



March 5th, 2019

Announcements

- Thank you to East Adams and Odessa Hospitals and AS Teams!
- TASP Conference, Tuesday 4/16/19

March 5th, 2019

Agenda

- Didactic: *Tuberculosis and LTBI*
- Case Discussions
- Open Discussion

Question 1

How many people in the world have tuberculosis (of all types)?

- A. 100,000
- B. 500,000
- C. 1,000,000
- D. 5,000,000
- E. 2,000,000,000



TAKE ON TB

DOH 343-142
May 2018

Too many people in Washington
still suffer from tuberculosis (TB).



207

TB cases reported in
Washington in 2017.

9,093 cases of TB were
reported in the U.S. in 2017.

The TB case rate is:

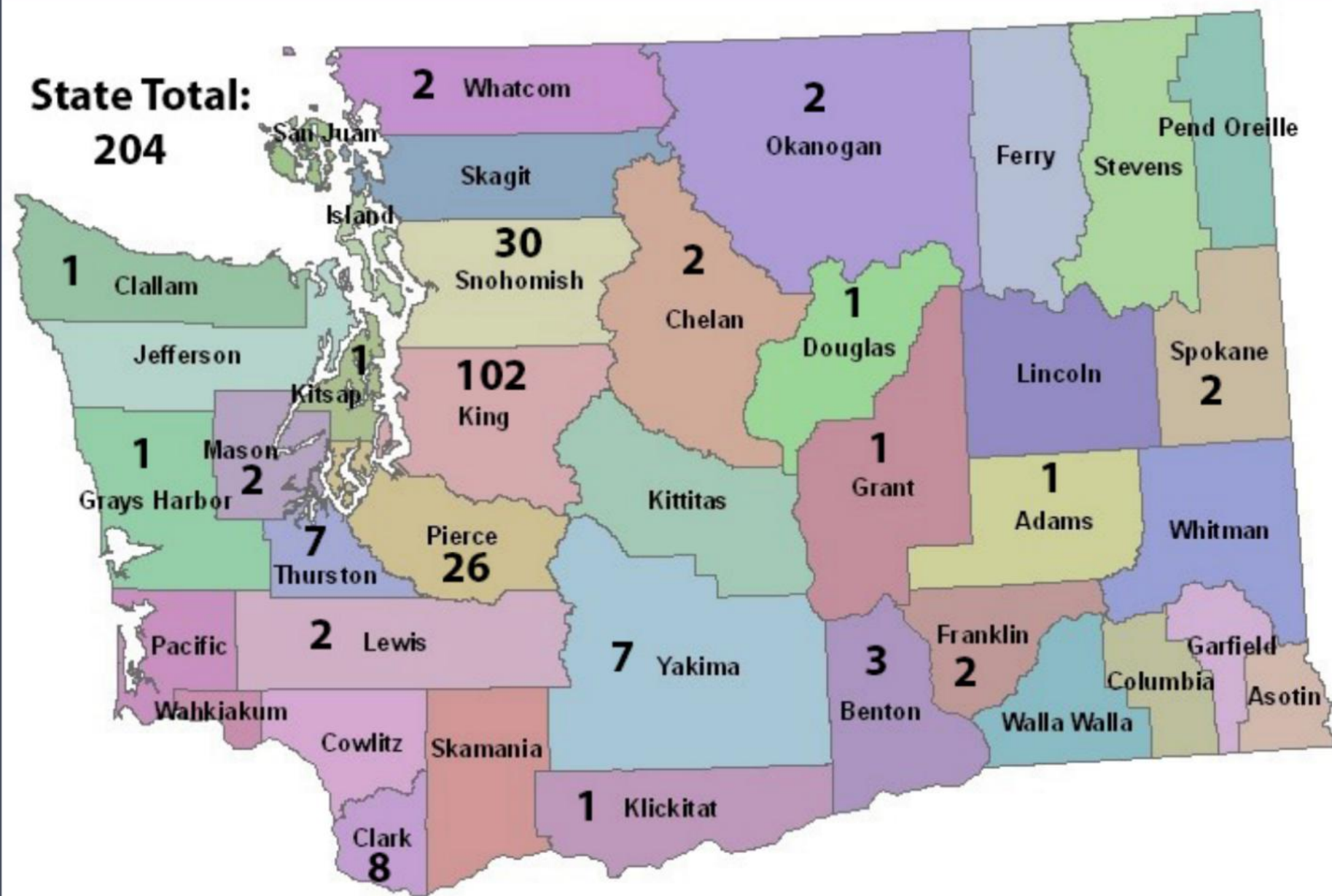
2.8

per 100,000
people

The national average is
2.8 per 100,000 people.



TB case counts statewide in 2016:



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The national average is 2.8 per 100,000 people.

These race/ethnic groups make up the majority of TB cases.



