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## Targeted Testing and Special Populations

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**Objectives**

- Understand how to define your area's special populations.
- Generate at least two strategies that may influence success in reaching special populations.
- Describe how targeting TB screening efforts toward special populations can increase program effectiveness.
- Describe at least three reasons for targeted testing program failure.




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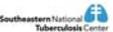
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**Why screen and test?**






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## Screening Goals

- Public Health
  - Reduce morbidity
  - Reduce transmission
- Individual
  - Identify individuals with TB disease and TB infection
  - Provide appropriate **treatment**



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## Two Types of Screening

- Screening for Disease
- Screening for Infection

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## Tests available for diagnosing Latent TB Infection (LTBI)

- Mantoux Tuberculin Skin Test (TST)
  - Skin test that produces a delayed type hypersensitivity reaction in persons with tuberculosis infection.
- Interferon Gamma Release Assays (IGRAs)
  - Blood tests that detect the amount of interferon-gamma (IFN- $\gamma$ ) released by blood cells from sensitized (TB infected) persons.

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## TST . . .Who Can Administer?

- IN VIRGINIA, only prescribers (MD, NP & PA) RN's and LPN's( working under the direct supervision of an RN ) can legally possess and administer tuberculin which is regulated as a class VI substance
  - Code of Virginia 54.1-3408 paragraph G
  - <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+54.1-3408>
- Who can measure TST?

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## Mantoux TST

- Currently the primary method – “Gold Standard”
- Interpretation of TST results based on
  - Size of the induration (swelling) and
  - Person's risk factors for exposure to TB
  - Must be read within a specific time frame.
- False positives/false negatives
  - Cross reactivity with BCG likely
  - Immune status may effect results
- Boosting/two-step testing
- If client is symptomatic for TB, CXR is needed even if TST is **negative**

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## Interferon Gamma Release Assays – IGRAs Overview

- Tests measure interferon-gamma (IFN-γ) released from a patient's T cells after stimulation with specific TB antigens
- **QuantIFERON - 2001** ( not available since 2005 )
  - CDC Guidelines 2003 MMWR
- **QuantIFERON - TB Gold (QFT-G) 2005**
  - CDC Guidelines 12/16/2005 MMWR
- **QuantIFERON - TB Gold InTube (QFT\_GIT) 10/2007**
- **T-SPOT.TB Test 7/2008**
  - CDC Guidelines 6/25/2010 MMWR

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## Using IGRA Tests - 1

- Role in public health is unclear and changing
  - Use TST for used on children <5yo
  - Cannot distinguish LTBI vs TB Disease
  - Impaired immune function may decrease sensitivity
  - Local lab collaboration - access to test remains limited, requires timely and careful handling to maintain viability of lymphocytes
  - Special considerations re conversions and reversions
- Probably cost effective
  - Employee annual testing, corrections, homeless shelters
    - Two step testing not required
  - Cross reactivity with BCG unlikely
  - Requires one visit

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## Using IGRA Tests - 2

- IGRAs can be used in place of and NOT in addition to TST while investigating contacts
- Negative IGRA test does not rule out TB Disease or early LTBI
- No data exist for optimal timing to perform IGRA testing on close contacts
- There is no data on the use of IGRA testing for investigating contacts of MDR-TB cases

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## Treatment of Latent TB Infection

- Recommended regimen
  - Isoniazid for nine months is optimal, six months acceptable (270 doses within 12 months)
- Alternative regimens
  - Six months of isoniazid (180 doses in 9 months)
  - Four-month course of rifamycin acceptable (120 doses in 6 months)
- Recommendation for PZA/rifamycin withdrawn (2002)
  - Problems with liver toxicity
  - Extremely close monitoring required if used
  - Remember it's still efficacious!

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## Why target the testing? Why not just test everyone?



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# SPITTING ON SIDEWALKS PROHIBITED

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## Targeting the Screening Efforts

- Focus efforts
  - Risk of TB infection
  - Progression of disease
- A decision to test is a decision to treat.

