

# Prevention of TB in children

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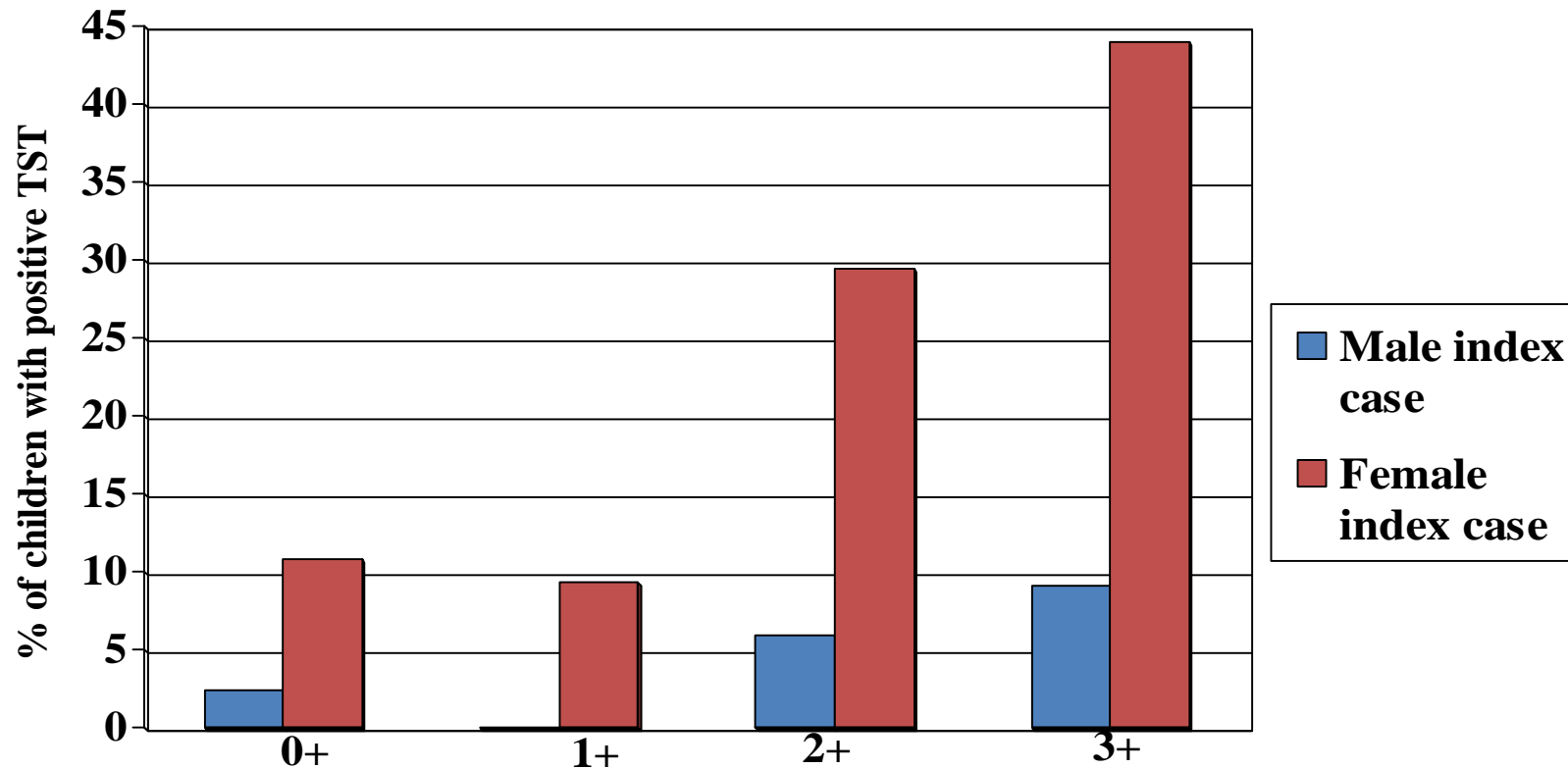
KEMRI

- The natural history of disease in children indicates that more than 95% of children who develop TB do so within 12 months after infection

# Studies of child contacts in African communities

- One-third to two-thirds of child household contacts of TB cases have evidence of TB infection i.e. TST positive
- Incidence of TB disease among household contacts is very high – reported as >1,000 cases/100,000 population
- Likelihood of infection is related to closeness/proximity of contact to and sputum smear positivity of index case
- Risk of infection greatest when the index case is the child's carer e.g. mother, grandmother
- HIV-infected children are at increased risk of exposure to TB

# Proportion of children with TB infection (positive TST) by degree of smear positivity of the source case



Kenyon TA et al, Int J Tuberc Lung Dis 2002

# Importance of Child Contact Screening

- The prevalence of TB infection is high among child contacts
  - Child contact screening identifies asymptomatic child TB contact for IPT
  - Early identification and treatment of children with active TB disease
- Early case finding and treatment of infectious TB cases will reduce the burden of child TB
- Child household TB contacts had significant increase risk of all-cause mortality compared to children living in non-TB households in same community

# Management of child contacts

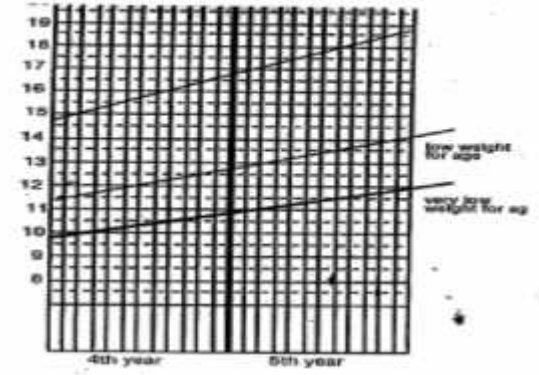
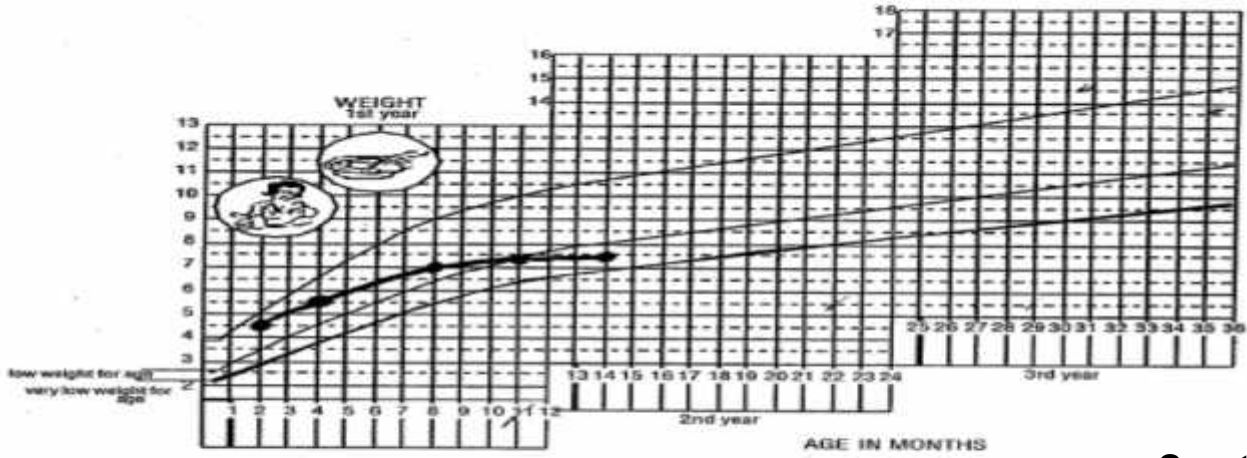
**List close contacts find out their ages, HIV status and if the contacts have any symptoms suggestive of Tuberculosis**

## **Checklist of main symptoms**

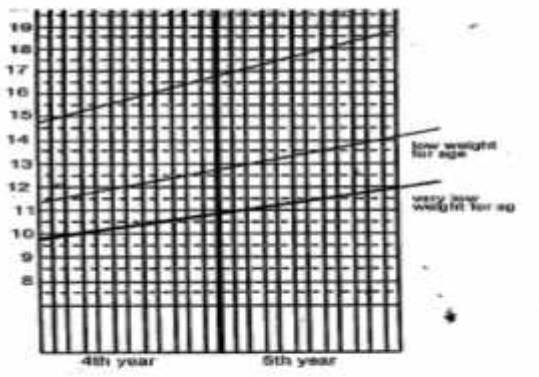
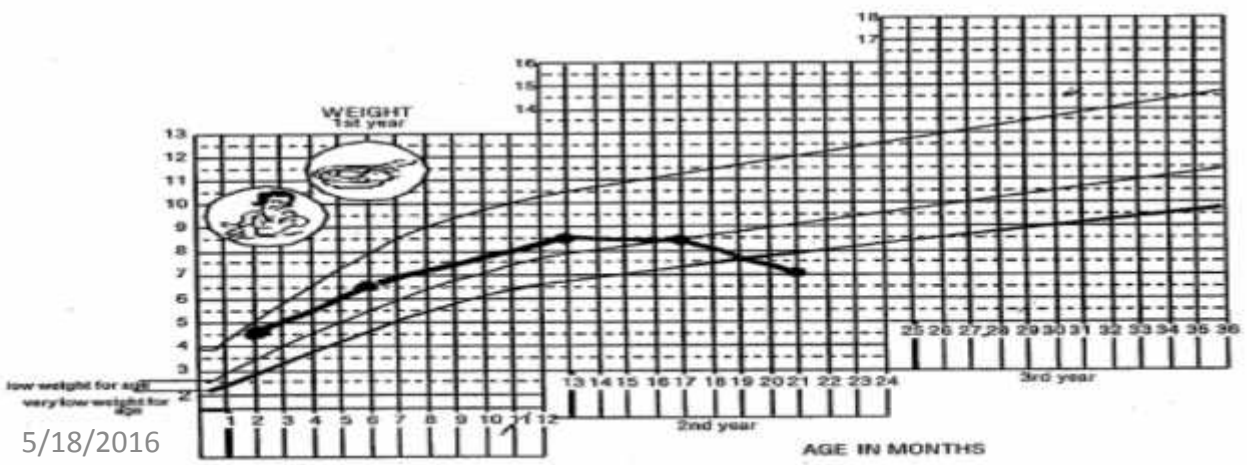
- Persistent cough for more than 2 weeks
- Weight loss or failure to gain weight
- Persistent fever for more than 1 week and/or night sweats
- Fatigue, reduced playfulness, less active
- Enlarged cervical LN(S)

# Growth Monitoring Chart

Check weight, record weight and compare to previous weights



Growth faltering or failure to thrive



Weight loss

# The Symptomatic Child

## Evaluate for TB

1. If TB, treat as per guidelines

1. If symptomatic but not TB :Re-evaluate symptoms and manage appropriately



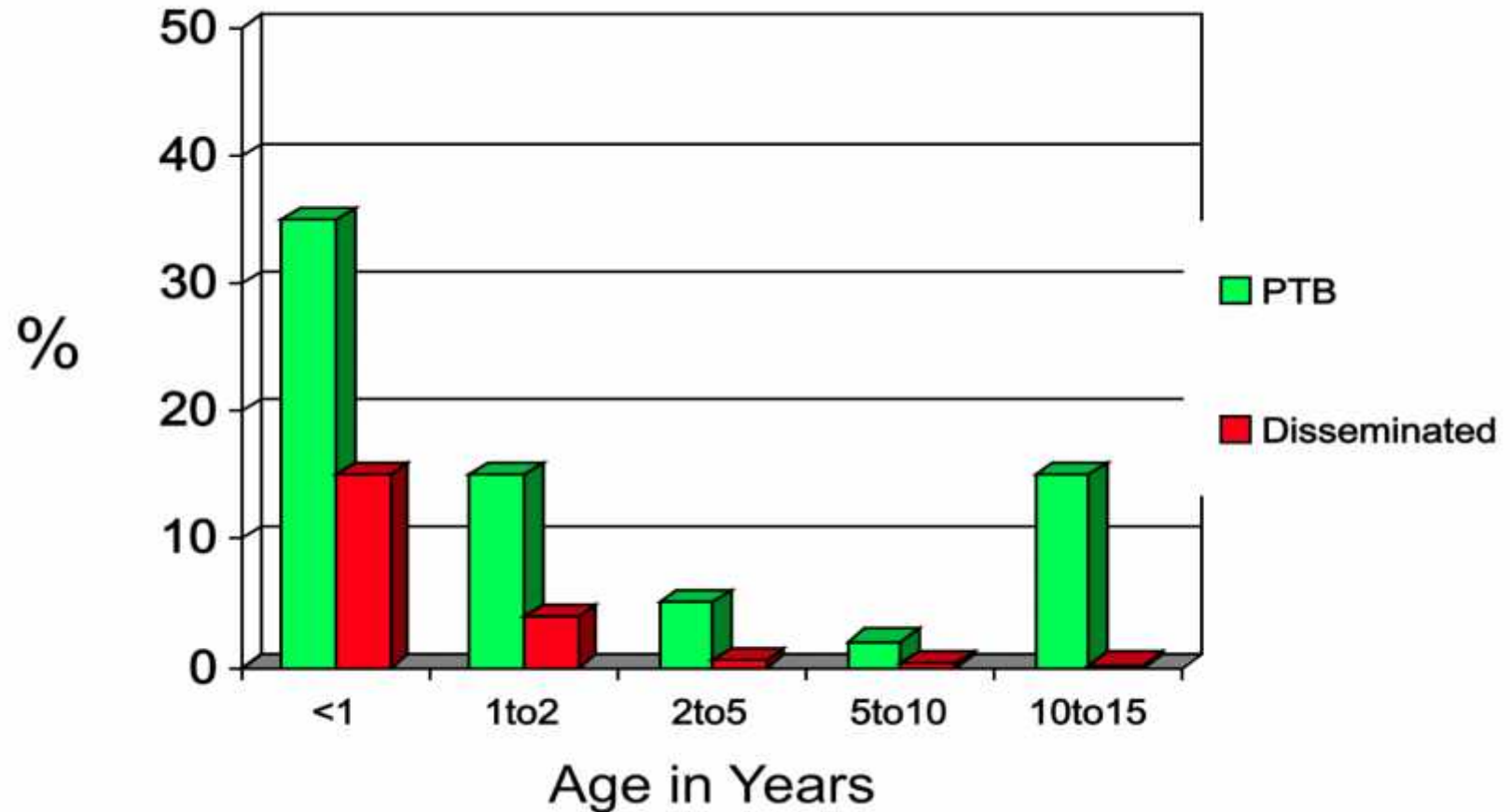
# Contact Tracing Approaches

- Facility Based Approach
- Community Based Approach  
(recommended)

