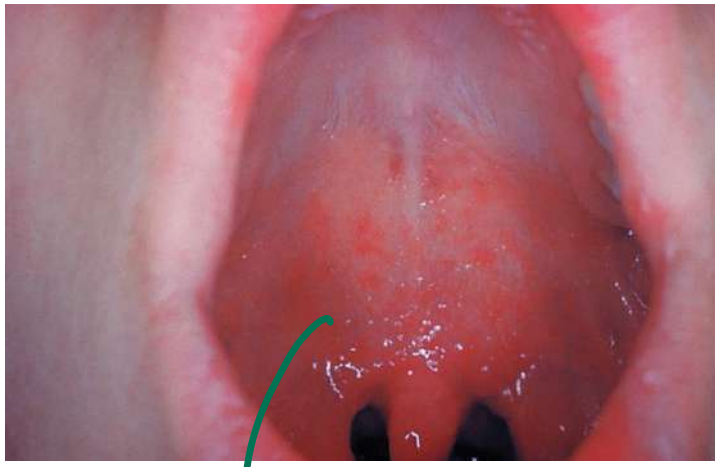
Communicable disease: Droplet infection

NS – BCG
PBS – TE

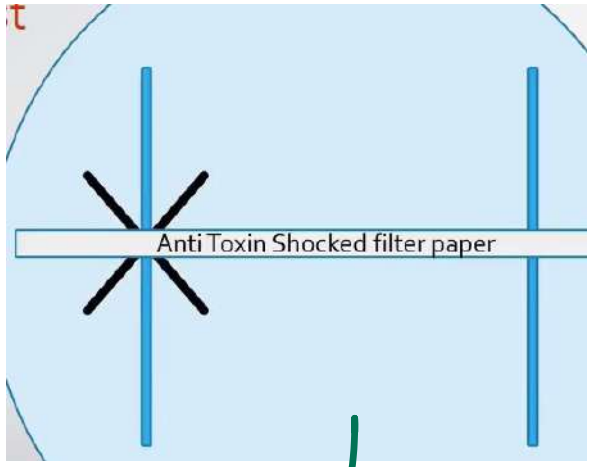
	IP	COMMUNICABLE PERIOD	IMPORTANT
VARICELLA	2w	2d before 5d after	MC complication: pneumonia VZIG only: Em 72hrs – pregn / ic / newborns Live vaccine OKA strain SC
MEASLES Paramyxo SSRNA - Enveloped	2w	4d bef 5d after	MC complication: otits media MCC of mortality: pneumonia Delayed: SSPE MR Live attenuated, SC, Edmonston Zagreb (DW) (DW) 9m / 16-24mos
RUBELLA	2w	〃	Seasonal, cyclical trend CRS: cataract / SNHL / PDA RA 27/3 strain vaccine-CI in pregnancy
DIPHTHERIA	2-5d	2w/c	Case: **Isolation till 2 negative culture** + Macrolides *14d + Antitoxin Contact: Culture+ Antibiotic+ Vaccine status: <3doses: complete vaccine >3 doses: >5yrs- booster dose <5yrs – NoThing
COVID-19	2-10d	2d bef 10d after	ACE-2, TMPRSS-2 receptors-Type 2 Pneumocytes



Koplik

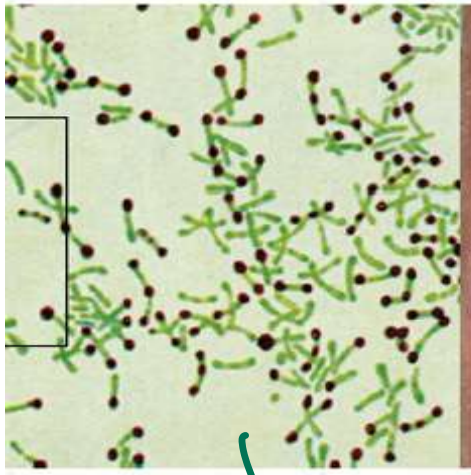


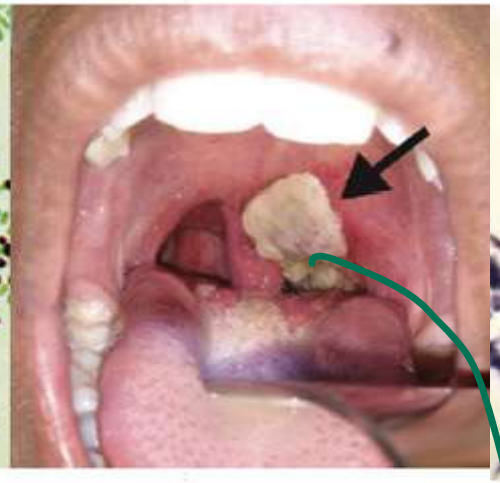
Forscheimer nibella

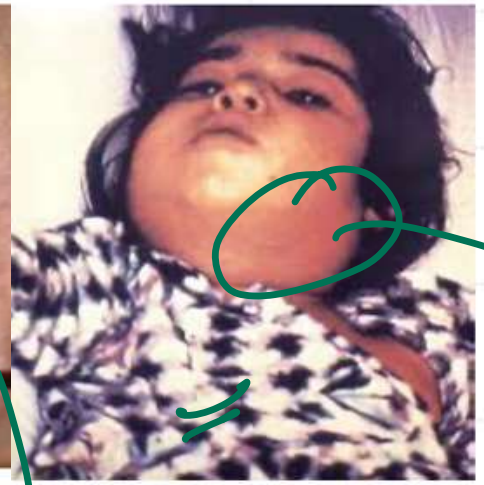


DT Elek &
EF (−)

Schick's hyp





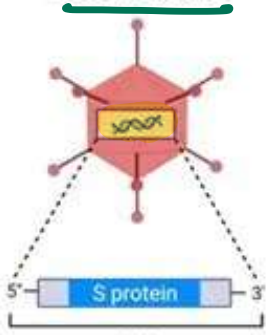


Bulls
neck

VOLUTIN Albert membrane x

COVID-19 vaccines

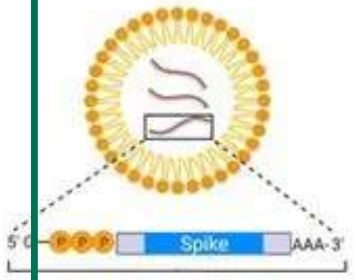
Vaccine: University of Oxford/ AstraZeneca



DNA

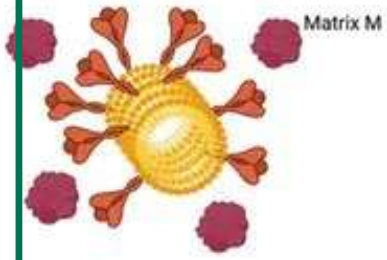
Platform: Adenovirus with gene for the SARS-CoV-2 spike (S) protein

BioNTech/Pfizer

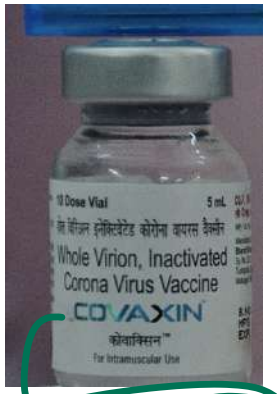


Platform: lipid nanoparticle-encapsulated mRNA vaccines encoding Spike protein

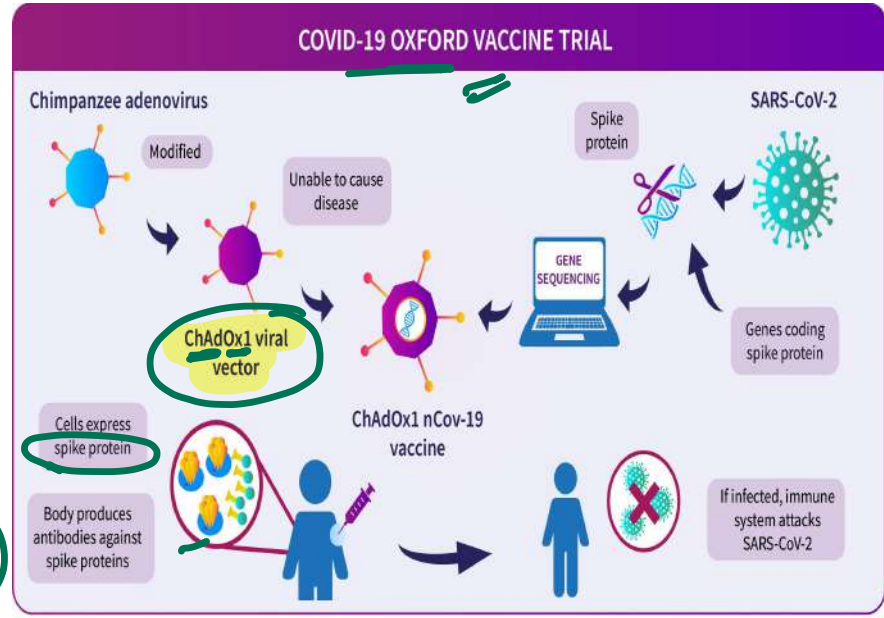
Novavax



Platform: Synthetic nanoparticle coated with trimeric spike protein. Matrix M used an immune-boosting adjuvant



Inactivated virus

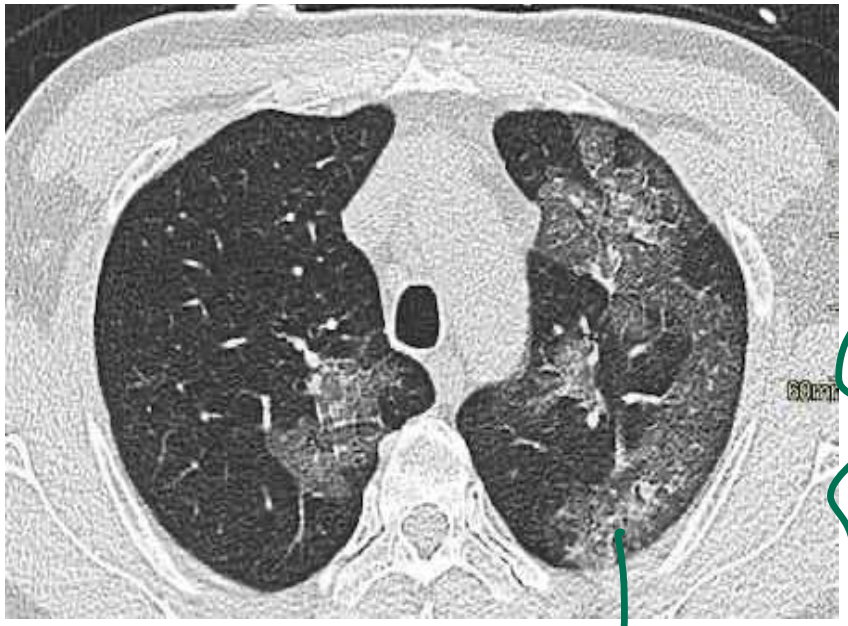


.live
. nasal route

Subunit

Another milestone in India's fight against COVID-19!