Asian



Black

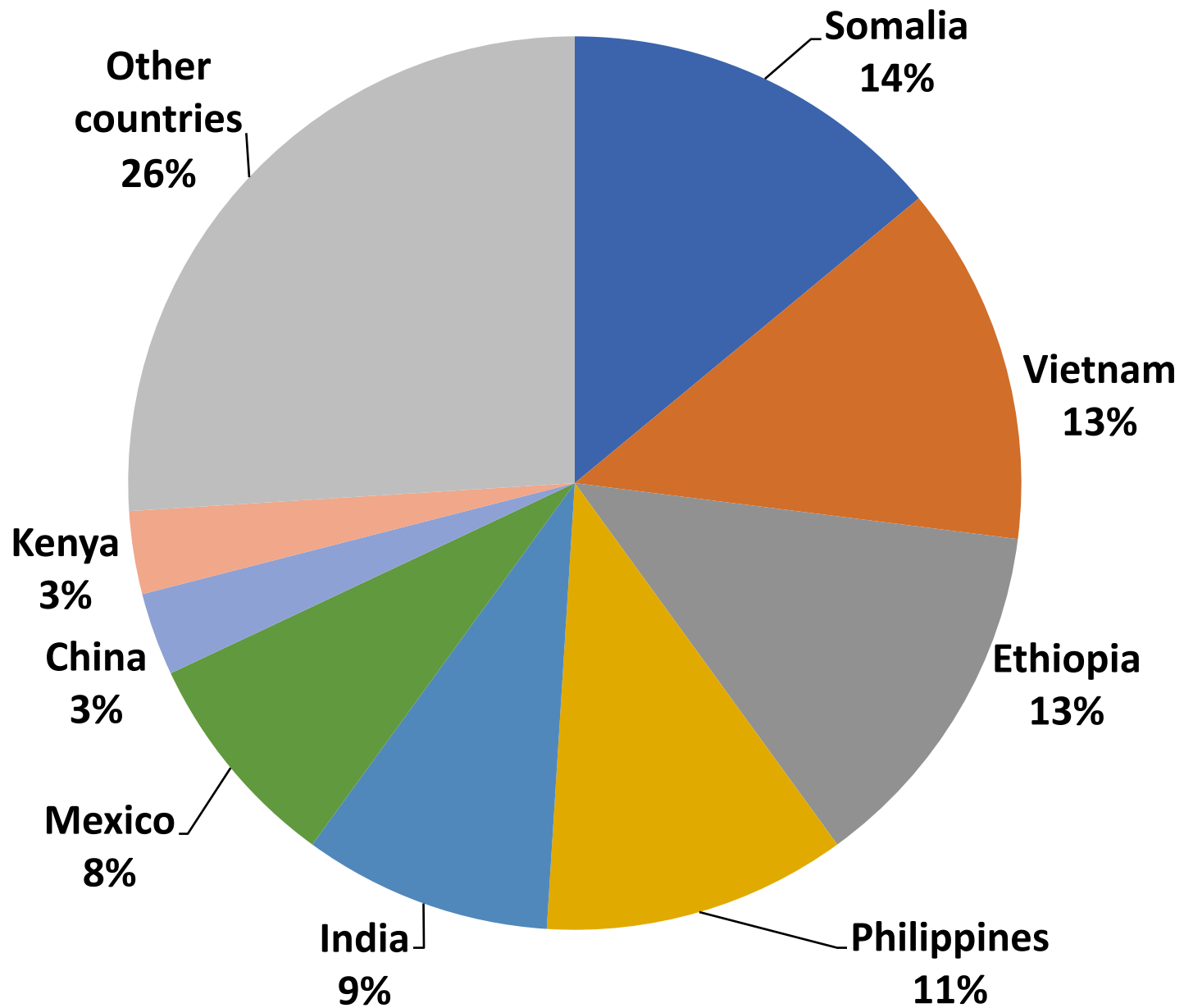


Hispanic

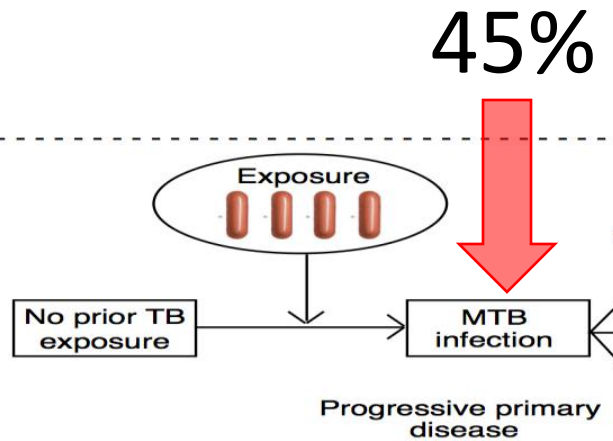


Approximately 3 out of 4 TB cases were born in a country where TB is common. Over a third developed TB 15 or more years after arriving in the United States.