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### Persons at Higher Risk for Acquiring TB Infection

- Close contacts
- Immune-compromised
- Foreign-born persons from areas where TB is prevalent
- Residents and employees of selected congregate living settings
- HCWs who serve high-risk populations
- Some medically underserved populations
- Certain racial or ethnic minority populations
- Children exposed to high-risk adults

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### Persons at Risk for Progression Once Infected - 1

- HIV-infected
- Recently infected with *M. tuberculosis*
- Children < 5 years
- Immunosuppressive therapy
  - Corticosteroid use (> 15 mg/d for one month or more)
  - TNF- $\alpha$  antagonists (Remicade, Humira, Enbrel, Simponi)

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### Persons at Risk for Progression Once Infected - 2

- Certain medical conditions
  - End stage renal disease, diabetes, selected cancers, etc.
  - Intestinal by-pass, gastrectomy, chronic malabsorption
  - Low body weight (10% below ideal)
- Illicit drug use
- History of inadequately treated tuberculosis
- Recent converters

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## What to do with referrals with LTBI?

- Pay me now or pay me later?
  - HD
  - Private sector

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## Translating National Risks to Local Risks

### Sources of information

- Surveillance data
  - Provides essential information on patterns and trends of the disease
  - Identifies populations and settings at high risk
  - Helps to establish priorities for activities

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## Do the national trends look like what is going on in your area?

Reported TB Cases by Age Group, United States, 2008

Age Group	Percentage
<15 yrs	6%
15-24 yrs	11%
25-44 yrs	34%
45-64 yrs	30%
>64 yrs	19%

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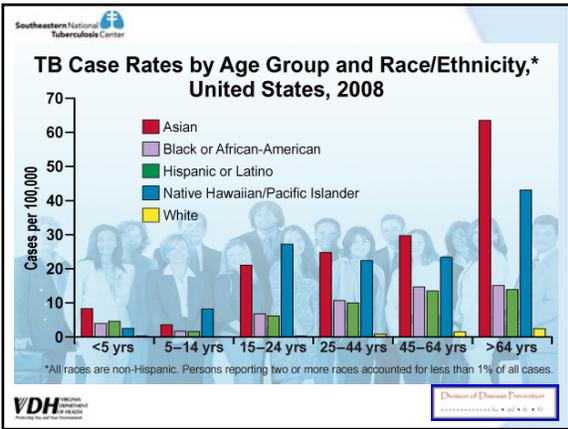
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- ### Determining Your Local Risks
- Community assessment
    - Geographic distribution - mapping
    - Demographic distribution (sex, age, race/ethnicity)
    - School data
    - Hospital admission/ER visits
    - Birth and death data
    - Occupations
      - HCWs
      - Detention employees
      - Migrant workers
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- ### Special Populations
- Contacts
  - Foreign-born
    - Immigrants
    - VISAS
  - HIV-infected
  - Homeless
  - Drug abusers
    - IVDU
    - Non-IVDU
  - Corrections
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## Looking at Your Risk Groups - 1

- Priorities for targeted testing and treatment
  - Tier 1
    - Persons working in or served by clinics or CBOs providing care to HIV-infected persons
    - Prisoners
    - Immigrants, refugees, Visa applicants with Class B1, B2, & B notifications
    - Recently arrived refugees
    - Well-defined groups in congregate living facilities
    - Persons in substance abuse treatment programs

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## Looking at Your Risk Groups - 2

- Priorities for targeted testing and treatment
  - Tier 2
    - Jail detainees
    - Persons working or living in homeless shelters
    - Immigrants reporting for adjustment of status
  - Tier 3
    - Other foreign-born persons at high risk

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## Looking at Your Risk Groups - 3

- Take care of the obvious first
  - Contact investigations
  - Corrections
  - Refugees and Class B immigrants
  - Healthcare facilities
  - Congregate settings

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## Approaches to Targeting Your Efforts

- Clinic-based testing of persons under medical care
  - Dependent on individual's risk profile, no local epidemiology
  - Requires education of healthcare providers
- Population-based
  - Groups identified based on local epi and assessment
  - Drug treatment centers, shelters

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## Reaching Your Targeted Population

- Once identified – how to reach the population
- Some more amenable than others
- Education aimed at target population
- Buy-in by group leaders
  - Identification of leaders
  - Healthcare workers
  - Others factors associated with targeted group
- Community and political support a must
- Resources for the program

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## Beginning Your Target Screening Program

- Anything unique that you can identify about your cases/suspects?
- What additional data sources do you need to consult to determine any patterns?
- Is there an identifiable group?
  - If so, list two ways you might target this group
- What factors do you need to consider?
- Who do you need to enlist to ensure that the program will work?

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## Final Thoughts

- Before any targeted screening program, resources **must** be identified and in place to assure follow-up of those identified with LTBI
  - Full evaluation of those testing positive
    - Chest x-ray
    - Sputum collection
    - Other additional evaluations needed
  - Treatment
    - Medications
    - Monitoring

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## Thank You

Any questions?



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