- Central Drugs Standard Control Organization (CDSCO) grants emergency use authorization to CORBEVAX vaccine for children between 12-18 years.
- It is India's 1st indigenously developed receptor binding domain protein sub-unit vaccine.



Cat	Risk of suspicion	CT findings	Details
0	-	Insufficient examination	-
1	No	Normal or non-infectious abnormalities	Mass/emphysema
2	Low	Abnormalities consistent with infections other than COVID-19	ATYPICAL findings
3	Equivocal	Non-specific appearance	Perihilar GGO, crazy-paving + pleural effusion
4	High	Abnormalities suspicious for COVID-19	Unilateral GGO, Multiple Consolidations, Pre-existing lung disease
5	Very high	Typical COVID-19	TYPICAL findings
6	PCR +		

GGO
multifocal
peripheral

TB : · Cavitn
· LN
· miliary nodules

Adult patient diagnosed with COVID-19

Mild disease

Upper respiratory tract symptoms and/or fever WITHOUT shortness of breath or hypoxia

Home Isolation & Care
(Refer to relevant guideline)

MUST DOs

- Physical distancing, indoor mask use, strict hand hygiene
- Symptomatic management (hydration, anti-pyretics, anti-tussive)
- Stay in contact with treating physician
- Monitor temperature and oxygen saturation (by applying a SpO_2 probe to fingers)

Seek immediate medical attention if:

- Difficulty in breathing or SpO_2 <93%
- High grade fever/severe cough, particularly if lasting for >5 days
- A low threshold to be kept for those with any of the high-risk features*

MAY DOs

Therapies based on low certainty of evidence especially for those with high-risk of progression*

- Inhalational Budesonide (given via Metered dose inhaler/ Dry powder inhaler) at a dose of 800 mcg BD for 5 days) to be given if symptoms (fever and/or cough) are persistent beyond 5 days of disease onset

***High-risk for severe disease or mortality**

- Age > 60 years
- Cardiovascular disease, hypertension, and CAD
- Diabetes mellitus and other immunocompromised states (such as HIV)
- Active tuberculosis
- Chronic lung/kidney/liver disease
- Cerebrovascular disease
- Obesity

Moderate disease

Any one of:

1. Respiratory rate ≥ 24/min, breathlessness
2. SpO_2 : 90% to ≤ 93% on room air

ADMIT IN WARD

Oxygen Support:

- Target SpO_2 : 92-96% (88-92% in patients with COPD)
- Preferred devices for oxygenation: non-rebreathing face mask
- Awake proning encouraged in all patients requiring supplemental oxygen therapy (sequential position changes every 2 hours)

Anti-inflammatory or immunomodulatory therapy:

- Inj. Methylprednisolone 0.5 to 1 mg/kg in 2 divided doses (or an equivalent dose of dexamethasone) usually for a duration of 5 to 10 days
- Patients may be initiated or switched to oral route if stable and/or improving
- There is no evidence for benefit for injectable steroids in those NOT requiring oxygen supplementation, or on continuation after discharge
- Anti-inflammatory or immunomodulatory therapy (such as steroids) can have risk of secondary infection such as invasive mucormycosis when used too early, at higher dose or for longer than required

Anticoagulation:

- Conventional dose prophylactic unfractionated heparin or Low Molecular Weight Heparin (weight based e.g., enoxaparin 0.5mg/kg per day SC). There should be no contraindication or high risk of bleeding

Monitoring:

- Clinical Monitoring: breathing rate, Hemodynamic instability, Change in oxygen requirement
- Serial CXR; HRCT chest to be done ONLY if there is worsening
- Lab monitoring: CRP, D-dimer, blood sugar 48 to 72 hrly; CBC, KFT, LFT 24 to 48 hrly

Severe disease

Any one of:

1. Respiratory rate >30/min, breathlessness
2. SpO_2 < 90% on room air

ADMIT IN HDU/ICU

Respiratory support:

- Consider use of NIV (Helmet/face mask interface depending on availability) in patients with increasing oxygen requirement, if work of breathing is LOW
- Consider use of HFNC in patients with increasing oxygen requirement
- Intubation should be prioritized in patients with high work of breathing /if NIV is not tolerated
- Use institutional protocol for ventilatory management when required

Anti-inflammatory or immunomodulatory therapy:

- Inj Methylprednisolone 1 to 2 mg/kg IV in 2 divided doses (or an equivalent dose of dexamethasone) usually for a duration 5 to 10 days
- Anti-inflammatory or immunomodulatory therapy (such as steroids) can have risk of secondary infection such as invasive mucormycosis when used too early, at higher dose or for longer than required

Supportive measures:

- Maintain euvolemia (if available, use dynamic measures for assessing fluid responsiveness)
- If sepsis/septic shock: manage as per existing protocol and local antibiogram

Monitoring:

- Clinical Monitoring: work of breathing, Hemodynamic instability, Change in oxygen requirement
- Serial CXR; HRCT chest to be done ONLY if there is worsening
- Lab monitoring: CRP, D-dimer, blood sugar 48 to 72 hrly; CBC, KFT, LFT 24 to 48 hrly

AIIMS/ ICMR-COVID-19 National Task Force/ Joint Monitoring Group (Dte.GHS)
Ministry of Health & Family Welfare, Government of India
CLINICAL GUIDANCE FOR MANAGEMENT OF ADULT COVID-19 PATIENTS

EUA/Off label use (based on limited available evidence and only in specific circumstances):

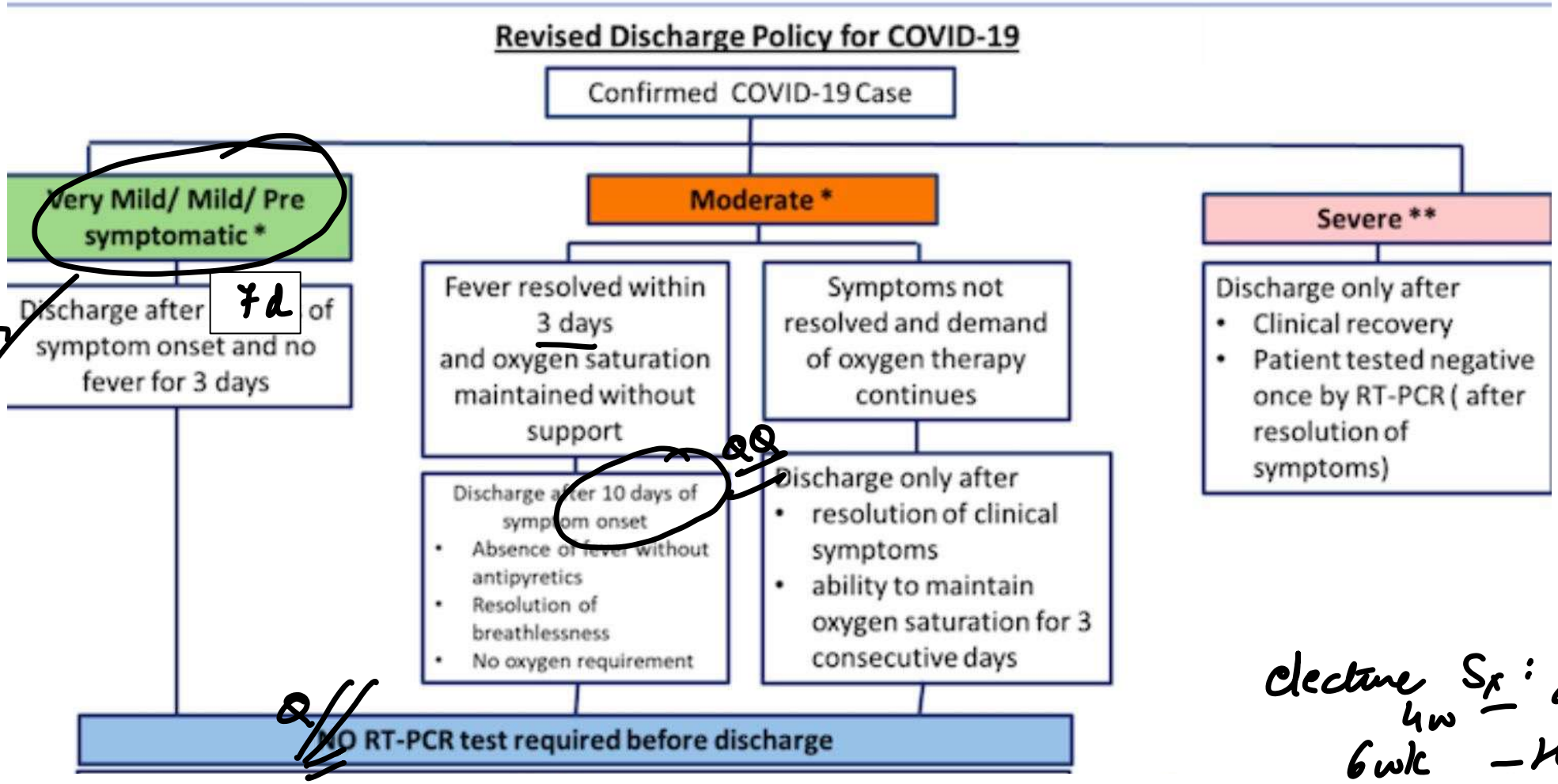
Remdesivir (EUA) may be considered ONLY in patients with

