

Primum non nocere

A case of latent tuberculosis infection

Benjamin Smith

benjamin.m.smith@mail.mcgill.ca



Latent Tuberculosis Treatment

- Effective
 - Reduces TB morbidity and mortality
 - Reduces health care costs
 - Important for TB control in low incidence countries
- Recommended for people at increased risk of developing active disease

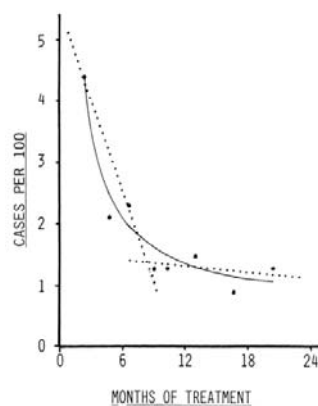
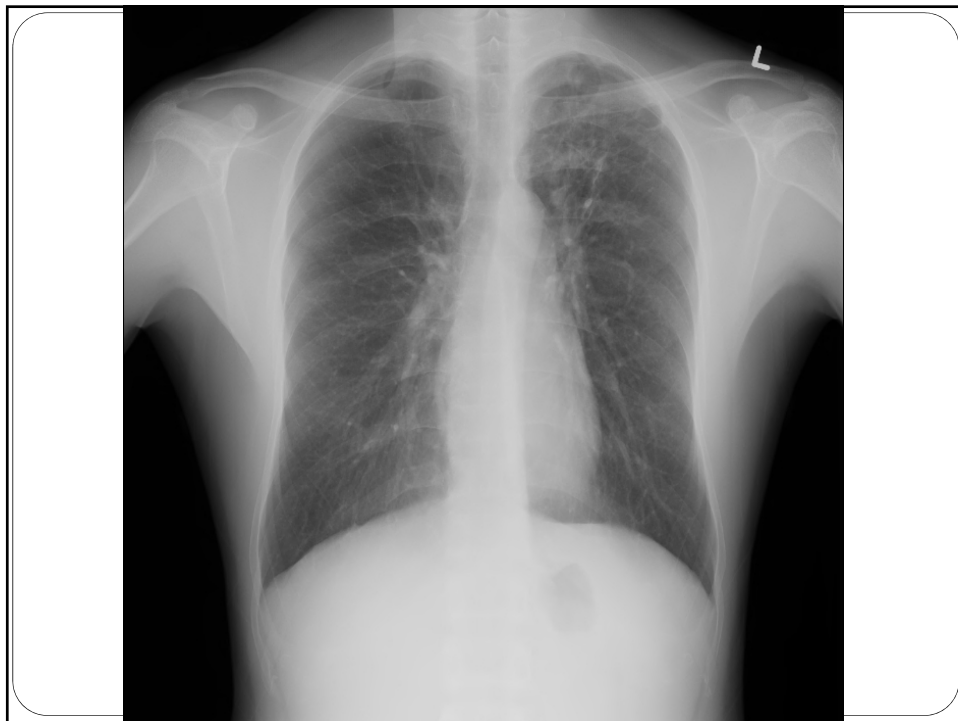


Figure Tuberculosis case rates (%) in the Bethel Isoniazid Studies population according to the number of months isoniazid was taken in the combined programs. Dots represent observed values; thin line, the calculated curve ($y = a + b/x$); and dotted lines, the calculated values based on the first four and last five observations ($y = a + b/x$).

Comstock, et al. A controlled trial of community-wide INH prophylaxis in Alaska. Am Rev Resp Dis. 1967

Case

- A 33 year old recently landed immigrant is referred because of an abnormal chest film



Case

- Question 1: Does this patient have LTBI?
- Question 2: Should he be offered treatment for LTBI?