# Isonizide Preventive Therapy(IPT)

- IPT-is given to high TB risk children who have no signs symptoms for TB disease
- IPT reduces the risk of TB disease by around 60% among infected contacts of all ages
- Large observational studies suggest that the efficacy may be higher (80-90%) in child contacts

# Risk of TB disease following infection by age



Adapted from Marais B, et al. Int J Tuberc Lung Dis 2004

# Which child gets IPT

- All children aged under 5 years who have been exposed to a case of infectious TB irrespective of their HIV status
- Among children living with HIV who are less than 12 months of age, only those children who have contact with a TB case and who are evaluated for TB (using investigations) if the evaluation shows no TB disease.
- Children living with HIV who are more than 12 months of age and who are unlikely to have active TB on symptom-based screening, and have no contact with a TB case
- Follow up of a child on IPT is monthly. If TB disease develops, stop IPT and treat for TB.
- **Malnourished and HIV positive children should also be given Vitamin B6 at 25mg daily**
- **INH preventive therapy should NOT be given to children exposed to an adult with proven MDR/XDR TB.** The children should instead be followed up for signs of active TB disease and managed appropriately

NB: Clinical assessment is sufficient to decide whether the contact is well or symptomatic for TB , where TST and CXR are not available

# IPT dosing schedule

**TB disease must be ruled out before initiating  
IPT**

Weight (kg)	Daily Dose in mg	Number of 100 mg, INH tablets	Number of 300 mg (Adult) tablets
<5	50	½	-
5.1 – 9.9	100	1	-
10-13.9	150	1½	½
14-19.9	200	2	-
20-24.9	250	2½	-
>25 and adults	300	3	1

# Follow up of child on IPT

- Give IPT for 6 months
- During monthly visits
  - evaluate for TB symptoms
  - Conduct Adherence counseling
  - Monitor INH adverse effects
    - (gastrointestinal symptoms, jaundice, nervous system)
  - Monitor a IPT register

# BCG

- All children should be vaccinated using BCG vaccines as soon as possible after birth.
- Even though BCG has very little protection against all forms of TB it protects against severe disseminated forms of TB in children especially in the Neonatal age group
- Do not give BCG in those suspected to have TB infection at birth
- Defer BCG vaccination till two weeks after IPT/TB treatment
- BCG is not given to children with symptoms of HIV/ congenital immunodeficiency syndrome

# The efficacy of Bacillus Calmette-Guerin vaccination of newborns and infants in the prevention of tuberculosis: meta-analyses of the published literature

- This risk is highest in very young (3 years of age) and immune-compromised children.
  - Fifty per cent of infants
  - 20–30% of 1–2 year olds progress to disease usually within 12 months after primary infection. |
- BCG vaccination of newborns and infants significantly reduces the risk of tuberculosis by over 50% on average. Up to 83% in Laboratory confirmed TB