- 10 days of onset of symptoms, in those having moderate to severe disease (requiring supplemental oxygen), but who are NOT on IMV or ECMO
- Consider remdesivir for 5 days to treat hospitalized patients with COVID-19 (No evidence of benefit for treatment more than 5 days)
- NOT to be used in patients who are NOT on oxygen support or in home setting
- Monitor for RFT and LFT (remdesivir not recommended if eGFR <30 ml/min/m2; AST/ALT >5 times UNL) (not an absolute contraindication)
- Recommended dose: 200 mg IV on day 1 followed by 100 mg IV OD for next 4 days

Tocilizumab may be considered when ALL OF THE BELOW CRITERIA ARE MET

- Rapidly progressing COVID-19 needing oxygen supplementation or IMV and not responding adequately to steroids (preferably within 24-48 hours of onset of severe disease/ ICU admission)
- Preferably to be given with steroids
- No active TB, fungal, systemic bacterial infection
- Long term follow up for secondary infections (such as reactivation of TB, Flaring of Herpes etc.)
- Significantly raised inflammatory markers (CRP and/or IL-6)
- Recommended single dose: 4 to 6 mg/kg (400 mg in 60 kg adult) in 100 ml NS over 1 hour

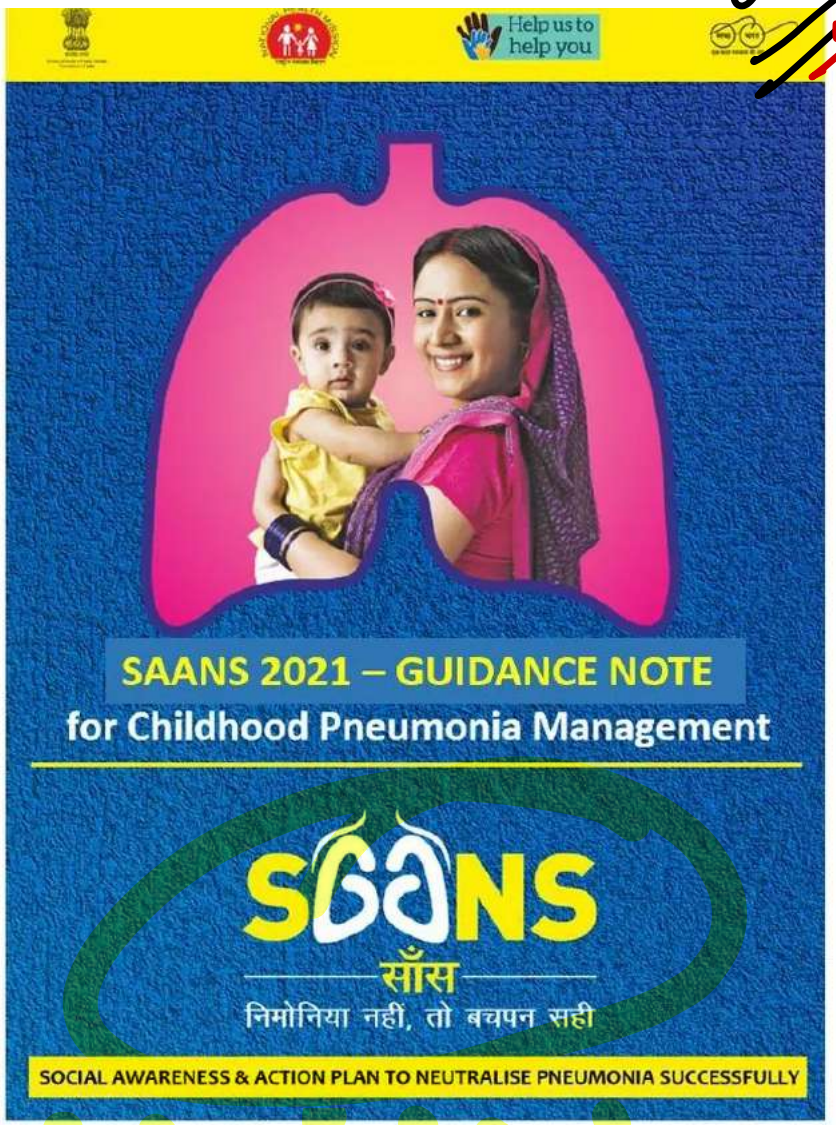
Virafin
Molnupiravir
Paxlovid: Nirmatrelvir/ritonavir
2-DG
Barcitinib
REGEN-COV: Casirivimab + Imdevimab
Bamlanivimab+Etesevimab
Sotrovimab



Telegram: @brainandscalpel
t.me/brainandscalpel

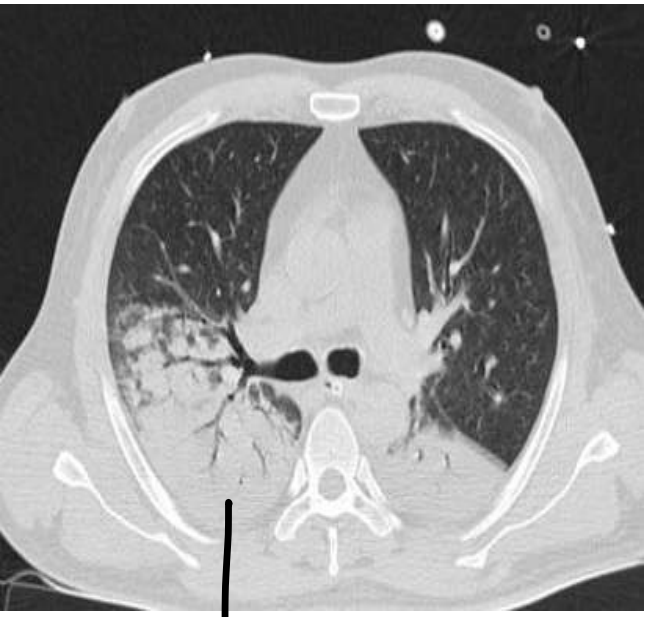
PNEUMONIA

IMNCI :

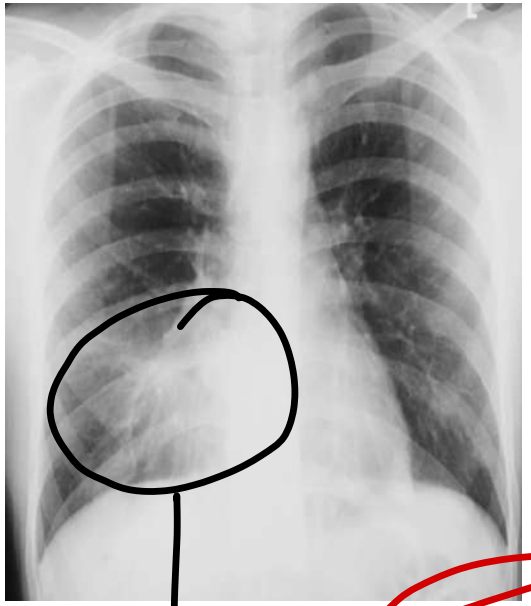


SIGNS	CLASSIFY AS	IDENTIFY TREATMENT (Urgent pre-referral treatments are in bold print.)
• Any general danger sign or • Stridor in calm child.	SEVERE PNEUMONIA OR VERY SEVERE DISEASE	➢ ***Give first dose of ampicillin/oral amoxycillin and intramuscular gentamicin.*** ➢ ***Refer URGENTLY to hospital.***
• Chest indrawing or • Fast breathing. ↓ <2m: 60 2-12m: 50 >12m: 40	PNEUMONIA	➢ ***Give Amoxycillin for 5 days.*** ➢ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days* ➢ Soothe the throat and relieve the cough with a safe remedy if child is 6 months or older. ➢ If coughing more than 14 days or recurrent wheeze, refer for possible TB or asthma assessment ➢ Advise mother when to return immediately. ➢ Follow-up in 2 days. ➢ ***If Oxygen saturation <90% by Pulse Oximeter refer urgently***
No signs of pneumonia or very severe disease.	NO PNEUMONIA: COUGH OR COLD	➢ If wheezing (or disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days* ➢ Soothe the throat and relieve the cough with a safe home remedy if child is 6 months or older. ➢ If coughing more than 14 days or recurrent wheeze, refer for possible TB or asthma assessment ➢ Advise mother when to return immediately. ➢ Follow-up in 5 days if not improving.

amp + genta

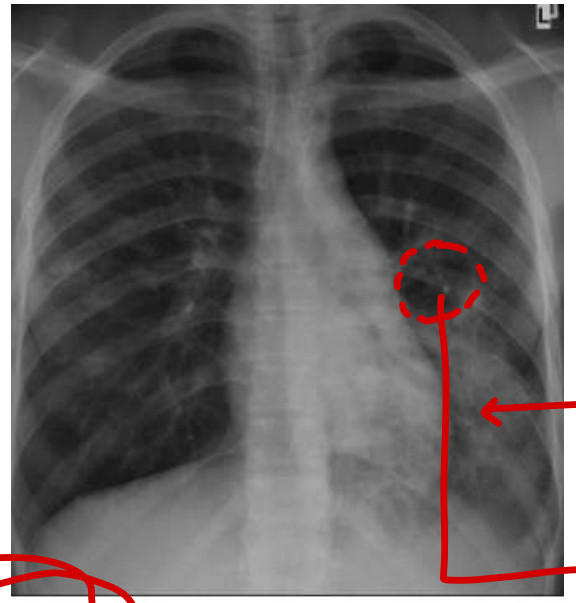


Consolidin C
air bronchogram



RML

Silhouette Sign



LLL

Pneumatocele

S. aureus

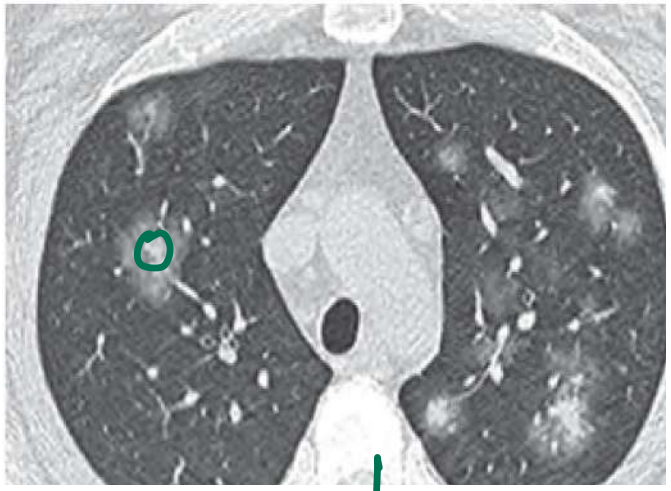
Pleural effusion with low glucose:
R : RA
E : Empyema
M : Malignancy