Case

- Asymptomatic
- Born in Morocco -> Montréal 2009
- Non-smoker, no alcohol
- No medications
- No personal history of TB, no close contacts
- No immune-deficiencies
- No diabetes, renal disease, cancer
- Normal BMI, normal chest exam, + BCG scar
- No previous TST, no previous CXR

Case

- Question 1: Does this patient have LTBI?
 - Additional information required:
 - Rule out active TB: Obtain 3 sputum samples for mycobacteria
 - Determine timing of BCG -> BCG Atlas
 - Perform tuberculin skin test -> 13mm

<http://www.bcgatlas.org/>

The screenshot shows a web browser window displaying the BCG World Atlas website. The browser's address bar shows the URL <http://www.bcgatlas.org/>. The website has a blue header with the title "BCG WORLD ATLAS" and the subtitle "A DATABASE OF GLOBAL BCG VACCINATION POLICY AND PRACTICE". Below the header is a navigation menu with links for "Home", "Questionnaire", "About", "Links", and "Contact Us". The main content area features a welcome message and instructions for users to select a country from a dropdown menu or a world map. The dropdown menu currently shows "Morocco". The world map is orange and has several red squares indicating data points. The browser's taskbar at the bottom shows the date and time as 4:32 PM on 20/11/2010.

http://www.bcgatlas.org/

The screenshot shows the 'World Atlas of BCG Policies and Practices' website. The main content area displays data for Morocco. On the left, a table lists various metrics:

Country	Morocco
Region	Middle East & North Africa
TB Incidence (per 100 000 per year) * 1	92
TB Incidence (Count) * 1	28617
TB Prevalence (per 100 000 per year) * 4	80
TB Prevalence (Count) * 4	24955
Income group (World Bank)	Lower middle income
Current BCG vaccination?	Yes
BCG Recommendation Type	A
Which year was vaccination introduced?	
Year BCG stopped?	
Timing of 1st BCG?	At birth
Multiple BCG?	
Timing of BCG #2	
Timing of BCG #3	
Multiple BCGs in the past?	
Timing of old BCG #2	
Timing of old BCG #3	
Year booster BCG stopped	
BCG Strain	
Is TST done post BCG?	
Year of BCG coverage estimate	

On the right, there is a map of Africa with Morocco highlighted in yellow. Below the map, a table titled 'BCG Recommendation Types' provides descriptions for types A, B, and C.

Type	Description
A	This country currently recommends BCG vaccination for everyone at a certain age. (Example: BCG at birth or for school-age children, etc.)
B	This country used to recommend BCG vaccination for everyone, but currently does not.
C	BCG vaccination was never recommended for everyone in this country. (i.e.: never gave BCG or given only to high risk groups such as health care workers.)

The browser window shows the URL 'http://www.bcgatlas.org/' and the page title 'World Atlas of BCG Policies and Practices'. The system tray at the bottom indicates the date and time as 4:34 PM on 20/11/2010.

http://www.tstin3d.com/

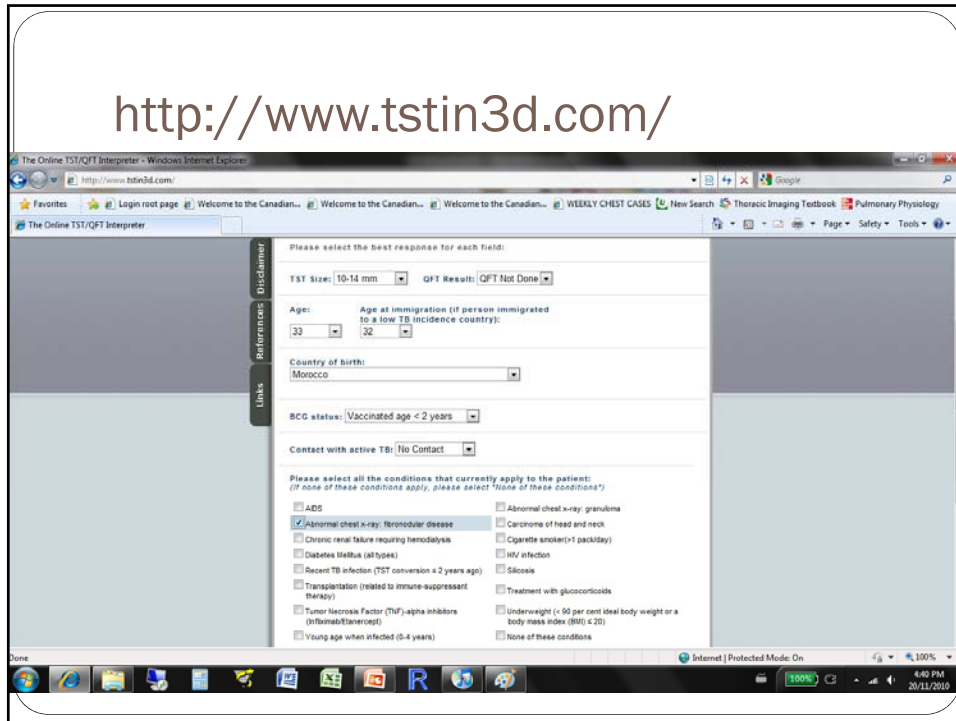
The screenshot shows the 'The Online TST/QFT Interpreter' website. The main content area features a form for entering patient information. The form includes the following fields:

- TST Size:** Select...
- QFT Results:** Select...
- Age:** Select... (with a sub-field for 'Age at immigration (if person immigrated to a low TB incidence country):' with a 'Select...' dropdown)
- Country of birth:** Select...
- BCG status:** Select...
- Contact with active TB:** Select...

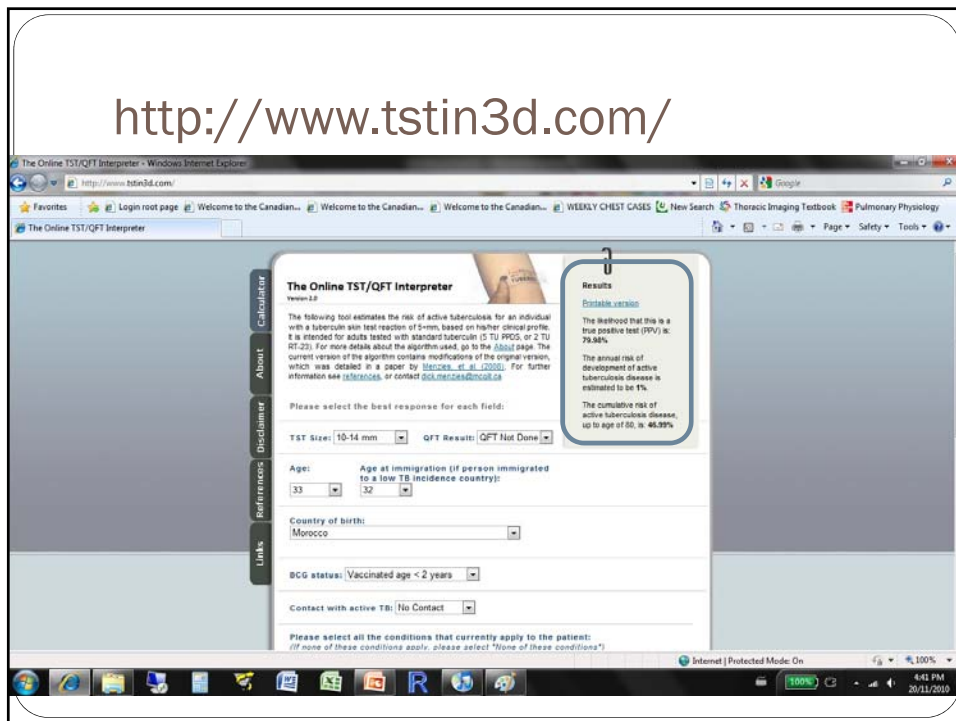
Below the form, there is a section titled 'Please select all the conditions that currently apply to the patient: (If none of these conditions apply, please select "None of these conditions")' with a list of checkboxes.

The browser window shows the URL 'http://www.tstin3d.com/' and the page title 'The Online TST/QFT Interpreter'. The system tray at the bottom indicates the date and time as 4:38 PM on 20/11/2010.

http://www.tstin3d.com/



http://www.tstin3d.com/



Case

- Question 1: Does this patient have LTBI?
 - Given the clinical information and the TST result, his probability of being infected with TB is 80%
 - Given the clinical information, his lifetime risk of developing active TB is 47%

Case

- Question 2: Should he be offered treatment for LTBI?
 - Patient is healthy
 - Commitment of up to 9 months of therapy
 - Potential for serious adverse events
 - Hepatitis, liver failure
 - Drug interactions
 - Nausea, vomiting
 - Rash, fever

Case

- Patient provided 3 sputum samples: negative for TB
- No history of liver disease, no alcohol use
- Started on INH therapy August 30, 2010
- At 1 month follow-up: feeling well, compliant

Case

- After 7 weeks of therapy: wife calls because of nausea x 1 week
- