Overview of Tuberculosis

- for vulnerable groups

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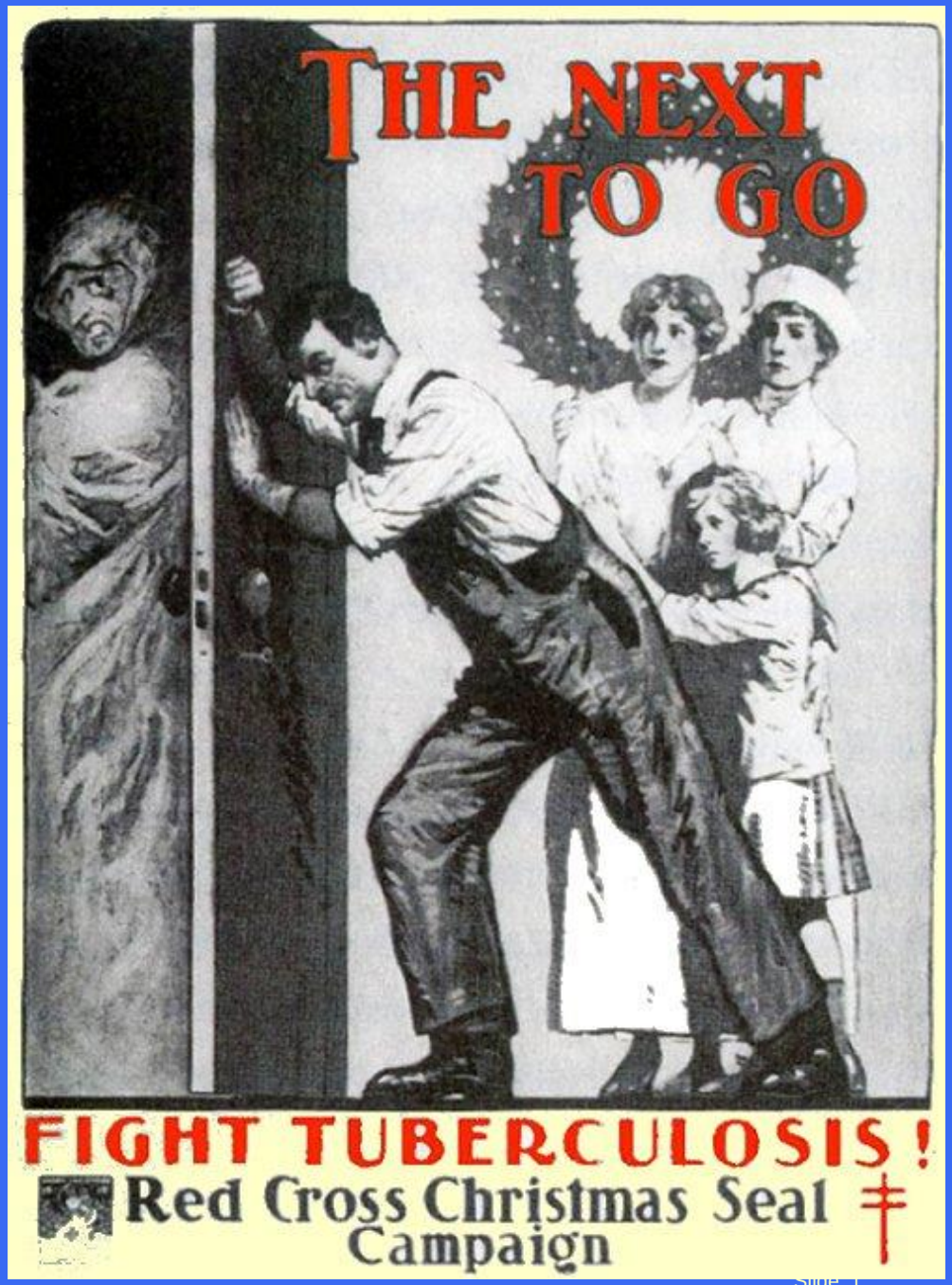


Aim of session

To update knowledge about how TB affects vulnerable groups

Objectives:

- Determine who is likely to get TB (High risk groups)

  * Compare the global, UK and local incidence of TB

- Discuss TB transmission & pathogenesis

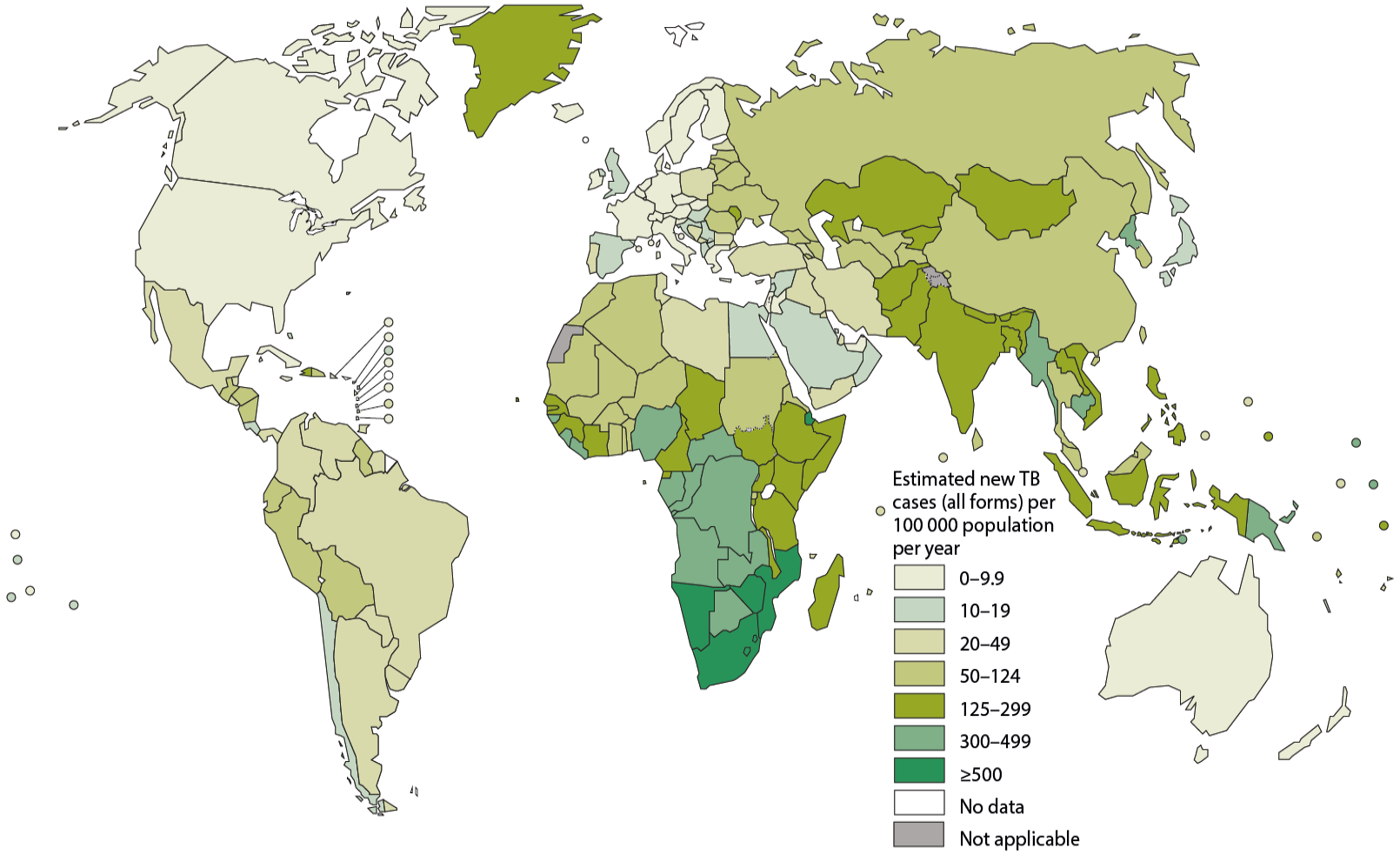
  * Distinguish between ‘Latent TB Infection’ and ‘Active TB Disease’