DRAIN
Pigtail

- pH < 7.2
- GS / culture (+)
- Imaging

CURB-65 Scoring	
Symptom	**Points**
Confusion	1
Urea: BUN>19 mg/dL (>7 mmol/L)	1
Respiratory rate≥30 breaths /min	1
Systolic BP <90 mm Hg or diastolic BP ≤60 mm Hg	1
Age≥ 65 years	1

OP 0-1	**Amoxicillin +/- Macrolides / Doxycycline**
IP 2	FQ / BL+ Azithral/Doxy
ICU 3-5	BL+ FQ/ Azithral

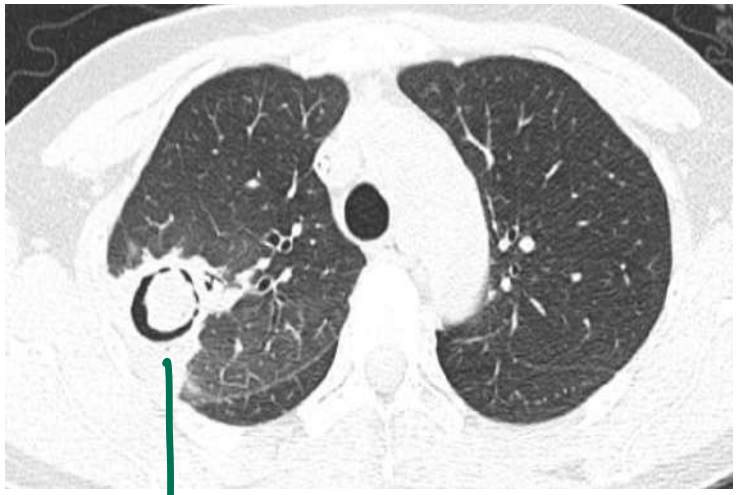


IC

Halo sign

inv aspergillosis

Rx : VORICOAZOLE

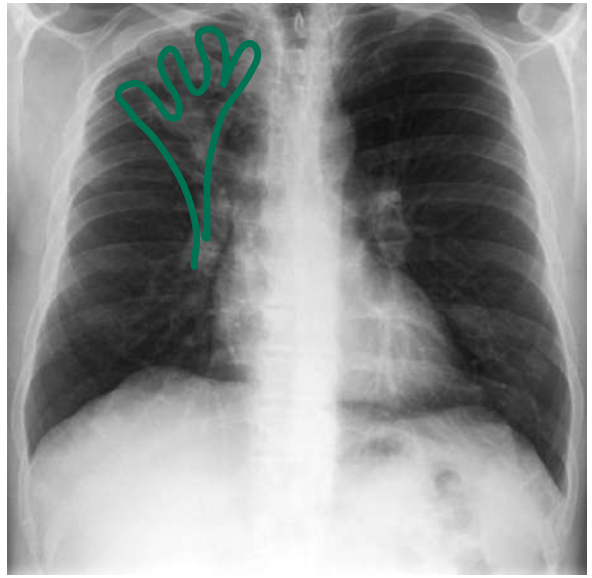


fungal ball :

Aspergilloma

Monad sign

Rx : Symptomatic Rx



ABPA

hyper

Rx : steroide

+/- Voriconazole

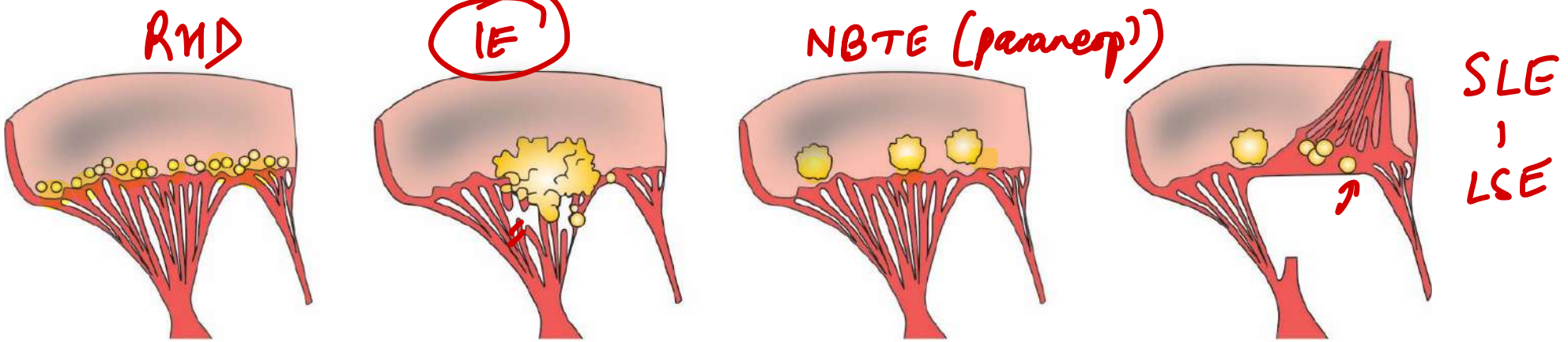
IgE

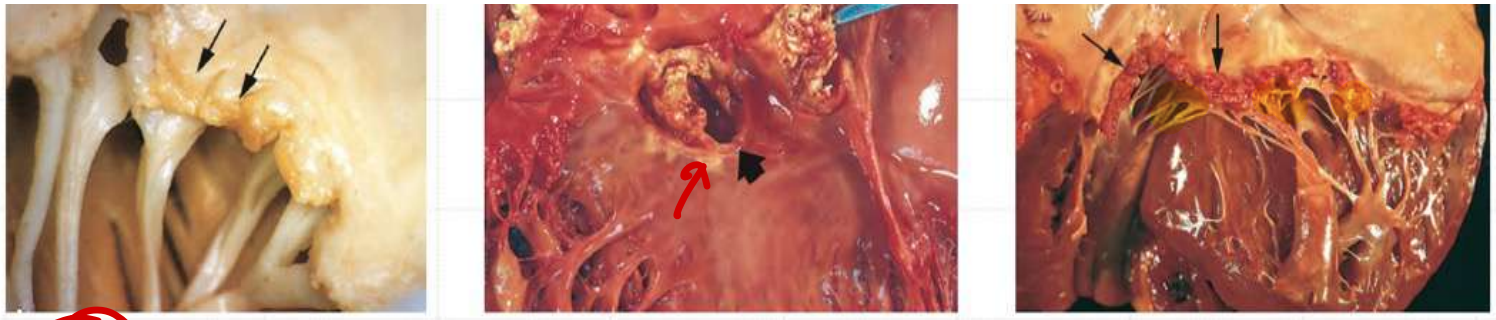
eosn

Table 2. Diagnostic criteria for ABPA by the international society for human and animal mycology (ISHAM) (2013).[7]

Baseline conditions: asthma and/or cystic fibrosis.	
Mandatory criteria:	
1. IgE specific to *A. fumigatus* (OR)	>0.35 kU/L
2. A positive skin test against *A. fumigatus* (AND)	
3. Total serum IgE	>1000 UI/mL
Other criteria (at least 2 must be present)	
1. IgG against *A. fumigatus* (OR)	>27 mg/L
2. Radiological changes typical of ABPA (OR) • Central and proximal cylindrical bronchiectasis • Alterations predominantly in the upper lobe • Nodules • Atelectasis • Air trapping	
3. Total eosinophil count	>500 cells/UL

INFECTIVE ENDOCARDITIS





RE

IE:
MCC in IVDU/ Hospital Acquired / Acute- S.aureus
MCC in community acquired IE/ dental procedure/ Late-onset prosthetic (>12mon)- S.viridans
MCC in prosthetic value IE- CoNS
MCC in ca colon- S.bovis
MCC in urinary procedure- Enterococcus

TABLE 128-3 The Modified Duke Criteria for the Clinical Diagnosis of Infective Endocarditis[a]

Major Criteria

1. Positive blood culture

   Typical microorganism for infective endocarditis from two separate blood cultures

   Viridans streptococci, *Streptococcus gallolyticus*, HACEK group organisms, *Staphylococcus aureus*, *or*

   Community-acquired enterococci in the absence of a primary focus,

   or

   Persistently positive blood culture, defined as recovery of a microorganism consistent with infective endocarditis from:

   Blood cultures drawn >12 h apart; *or*

   All of 3 or a majority of ≥4 separate blood cultures, with first and last drawn at least 1 h apart

   or

   Single positive blood culture for *Coxiella burnetii* or phase I IgG antibody titer of >1:800

2. Evidence of endocardial involvement

   Positive echocardiogram[b]

   Oscillating intracardiac mass on valve or supporting structures or in the path of regurgitant jets or in implanted material, in the absence of an alternative anatomic explanation, *or*

   Abscess, *or*

   New partial dehiscence of prosthetic valve,

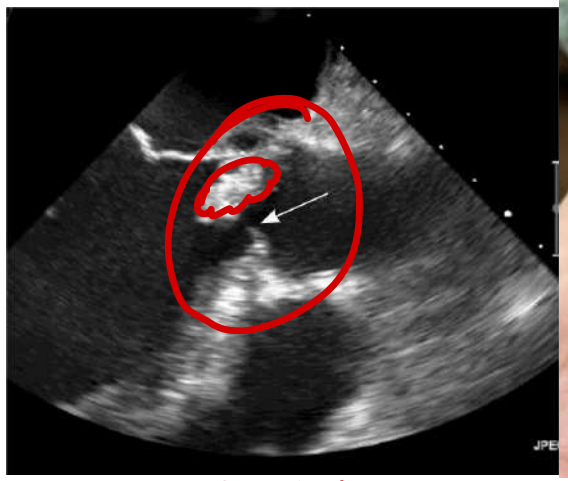
   or

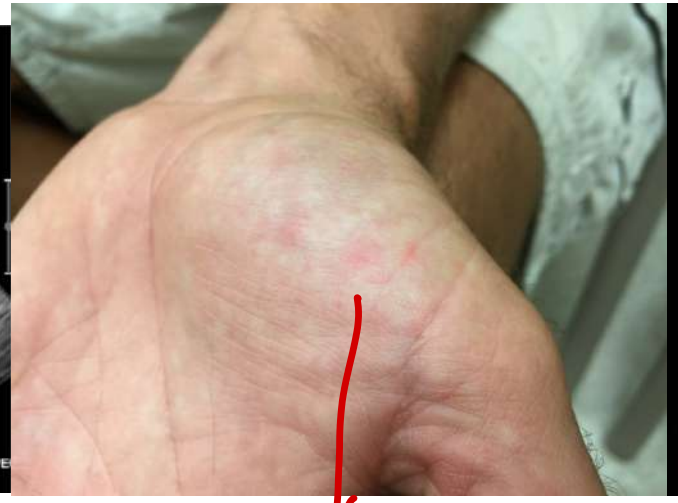
   New valvular regurgitation (increase or change in preexisting murmur not sufficient)