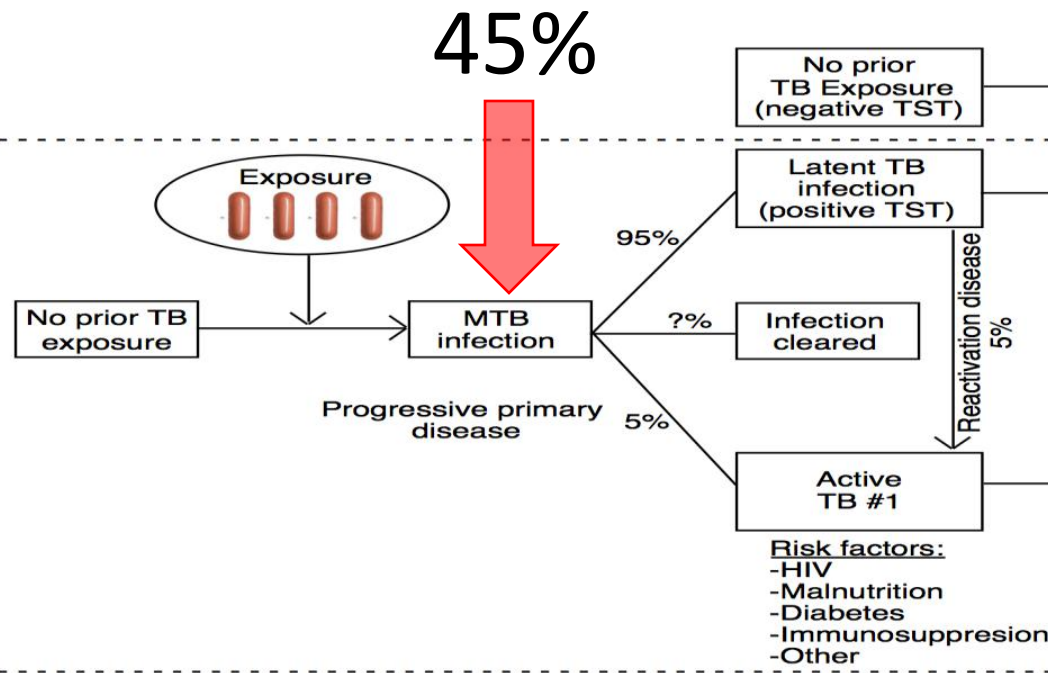




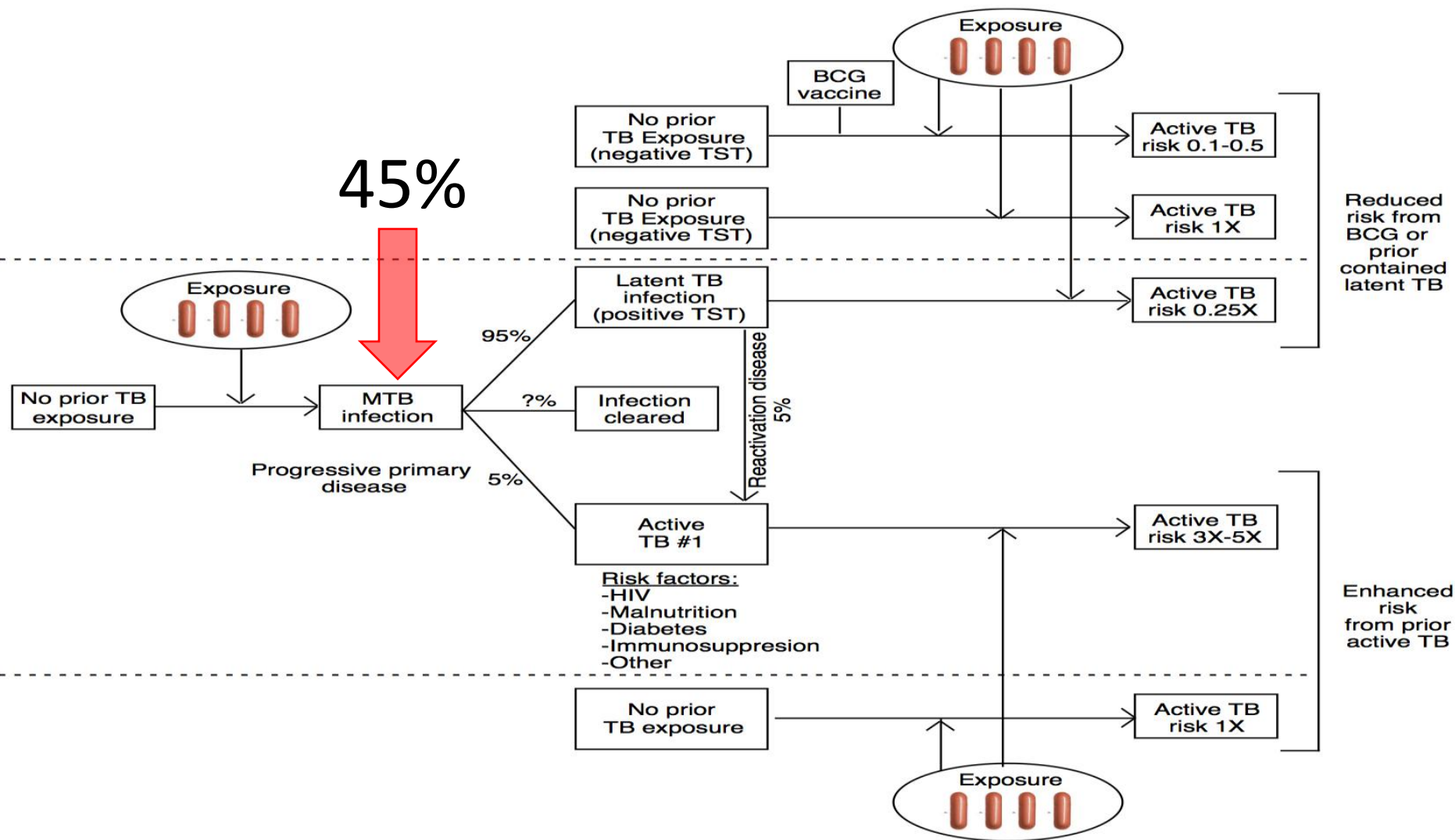