- Compare different measures for TB Prevention & Control

- Identify ‘at risk-groups’ for TB and how to support vulnerable groups

  * to assist with early TB diagnosis
  * to help adherence to & completion of long /complicated treatment regimens

Estimated TB incidence rates, 2013

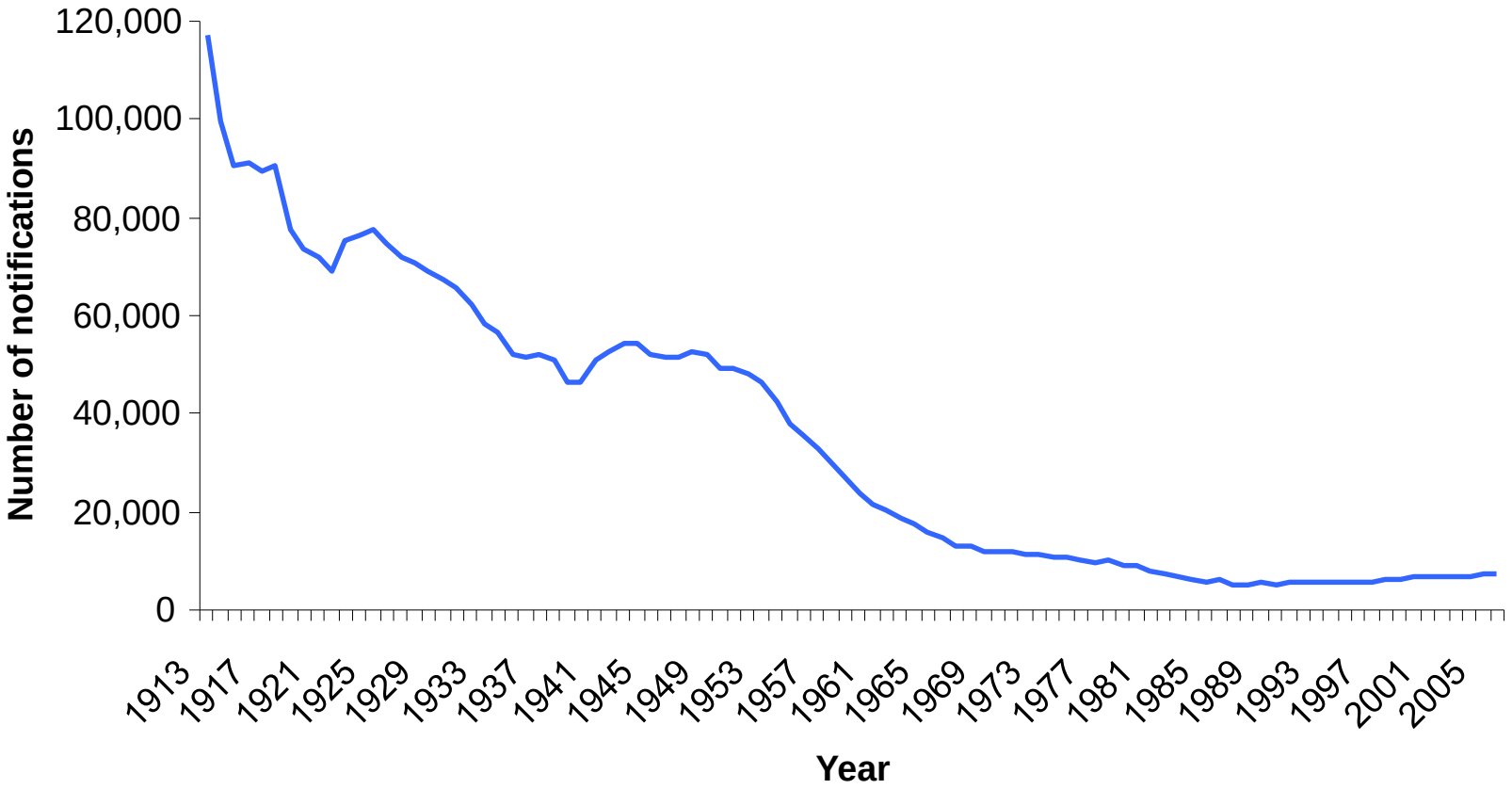


The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: *Global Tuberculosis Report 2014*. WHO, 2014.