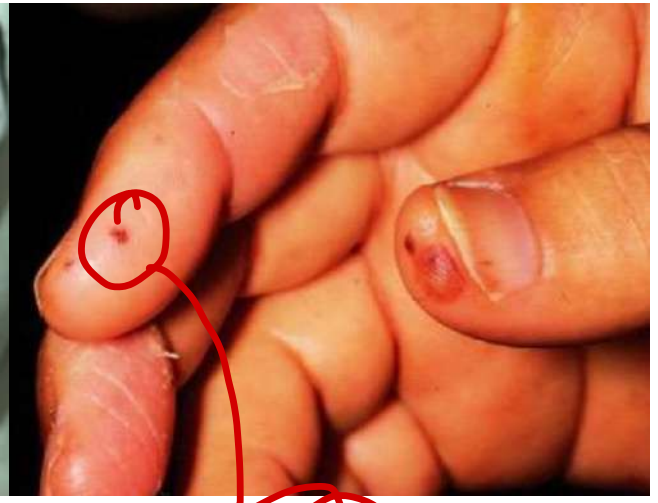
Minor Criteria

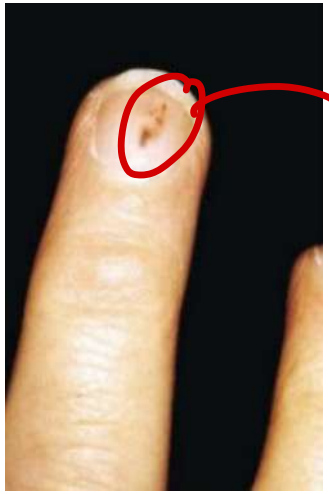
1. Predisposition: predisposing heart conditions[c] or injection drug use
2. Fever ≥38.0°C (≥100.4°F)
3. Vascular phenomena: major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, Janeway lesions
4. Immunologic phenomena: glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor
5. Microbiologic evidence: positive blood culture but not meeting major criterion, as noted previously,[d] *or* serologic evidence of active infection with an organism consistent with infective endocarditis

[a]Definite endocarditis is defined by documentation of two major criteria, of one major criterion and three minor criteria, or of five minor criteria. See text for further details. [b]Transesophageal echocardiography is required for optimal assessment of possible prosthetic valve endocarditis or complicated endocarditis. European Society of Cardiology includes finding on EKG-gated cardiac CT angiogram or FDG-PET/CT as major criteria (see text). [c]Valvular disease with stenosis or regurgitation, presence of a prosthetic valve, congenital heart disease including corrected or partially corrected conditions (except isolated atrial septal defect, repaired ventricular septal defect, or closed patent ductus arteriosus), prior endocarditis, or hypertrophic cardiomyopathy. [d]Excluding single positive cultures for coagulase-negative staphylococci and diphtheroids, which are common culture contaminants, or for organisms that do not cause endocarditis frequently, such as gram-negative bacilli.









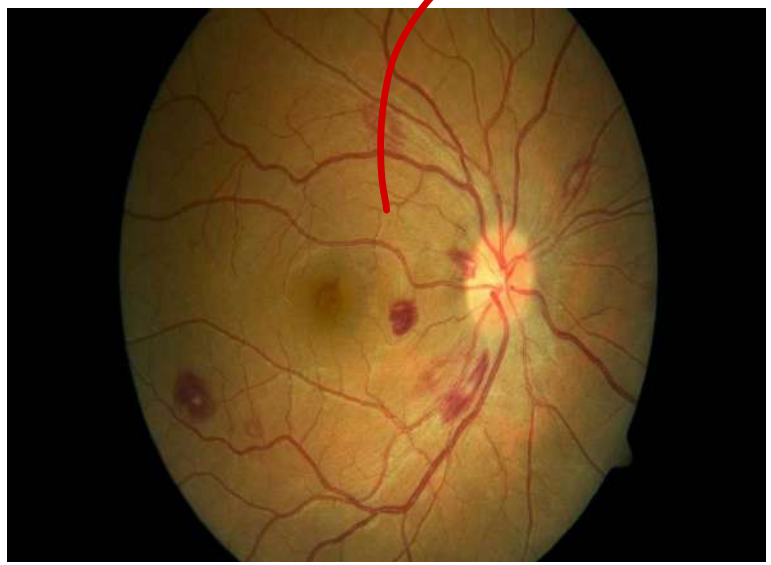
veget^n

Janeway : non-tender

Osler nodes : tender

splinter

Blood Cultures In patients with suspected NVE, PVE, TAVR-PVE, or CIED-IE who have not received antibiotics during the prior 2 weeks, three two-bottle blood culture sets containing the appropriate volume of blood (10 mL per bottle) should be obtained from different venipuncture sites over 1–2 hours. If the cultures remain negative after 48–72 h, two or three additional blood culture sets should be obtained, and the laboratory should be consulted for advice regarding optimal culture techniques. Pending culture results, empirical antimicrobial therapy should be withheld initially from hemodynamically and clinically stable patients with suspected subacute IE, especially



Roth spots

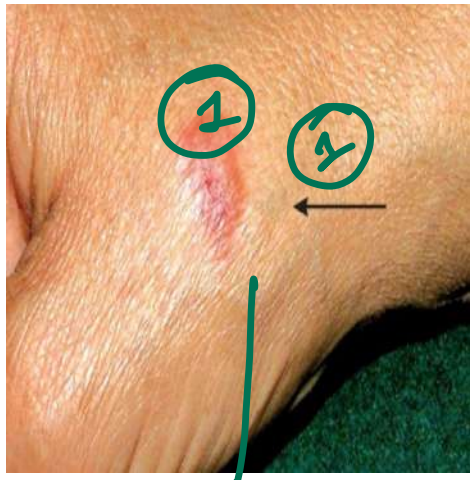
Prophylaxis Recommended	Prophylaxis Not Recommended
Dental procedures All dental procedures that involve manipulation of gingival tissue or the periapical region of the teeth or perforation of the oral mucosa	**Dental procedures** Routine anesthetic injections through noninfected tissue, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, and bleeding from trauma to the lips or oral mucosa
Respiratory tract procedures Only respiratory tract procedures that involve incision of the respiratory mucosa	**Gastrointestinal tract procedures**
Procedures on infected skin, skin structure, or musculoskeletal tissue	**Genitourinary tract procedures**

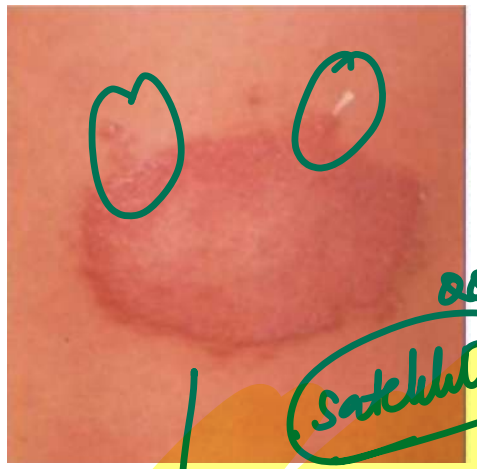
TABLE 128-9 High-Risk Cardiac Lesions for Which Endocarditis Prophylaxis is Advised Before Dental Procedures

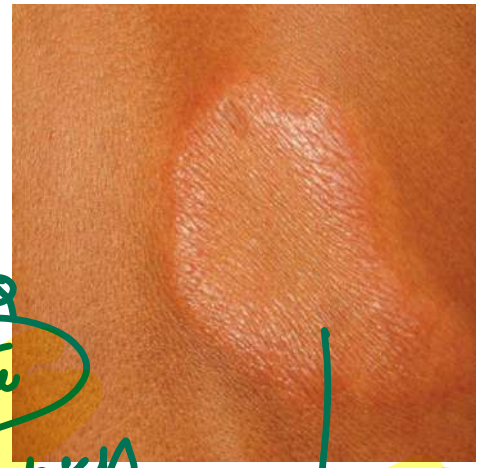
- Prosthetic heart valves or material
- Left ventricular assist devices or implantable heart
- Prior endocarditis
- Unrepaired cyanotic congenital heart disease, including palliative shunts or conduits
- Completely repaired congenital heart defects during the 6 months after repair
- Repaired congenital heart disease with residual defects adjacent to prosthetic material
- Surgical or transcatheter pulmonary artery valve or conduit placement
- Valvulopathy developing after cardiac transplantation[a]