# Role of the community in TB control

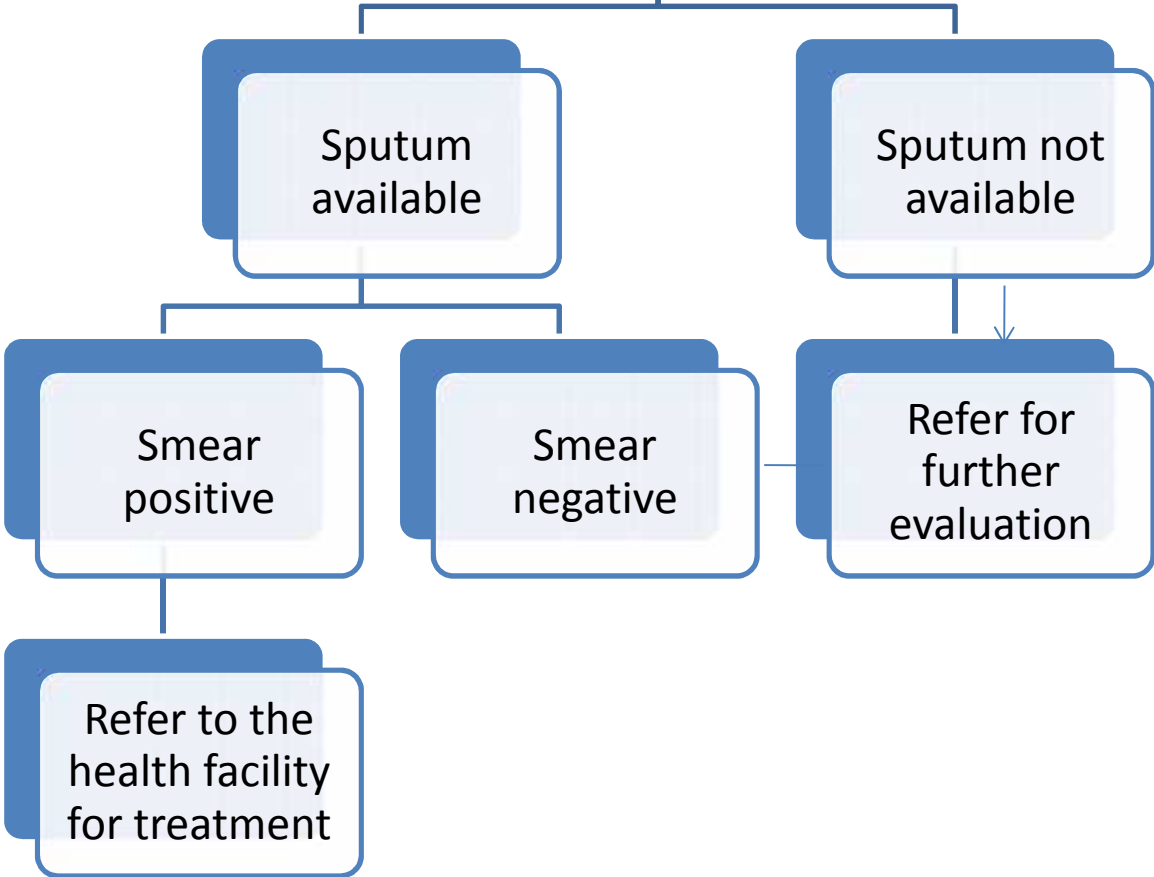
- Identify and refer suspects around them to seek TB services
- Facilitate DOTS to children on treatment
- Assist in defaulter tracing
- Report any suspicious deaths which may be due to TB to enable contact tracing
- Creation of awareness within the community on TB-signs, symptoms and treatment
- Assist in contact tracing

# Common scenarios for community health worker in management of child TB

- Child with symptoms and the diagnosis of TB is suspected
- Child who is a household or close contact of an infectious case of TB i.e. usually a case with sputum-smear positive disease
- Child on treatment for TB
- Persons who die of TB-Possible child contacts

# Guidance for the management of children at community level who present with symptoms suggestive of TB

Symptoms suggestive of TB? Cough, fever, poor weight, less active, enlarged lymph nodes  
**refer**



# DEFAULTER TRACING

- **Definitions:**

- **Defaulter-** Any TB patient who misses scheduled appointment twice during the intensive phase or misses second month's scheduled appointment during continuation is considered a defaulter.
- **Defaulter tracing-** is the process of identifying, locating and retrieving patients who have stopped collecting/taking TB medication against medical advice
- The health worker identifies defaulters from the treatment registers at health facilities

# REASONS THAT MAY MAKE TB PATIENTS DEFAULT

- Long distance to treatment centers
- Long duration of treatment
- Large number of tablets required for treatment
- Adverse effects of TB drugs
- Lack of adequate health education
- Lack of improvement due to wrong diagnosis especially if based on X-ray alone or dual infection not diagnosed
- Lack of support from community, family and friends
- Negative attitude of clinic staff towards patients.

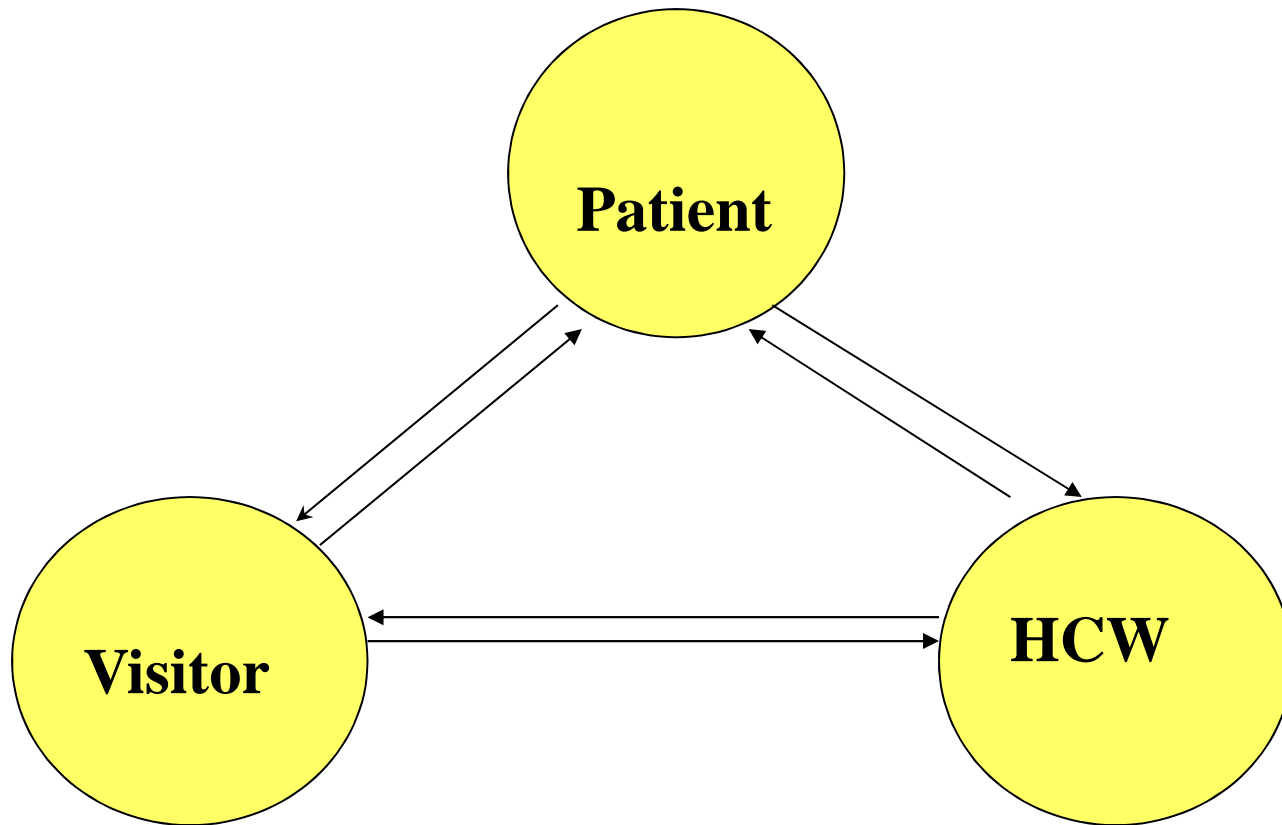
# PEOPLE RESPONSIBLE FOR DEFAULTER TRACING

- Health workers (HWs)
- Community Health Extension Worker (CHEW)
- Community Health Workers (CHWs)
- Family members
- Village/provincial administration among others

