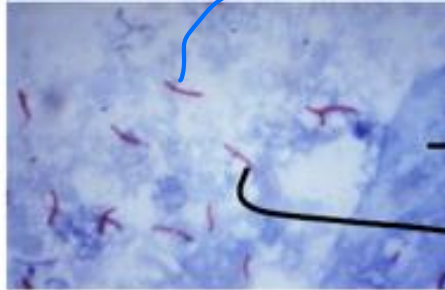


Ziehl Neelsen stain  
Red bacilli



# TUBERCULOSIS

Mycobacterium Tuberculosis

Resists decoloration by acid during

Staining due to presence of mycolic acid  
lipids Rich

\* Acid fast bacilli

Extrapulm. TB

MC site "

TB

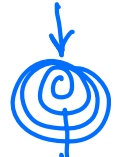
→ Cxal lymphadenitis

HIV ⊕ + TB

\* ATT → ART  
2wks

ART, immunity ↑, IL-1 +

Inflammatory rxn: FEVER HG



Pus  
Cold abscess



IRIS

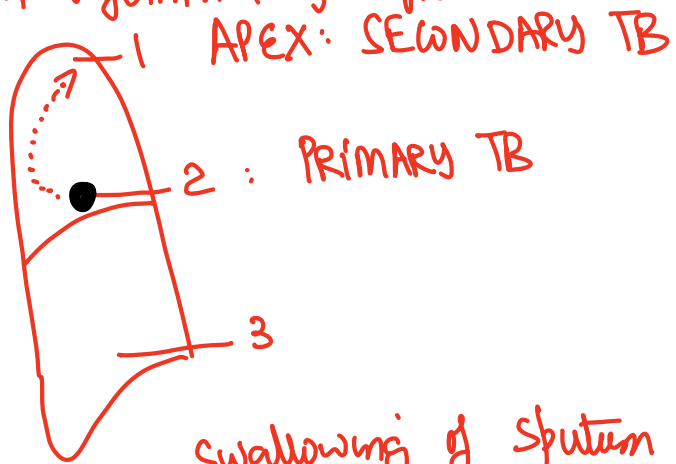
paradoxical worsening of TB symptom

Immune Reconstitution Inflammation Syndrome

Spread

1. DROPLETS

- Lungs
- Tonsil



2. [Intestinal TB] — Swallowing of sputum containing AFB  
— Non pasteurized milk consumption (M. Bovis)

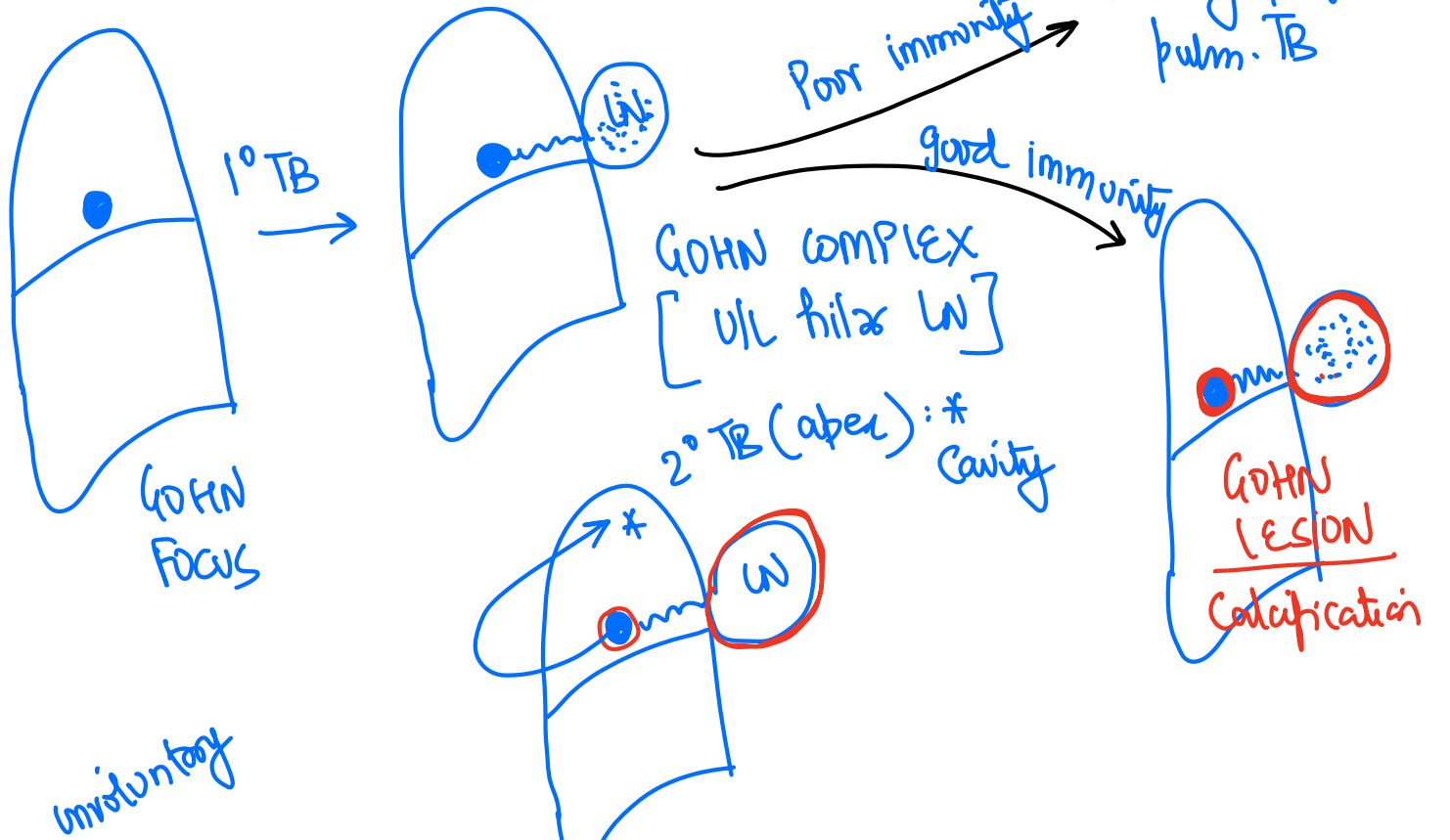
3. Transplacental Tx: Congenital TB [fetal liver]

\* Non-Motile, non sporulating, AFB  
(acid fast bacilli)  
producing niacin

\* Stain: ZN stain (Ziehl neelsen stain)

\* Sputum CULTURE : LOWSTEIN JENSEN MEDIA  
: MIDDLEBROOK - MEDIA : liquid media  
↓  
growth: 6wks : DORSET - EGG MEDIA

IOC → Sputum CBNAAT : CARTIDGE BASED Nuclear acid  
amplification Technology : TAT  
< 24 HOURS



1. LG FEVER, evening rise of Temp  
night sweats
  2. wt loss: 5% ↓ weight ~ 6mths loss
  3. Cough x 2 wks
  4. HEMOPTYSIS: blood in sputum
- SOURCE: **Bronchial Artery #**

CAVITY

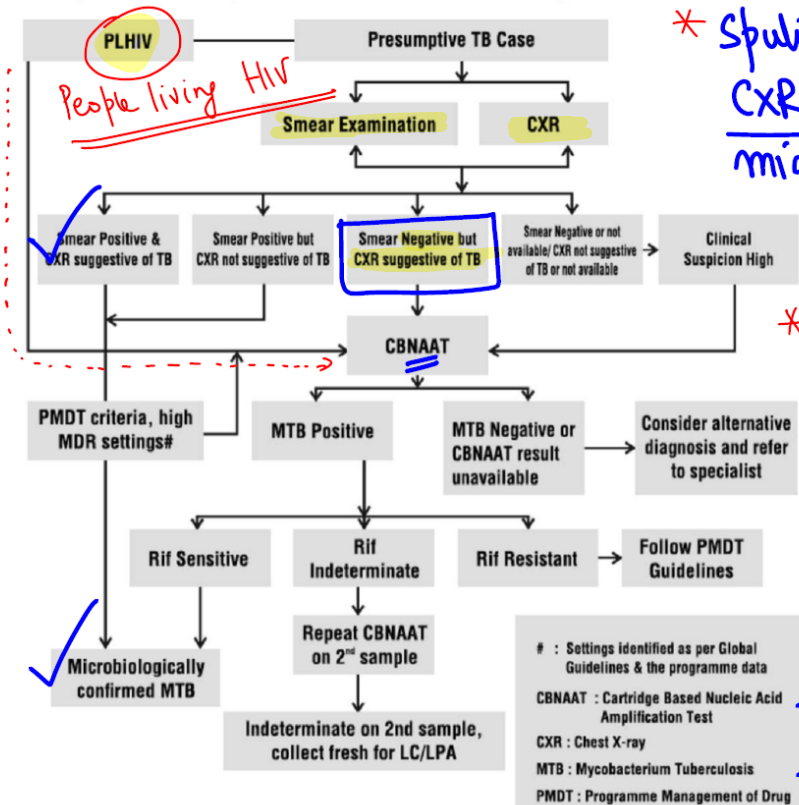
- ✓ Low Socio-Economic Patient
- ✓ STEROIDS
- ✓ AIDS +
- ✓ CHILD < 5yrs (PEM), PRISONS, Mental care
- Health facility, IVDU, SILICOSIS \*

GYPSUM / KOTA STONES | CONSTRUCTION WORK

~~Q.~~ pregnancy +  
ATT  
😊 : ✓  
☹️



# Diagnostic Algorithm for Pulmonary TB



\* Sputum for AFB +  
 CXR +  
 microbiologically confirmed TB

\* Sputum for AFB ⊖  
 CXR: +

Sputum CBNAAT  
 Cartridge based nucleic acid Amplification Tech

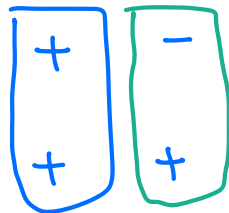
\* M.TB: ⊕ ←

\* Resistance To Rifampin

# : Settings identified as per Global Guidelines & the programme data  
 CBNAAT : Cartridge Based Nucleic Acid Amplification Test  
 CXR : Chest X-ray  
 MTB : Mycobacterium Tuberculosis  
 PMDT : Programme Management of Drug

# WORK-UP

1. Sputum smear for AFB:



2. CXR

3. Sputum for CB NAAT

> 10mm induration measured

⊕

EXPOSURE TO TB

⊖

SUSCEPTIBILITY TO TB

4.

Mantoux Test ≤ 1 TU of P.P.D., intradermal in forearm

> 48 HRS: induration

PROGNOSIS

False  $\oplus$  Mx

→ BCG vaccine

→ leprosy

False  $\ominus$  Mx

STEROIDS

AIDS

Recent Blood Tx

Measles

PEM gd IV

# Hospitalized patients of pulmonary TB

MASSIVE HEMOPTYSIS: > 600 ml blood  
in sputum/day  
or  
Rx: Bronchial A  
embolization

> 150 ml blood in  
single episode

\* Negative pressure Rooms

↳ exchange of fresh air: 6 cycles  
hour

\* N95/99 MASK: HCW  
SURGICAL MASK: patient

\* Hand wash / safe disposal of sputum

# N.T.E.P

- ✓ MDR-TB : (R) :  $\geq 2$  INH + Rmp
- ✓ Pre XDR-TB : (R) :  $\geq 2$  " + Fluoroquinolones
- ✓ XDR-TB : MDR + FQR + Resistance To at least one group A drug
  - \* Bedaquiline or
  - \* linezolid

\* Ensure compliance

\* Supply chain logistics

MDR-TB : oral BPaLM x 6 months

Bedaquiline:  $\ominus$  ATP synthase

Pretomanid :  $N_2$  Reactive species

Linezolid :  $\ominus$  protein synthesis

Moxifloxacin :  $\ominus$  DNA gyrase

Tarsades de pointes

QT prolongation

CNS TB  $\Rightarrow$  ATT x 1yr + **STEROIDS** x 6 wks  
(TB meningitis) (dexamethasone)

2 (HRZE) = intensive phase of Drug-sensitive MTB

R<sub>x</sub>

H INH<sub>L</sub>: NEURITIS: B<sub>6</sub>

R Rmp<sub>L</sub>: FLU, orange urine

Z pyrazinamide<sub>L</sub>: URic Acid ↑, most hepatotoxic A.T.T

E ethambutol<sub>K</sub>: optic neuritis

Children → Moxifloxacin used in place of ethambutol

Rifapentine

4 HR : continuation

B<sub>6</sub> Toxicity

P. neuritis