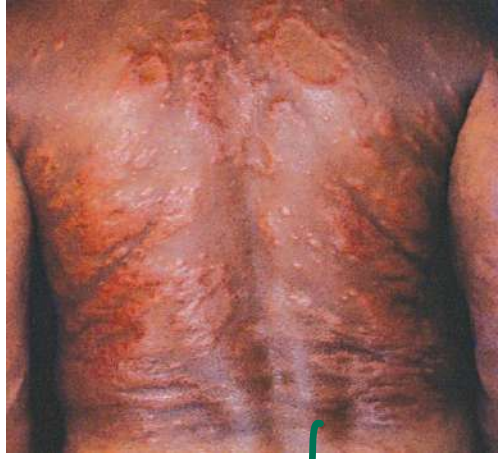
ASD xx

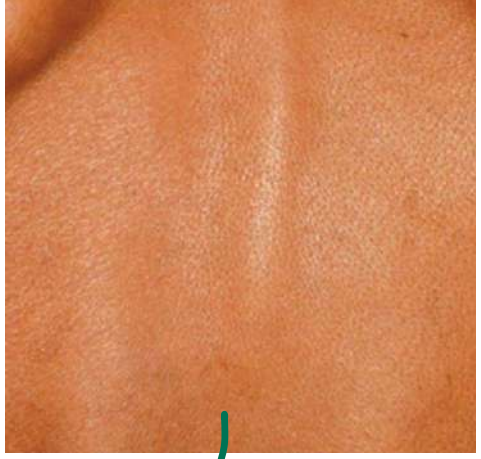
LEPROSY





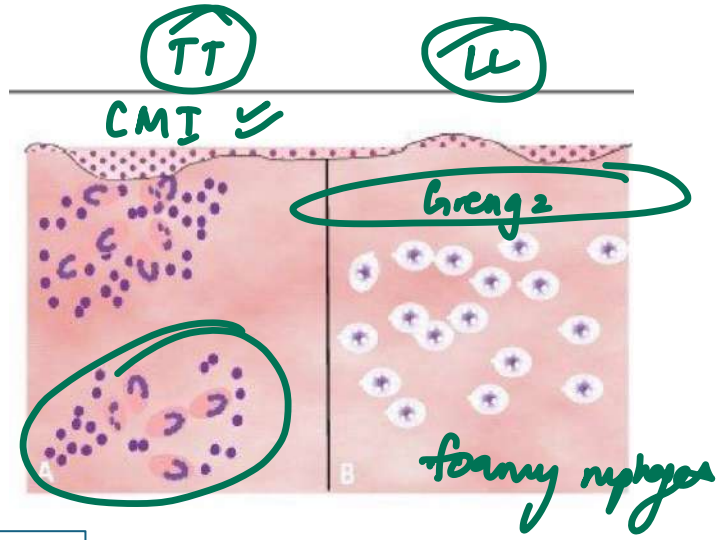






TT	BT	BB	BL	LL

1. Number of lesions _____ increase
2. Well-defined, elevated margins _____ ill-defined
3. Single thickened nerve _____ more nerves bilaterally
4. Sit Skin Smear (SSS) negative _____ positive
5. Anesthetic lesions _____ sensations present
6. Tuberculoid granuloma _____ foam macrophages and Grenz zone



Route of infection - inhala
MC cranial nerve- 7th
Mc Nerve for biopsy- radial cut N > sural
Earliest sensation lost- cold temp
Fite Faraco stain

Prophylaxis in contacts:
- >2yrs
- >20hrs per week
- Sharing clothes

NLEP

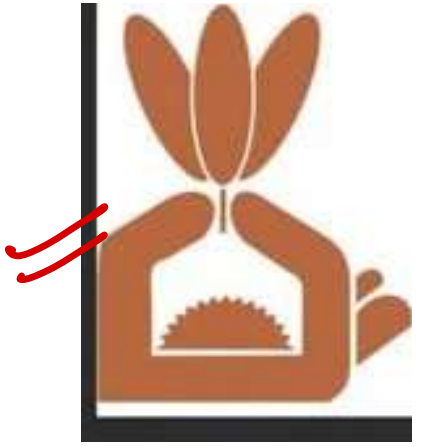
1. Which of the following indicators can help in determining whether the health system is giving importance to identifying leprosy in the community?

A. Treatment completion rate
B. Annual new case detection rate per lac
C. Treatment initiation rate
D. Proportion of newly diagnosed patients with grade-2 disability

Targets:
Prevalence < 1/10000
Grade 2 disability <1%
Zero stigma/ disability among new children

SPARSH
Nikush

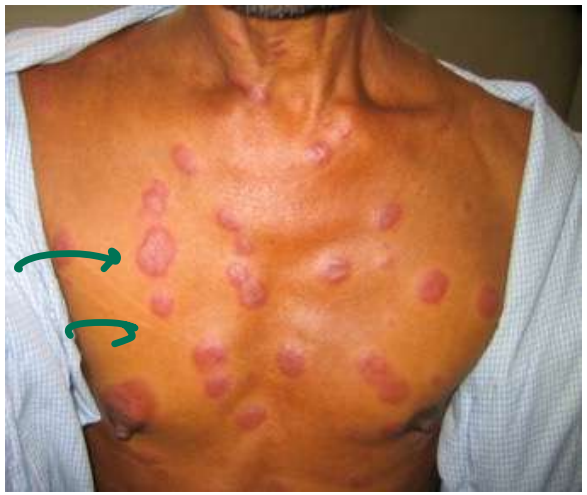
Leprosy prophylaxis : Rifampicin SD
>20hrs a week
>3months
>2yrs age



	PBL	MBL
Skin lesions	0-5	>5
Nerves (sw, motor)	0-1	>1
SSS AFB	(-)	(+)
MDT duration	6m	12m

	Type 1	Type 2 (ENL)
Hysn reaction:	IV	III
Seen in:	BB	LL
Relation to treatment:	Cm 12m ↓ fp	No rel^n
C/F:	pre existing RED	Nodular NEW
Systemic involvement:	xx	=
Treatment:	← DOC: steroids →	
	← DO NOT STOP MDT →	

Rifampicin	Dapsone	Clofazimine
600mg OAMS	100mg OD	300mg OAMS+ 50mg OD



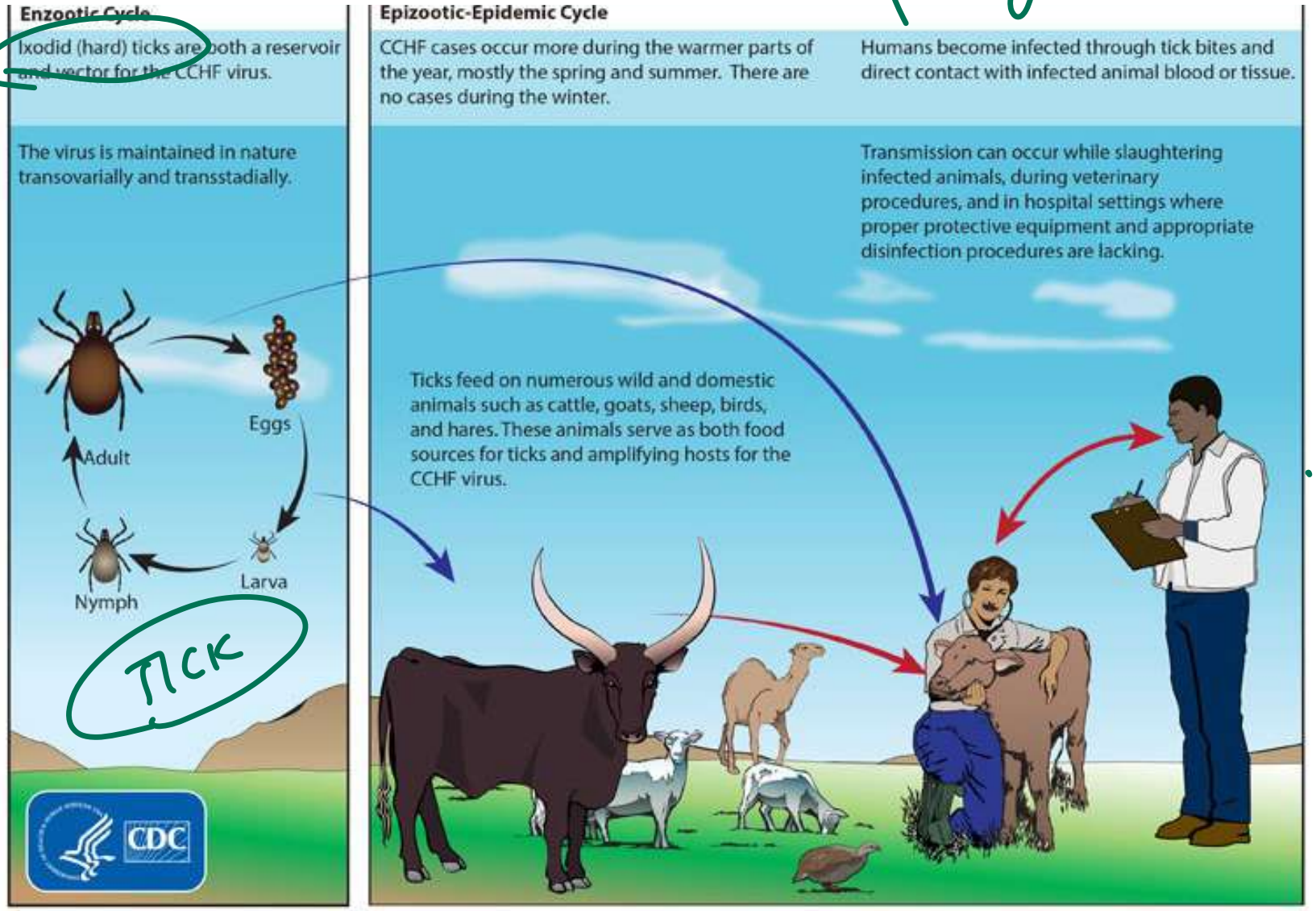
NATIONAL LEPROSY ERADICATION PROGRAM

ZOONOSES

CCHF

Nairovirus (Bunya)

30% CFR



Tick

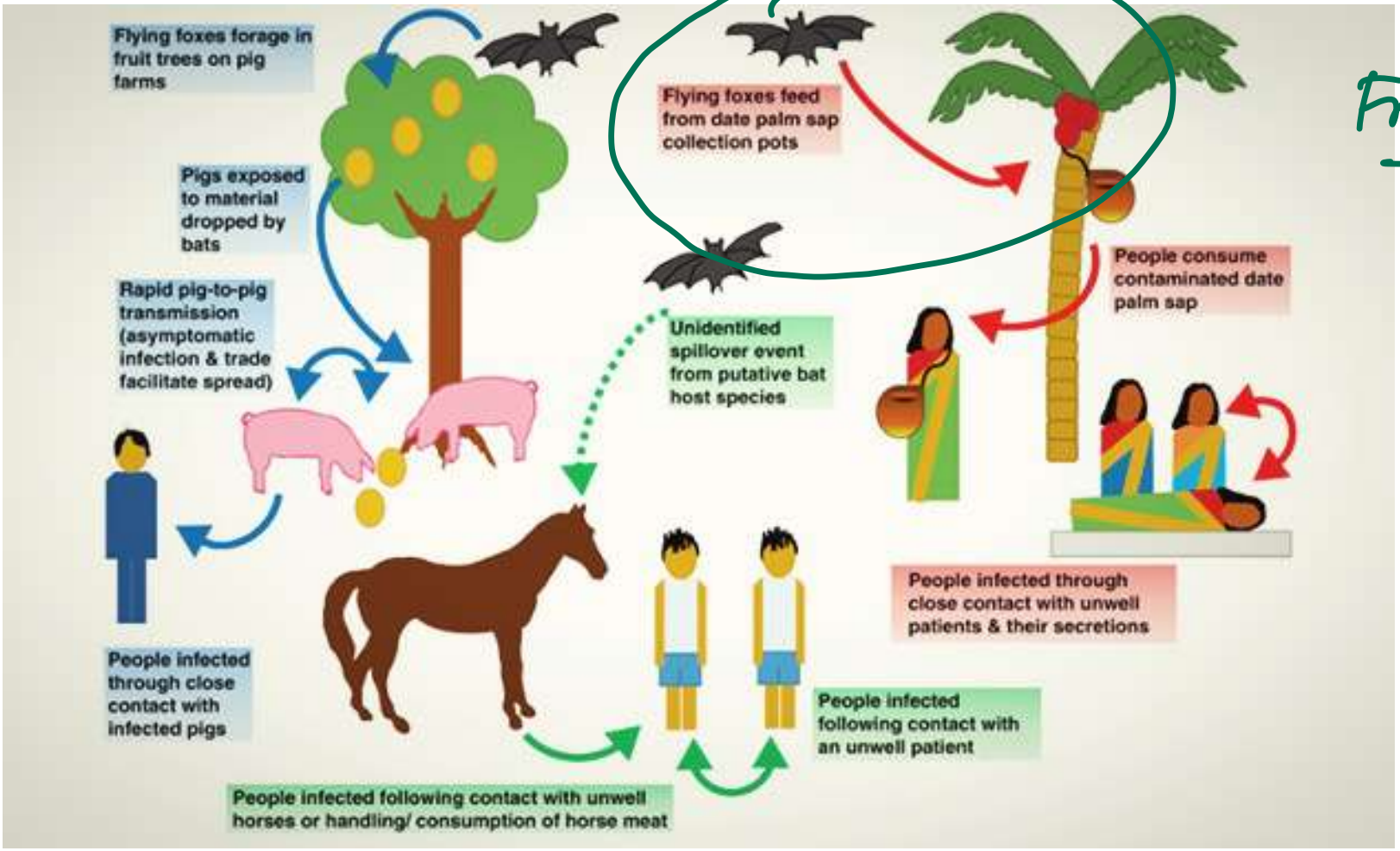
Gujarat / TN

NIPAH virus

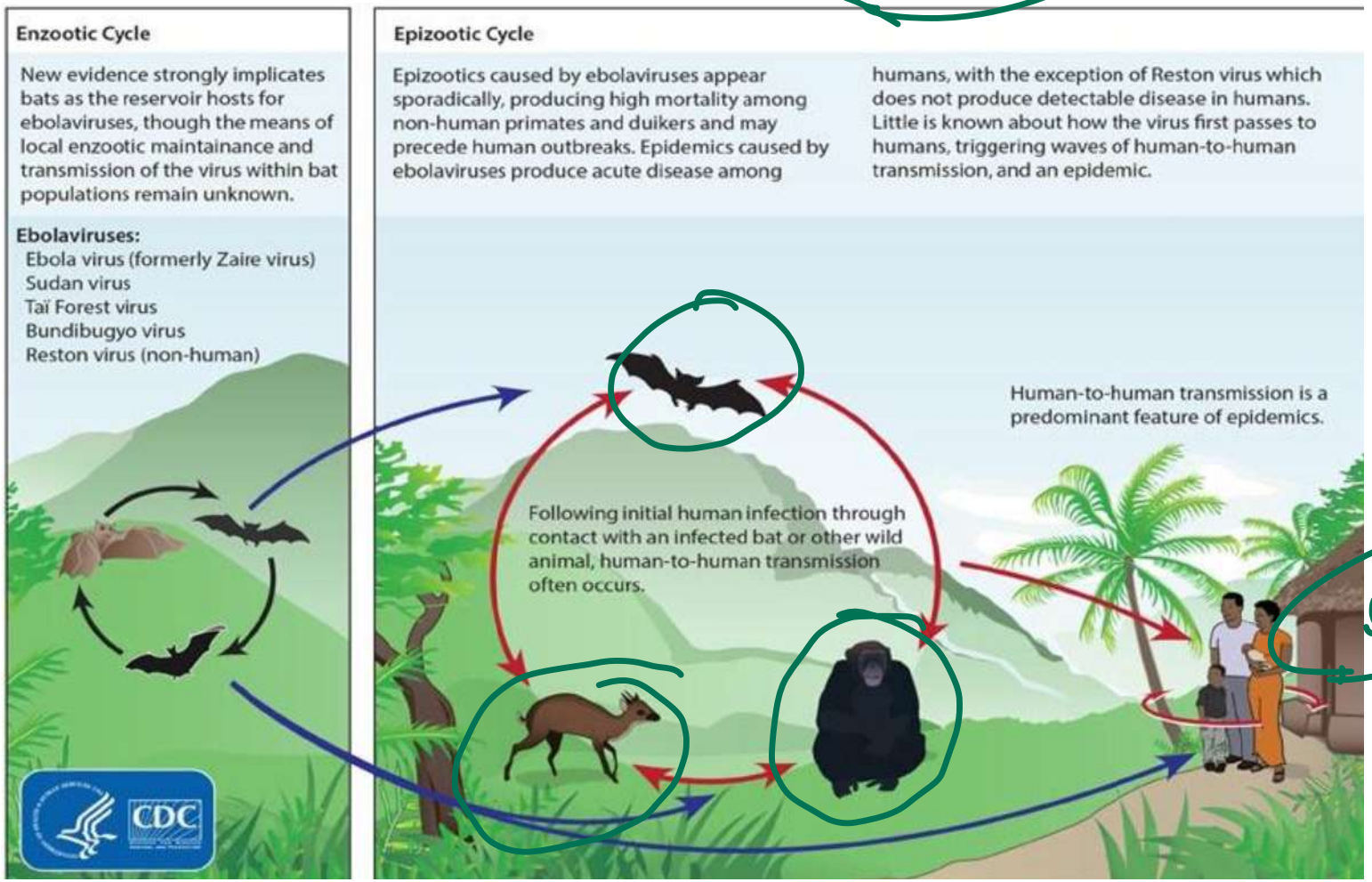
40-75% CFR

Fruits bats

Kerala



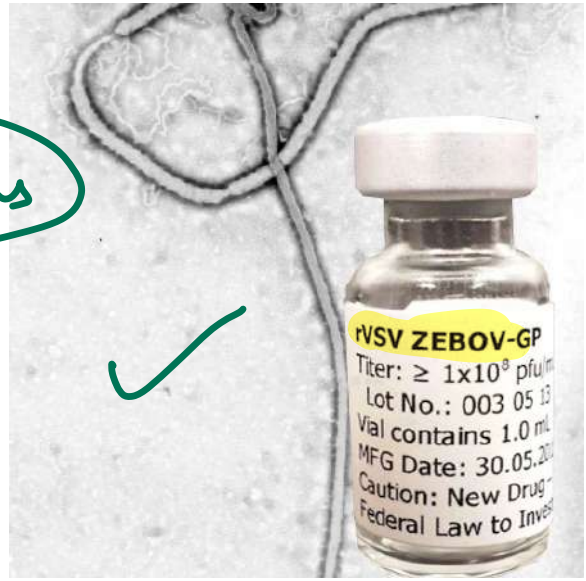
Ebola



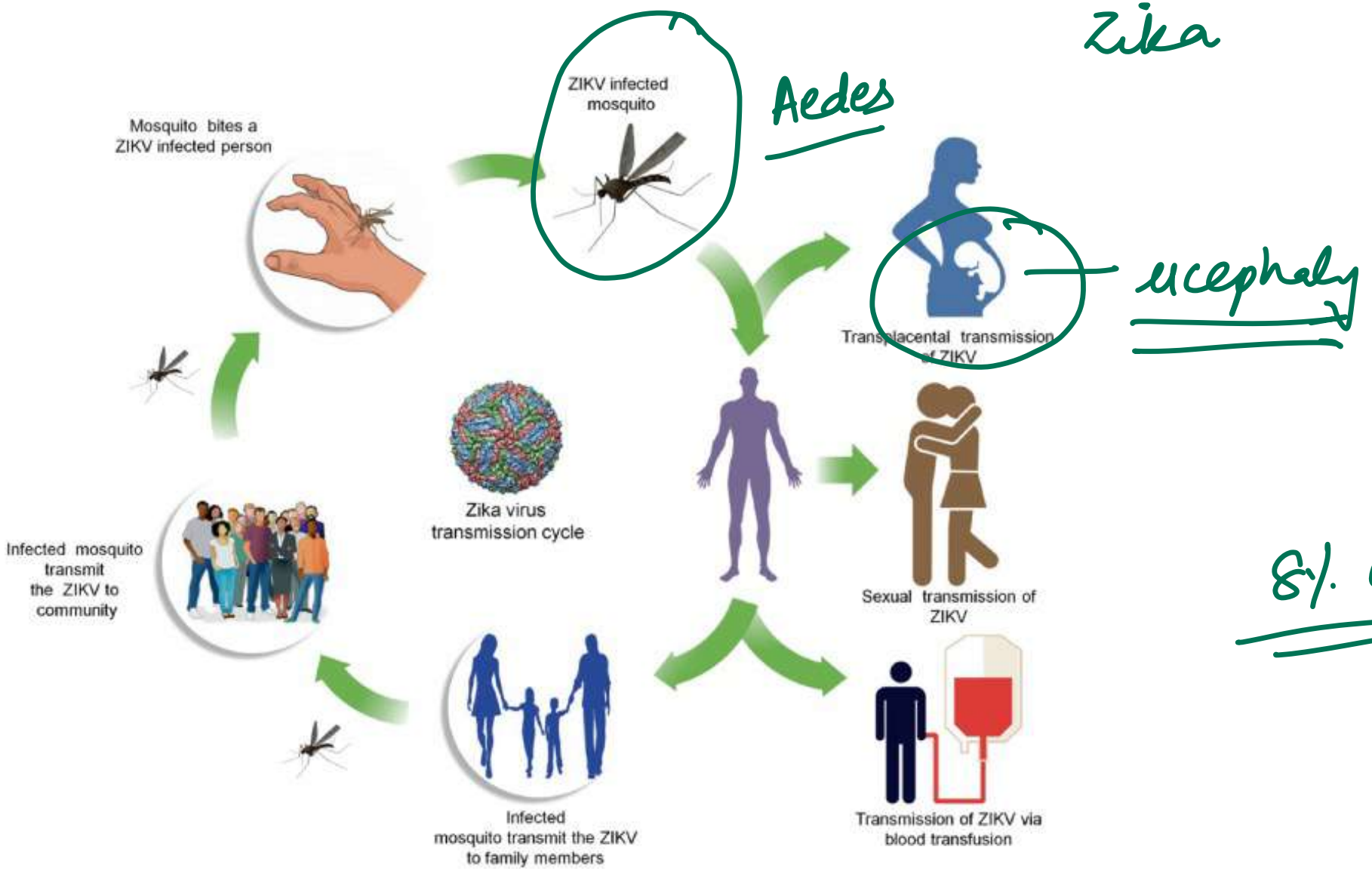
Inmazeb®
(atoltivimab, maftivimab, and odesivimab – ebgn)
injection
16.67 mg / 16.67 mg / 16.67 mg per mL