# **INFECTION PREVENTION AND CONTROL**

# What is infection control?

Prevention of TB transmission in all directions

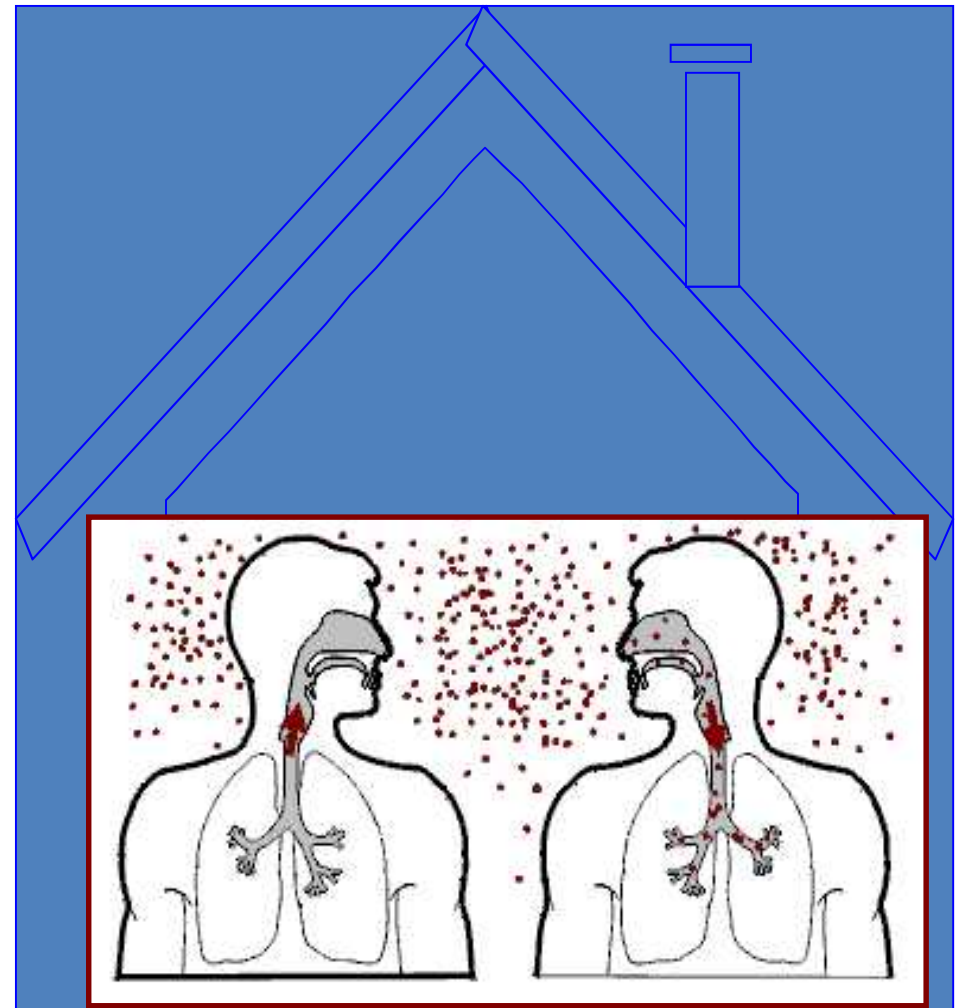




# Risk of TB transmission

## Factors could be:

- Institutional
- Patient
- Recipient
- Physical environment
- Bacterial



# Institutional factors

- Overcrowding
- Exposure in small, enclosed spaces
- Lack of adequate ventilation
- Re-circulation of contaminated air

# Patient factors

- Infectiousness: Positive sputum smear, cavitation, force and frequency of cough\*
- Understanding of TB: cough etiquette\*
- Treatment: (correct course and adherence)\*
- Cough-inducing procedures \*
- Likelihood of TB (prior treatment, age, homelessness, contact of known case, etc.)

*\*Influence the number of infectious bacilli in room air*

# Recipient factors

- Distance from infectious source \*
- Duration, and frequency of contact\*
- Adherence to infection control practices\*
- Susceptibility either intrinsic or acquired (i.e. immune status, general health, other diseases, nutrition, age)

*\*Influence the number of infectious bacilli in the inhaled air*

# Recipient factors



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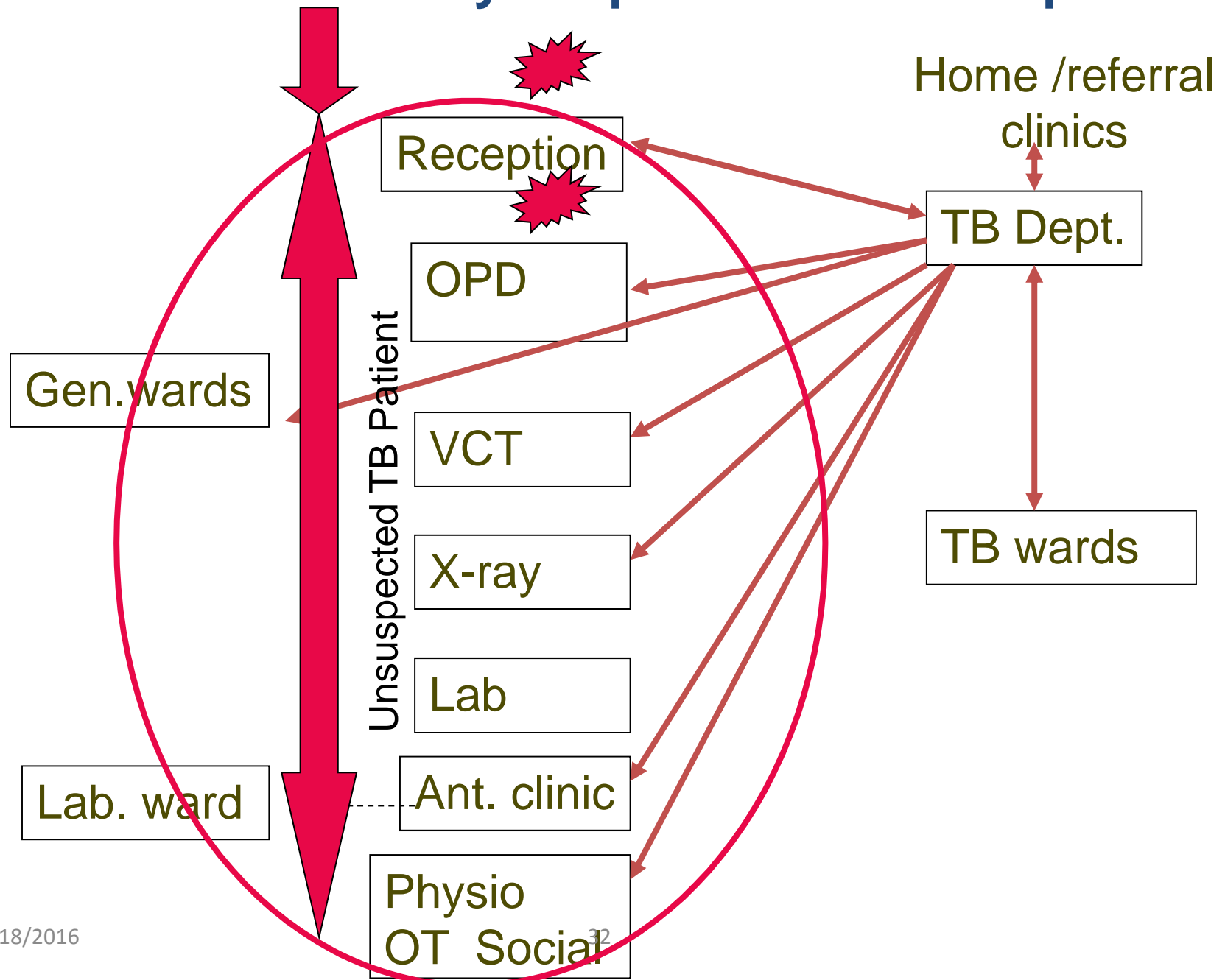
# Physical /Environment factors