World Health Organization

Tuberculosis notifications, England and Wales, 1913-2006

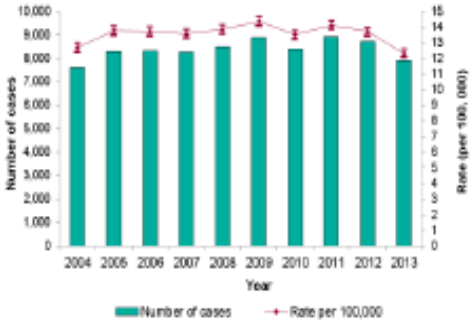


Source: Statutory Notifications of Infectious Diseases (NOIDs)

Public Health England

Tuberculosis in England

- In 2013, 7,290 TB cases (13.5 cases per 100,000 pop)
- Rates increased steadily 1980s to 2005, remained relatively high with a slighty decrease in 2013
- Particular groups affected:
  - Non-UK born (73%)
  - ethnic minorities (majority ISC or Black Africa)
  - individuals with social risk factors (9%)



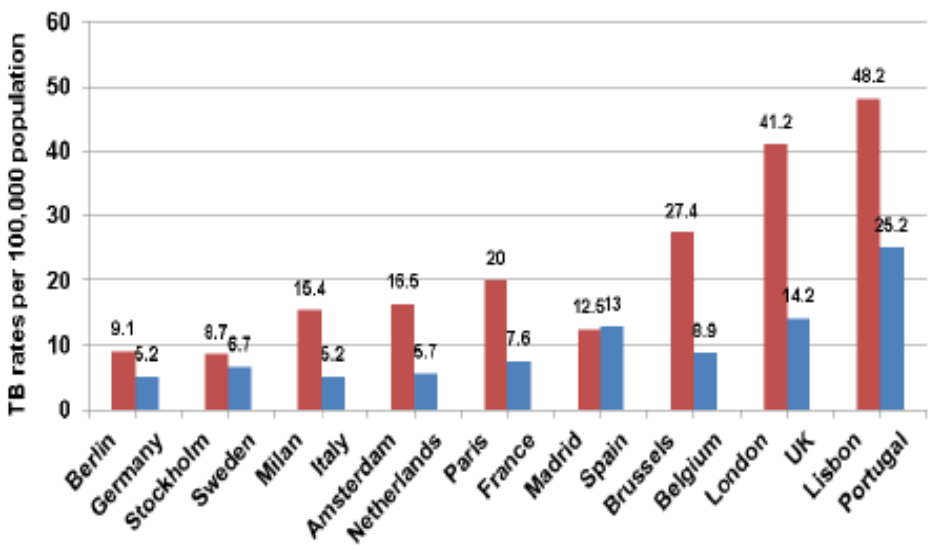
- 85% of non-UK born develop TB >2yr after arrival in UK
- drug resistance increasing

Public Health England

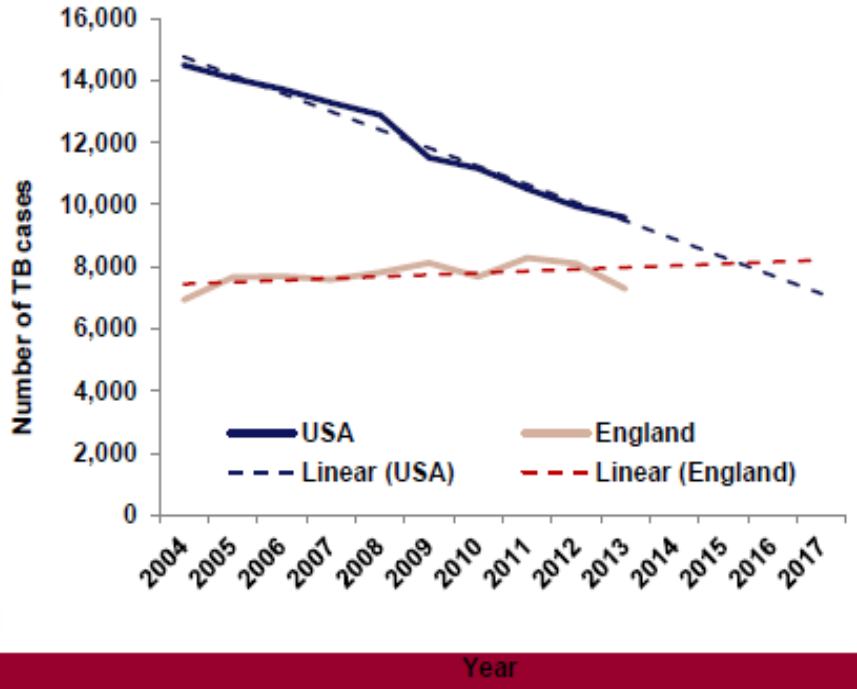
International comparisons poor

- England - 2nd highest TB rate in Western Europe
  - >4x higher than USA

Comparison of TB rates per 100,000 pop. in W. European countries and cities (2012)

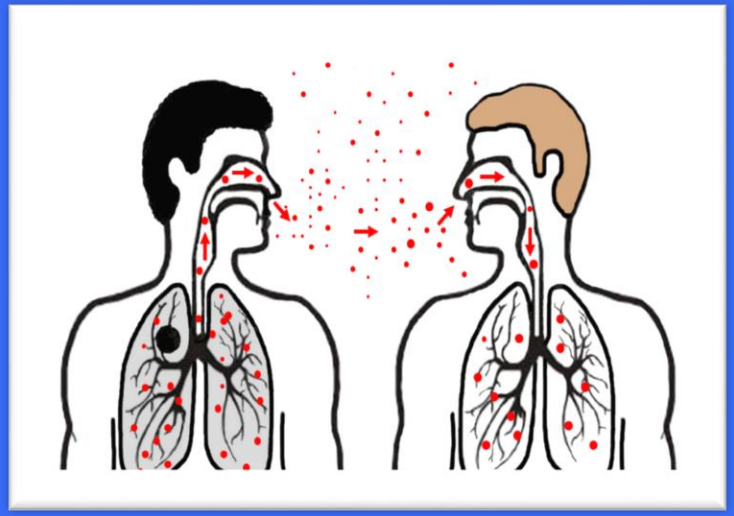


No. of TB cases in England versus the US



Transmission & Pathogenesis of *M.tuberculosis*

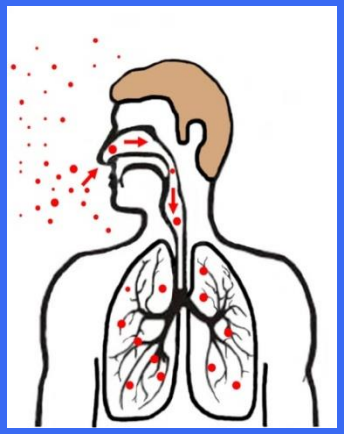
- Airborne disease caused by the bacterium *Mycobacterium tuberculosis (M.tb)*
- M.tb spread via airborne particles called droplet nuclei
- Expelled when a person coughs, sneezes, shouts or sings



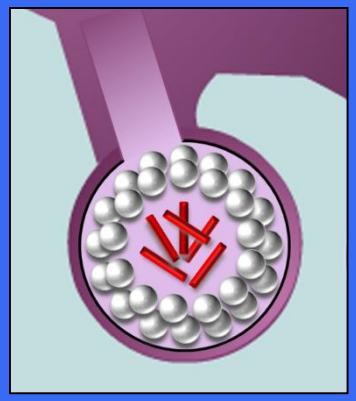
Probability TB will be transmitted

- **Susceptibility of the exposed person**
- **Infectiousness of person with TB (i.e. number of bacilli TB patient expels into air**
- **Environmental factors that affect the concentration of *M.TB* organisms**
- **Proximity, frequency & duration of exposure (Close contacts)**
- **Very rarely transmitted from children**

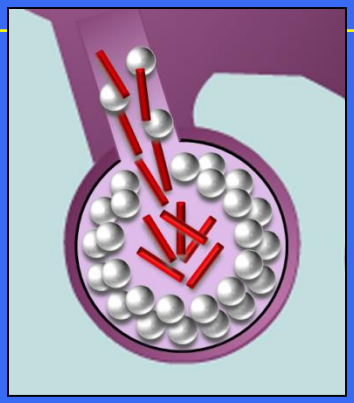
Pathogenesis

	**Droplet nuclei containing tubercle bacilli are inhaled, enter the lungs, and travel to the alveoli.**
	**Tubercle bacilli multiply in the alveoli.**

Pathogenesis

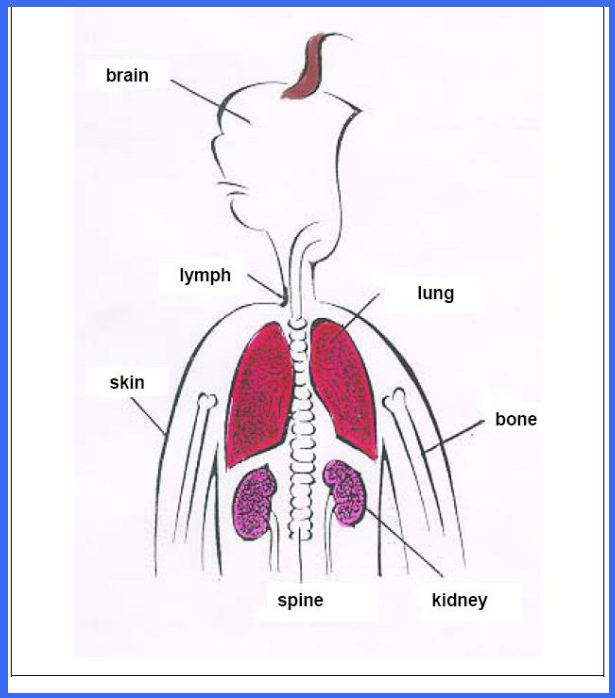


Within 2 to 8 weeks, special immune cells called macrophages ingest and surround the TB bacilli. The cells form a barrier shell, called a granuloma, that keeps the bacilli contained and under control **(Latent TB Infection - LTBI)**



If the immune system cannot keep the TB bacilli under control, the bacilli begin to multiply rapidly **(TB disease)**

Pathogenesis



A small number of TB bacilli enter the bloodstream and spread throughout the body.

The TB bacilli may reach any part of the body.

Strategies for TB Prevention & Control

1. Assessment for potential TB

- Signs & symptoms
- Risk factors
- Diagnostic tests
- Infectivity & Drug resistant risk assessment


Risk factors

2. Prompt Effective TB Treatment


Treatment

- Prescribed by a TB specialist
- Monitored for adherence
- DOTs if required (supervised therapy)

3. TB Screening

- Close Contacts of Index cases
- New Entrants
- TB outbreaks & Incidents


Close Contacts

4. TB (BCG) Vaccination


BCG groups

- for High-Risk groups

5. Notify active TB cases.

- Epidemiology trends
- Instigates contact screening & TB outbreak management
- TB specialist input & review

6. Audit & Evaluation of TB Service:

- TB Cohort Review
- Chemoprophylaxis audits
- Student screening

Thank you