40 %
CFR

Secretins



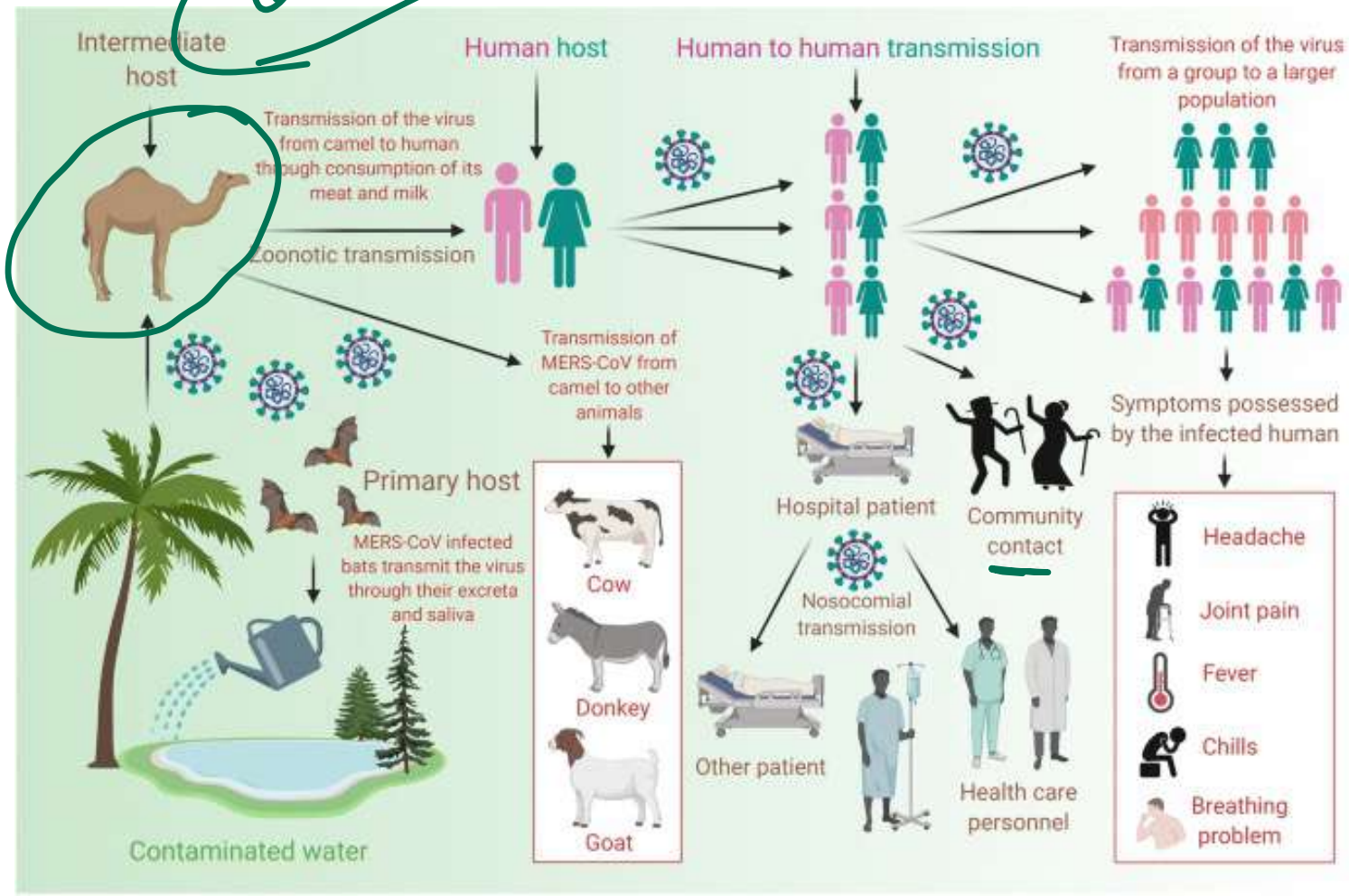
Zika



S/. CPR

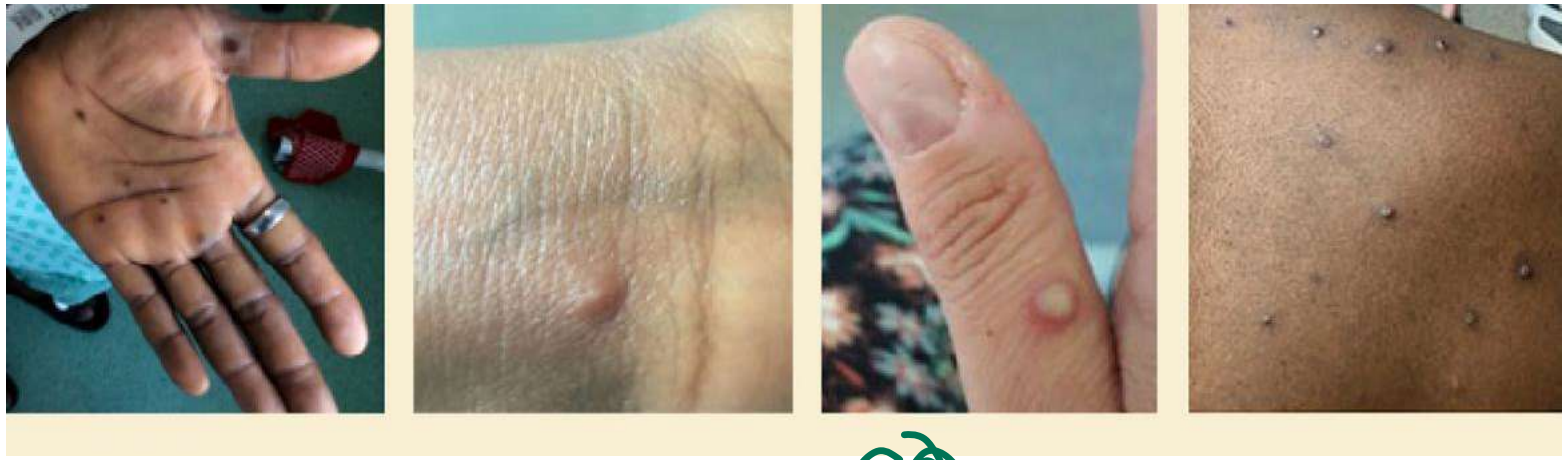
Camel milk

MERS CoV



30-35%

CFR



Monkey pox

LN(+)

resp / sexual

- Ticovirimat
- Brincidafovir

3-6% CFR

Categories of contact with suspect rabid animal	Post – exposure prophylaxis measures
Category I • Touching of feeding animals • Licks on intact skin	None
Category II • Nibbling of uncovered skin • Minor scratches or abrasions without bleeding	1. Immediate vaccination and 2. Local treatment of wound
Category III • Single or multiple transdermal bites or scratches • Licks on broken skin • Contamination of mucous membrane with saliva from licks • Contacts with bats – India (x)	1. Immediate vaccination 2. Administration of rabies immunoglobulin 3. Local treatment of the wound

Re-exposure:

Pre-exposure:

Post-exposure:
Modified Thai Cross:

Essen:

HRIG: 20 IU/kg
Equine IG: 40 IU/kg

RABIES
C/F: paresthesia (bite) + Hydrophobia – pharyngeal spasm
Gold standard for diagnosis: PCR / viral culture
Milwaukee protocol
Postmortem stain: Seller stain Negri bodies

Brace-scolions
Criteria : SOD dysfn
Shoulder : HADD

PEP

tetanus

All wound receive surgical toilet

Wounds less then 6 hours old, clean, non-penetrating, & with negligible tissue damage

Immunity category
A: Nothing more required
B: Toxoid 1 dose
C: Toxoid 1 dose
D: Toxoid complete course

Other wounds

Immunity category
A: Nothing more required <5yo
B: Toxoid 1 dose 5-10yo
C: Toxoid 1 dose + human tetanus Ig. >10yo
D: Toxoid complete course + human tetanus Ig

- A - has had a complete course of Toxoid or booster dose with in the past 5 year
- B - has had a complete course of Toxoid or booster dose more then 5 years ago & less then 10 years ago
- C - has had a complete course of Toxoid or a booster dose more then 10 year ago
- D - has not had a complete course of Toxoid or immunity status unknown

PUO :

- Temperature of 101 degrees Fahrenheit (38.3 degrees Centigrade) or higher
- with a minimum duration of three weeks without an established diagnosis
- despite at least one week's investigation in the hospital (NOW: 3days)
- Or 3 OPD visits
- Not immunocompromised