- Proximity to Infectious individuals-important in children because the very young are in close contact with their caregivers.
- Adequate ventilation
- Humidity level

# TB infection control required in

- In patient wards
- Outpatient clinics
- Laboratories
- Maternal and child health clinics
- VCT centers
- ART clinics
- TB clinics
- Hospices
- Community/Household

# Areas visited by TB patients and suspects





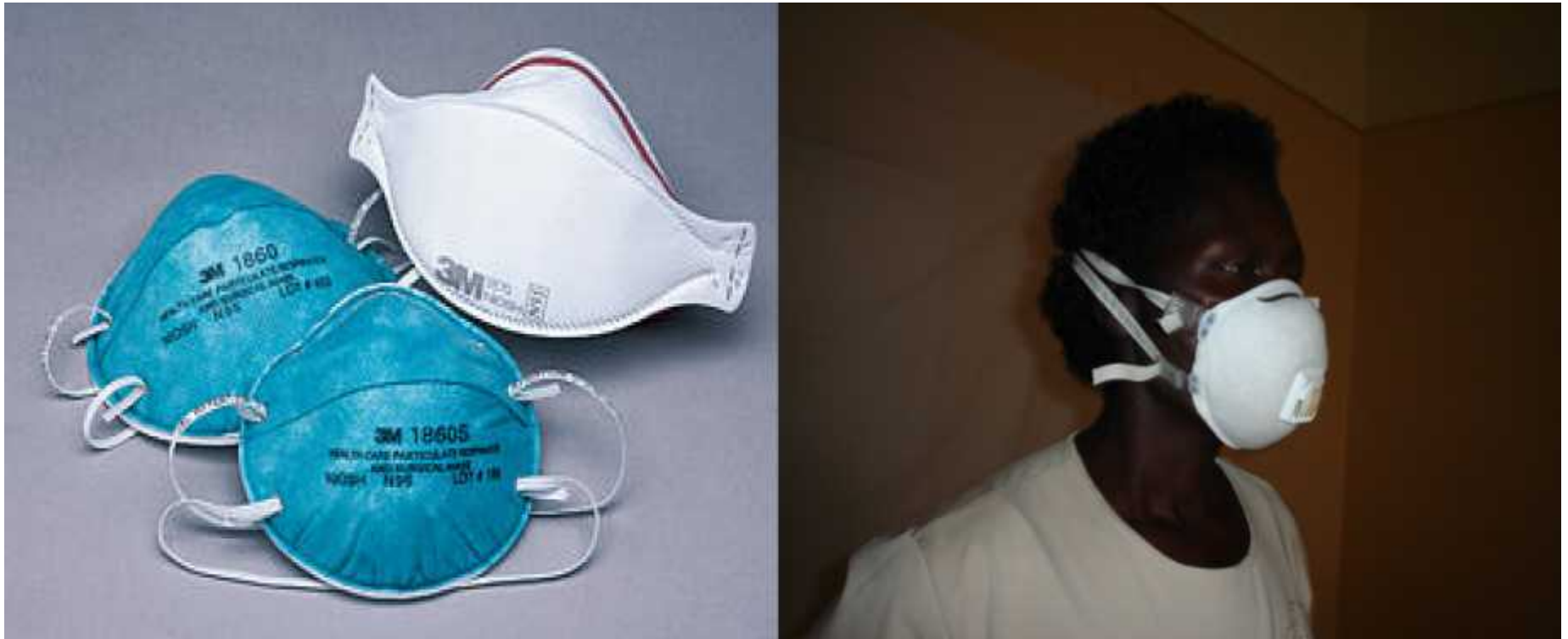
# Hierarchy of Infection Controls

- Administrative controls
  - Triage, Separate infectious patients
  - Cough etiquette and respiratory hygiene
- EnvironVentilation systems
  - Natural ventilation
  - Mechanical ventilation
- Household

# Personal protective equipment

Particulate respirators e.g. N95, FFP2 for HCW

Surgical masks for patients



# Definitions

**Close Contact:** Is defined as someone in frequent contact with a source case with PTB. In same home, dorm, class room

**Source Case :** Any infectious person with Pulmonary TB

**Contact Screening:** Refers to the screening or evaluation for TB infection or disease of all close contacts of infectious PTB case