Risks of Infection and Disease

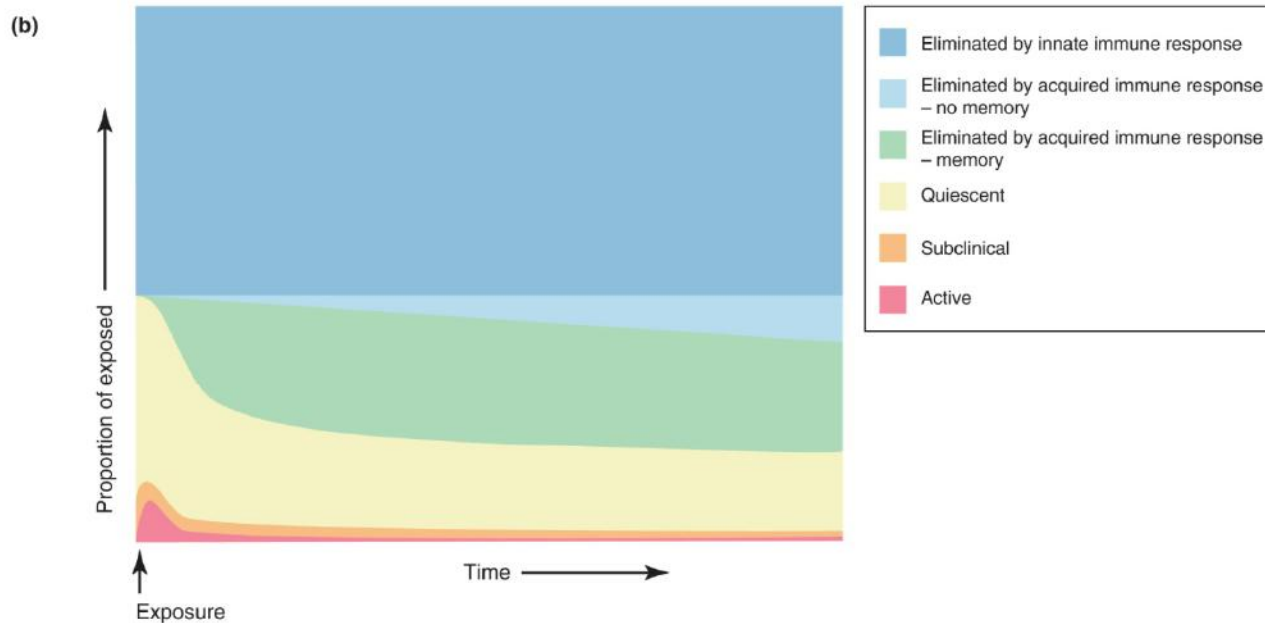
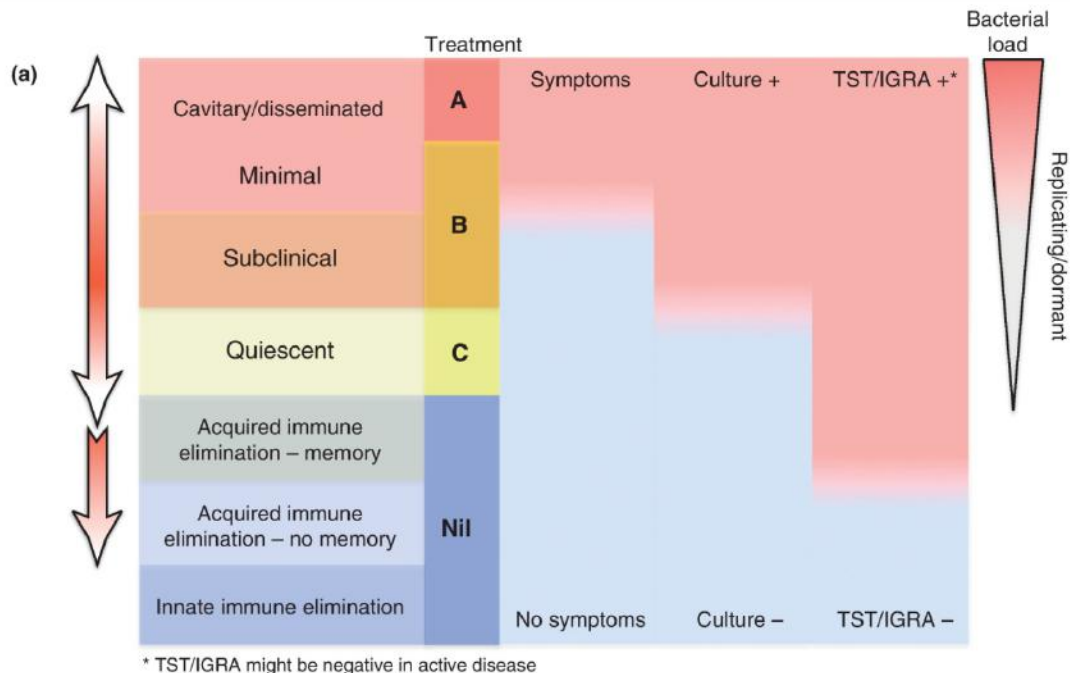


Risks of Infection and Disease



Risks of Infection and Disease





Approaches to TB Control

- Early and rapid diagnosis of cases of TB followed by effective treatment
- Detect and treatment of persons with LTBI (4% (12 million) of US population has LTBI)
 - 10% will go on to develop active disease
 - Treatment takes minimum of 3 months
- WHO goal to eliminate as a public health problem by 2050



INDICATIONS FOR TESTING

- Groups with high prevalence of TB infection (from endemic areas)
- Individuals with higher risk of reactivation (pending immunosuppression or HIV infection)
- Recent TB contacts
- Healthcare workers (usually regulated)



Testing

- Surrogate markers for infection
 - Mantoux/Tuberculin skin test (TST)
 - Interferon-gamma release assay
 - QuantiFERON-TB Gold test
 - QuantiFERON-TB Gold In-Tube test
 - T-SPOT TB test
- Cannot distinguish between active and latent disease



Tuberculin Skin Test

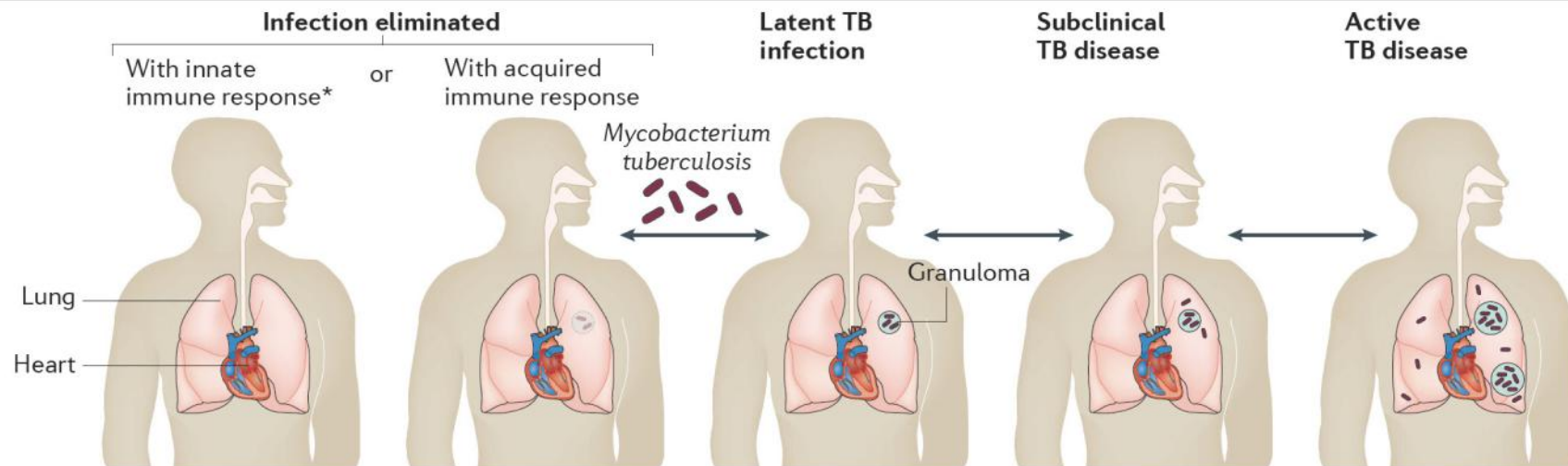
- Simple and inexpensive
- Requires appropriate administration
- *Induration* read at 48-72 hours
- BCG vaccination is associated with increased false positives
- PPV for incident tuberculosis is low



IGRAs

- Not cheap
- Does not require the patient to return
- Not affected by prior BCG vaccination
- No more sensitive than TST
- More specific than TST
- PPV for incident tuberculosis is low





	Infection eliminated		Latent TB infection	Subclinical TB disease	Active TB disease
	With innate immune response*	or With acquired immune response			
TST	Negative	Positive	Positive	Positive	Usually positive
IGRA	Negative	Positive	Positive	Positive	Usually positive
Culture	Negative	Negative	Negative	Intermittently positive	Positive
Sputum smear	Negative	Negative	Negative	Usually negative	Positive or negative
Infectious	No	No	No	Sporadically	Yes
Symptoms	None	None	None	Mild or none	Mild to severe
Preferred treatment	None	None	Preventive therapy	Multidrug therapy	Multidrug therapy

Source: [Nature Microbiology](#)

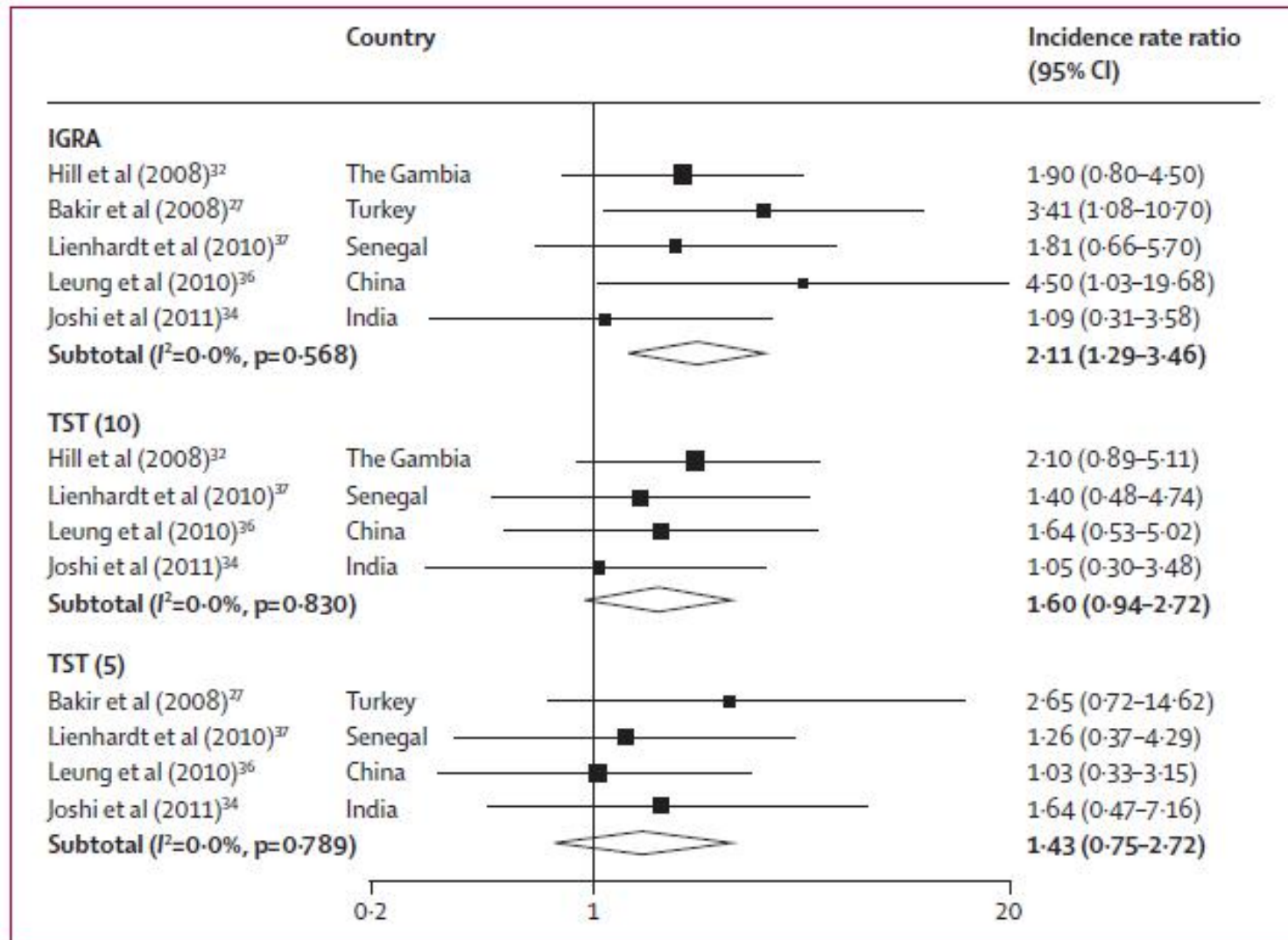


San Francisco Experience

	TST	IGRA
Clinic for immigrants	1050/2825 (37%)	750/3391 (22%)
Clinic for homeless	1726/6231 (28%)	506/7548 (7%)



Neither Test is Great



Take Home Points #1

- In the US, most screening should be in BCG-vaccinated groups (where IGRA would be helpful)
- Most IGRAs yield a useable result*
- Usually easier to find IGRA result



Hypertension	Latent TB infection
Asymptomatic condition	Asymptomatic condition
Very serious complications -Death -Major disability	Very serious complications -Death -Major disability -AND transmission
Treatment is for years -Expensive medications -Potential serious side effects -Requires close monitoring and follow up	Treatment is max 9 months -Cheap medications -Potential serious side effects -Requires close monitoring and follow up
BUT- no debate about treatment	WHY the debate about treating?

LTBI Treatment

- Active disease excluded
- Age limits? (NICE guidelines <35y)
- Subsequent TB incidence decreased by 25-92%
- Co-morbidities
- Clinical and laboratory monitoring
- Self-supervised INH treatment completion rates of 60% or less



Regimens for Treatment

- Isoniazid 300mg PO Daily
 - 6-9 months
 - Longer duration associated with lower adherence
 - AE: hepatotoxicity
- Rifampin 600mg PO Daily (👉 P450 3A)
 - 4 months
 - AE: hepatotoxicity (maybe less than w/ INH)
- *Isoniazid + Rifapentine 900mg + 900mg once weekly x 3 months (DOT?)

+/- pyridoxine with INH



Take Home Points #2

- Screening means intention to treat
- Though neither test for LTBI is great, they are the best that we have
- TST and IGRAs have similar sensitivity, IGRA appears to be more specific
- There are several possible treatment options, choosing which one should be made based on **best chance of completing course**
- If concerned about drug-resistant LTBI consider referring to a specialist



References

- Recommendations for use of an isoniazid-rifapentine regimen with direct observation to treat latent *Mycobacterium tuberculosis* infection, MMWR 2011.
- Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection, MMWR 2000.
- CDC Latent TB:
<https://www.cdc.gov/tb/topic/treatment/ltbi.htm>
- Borisov, A. S. *et al.* Update of Recommendations for Use of Once-Weekly Isoniazid-Rifapentine Regimen to Treat Latent *Mycobacterium tuberculosis* Infection. *MMWR Morb. Mortal. Wkly. Rep.* **67**, 723–726 (2018).

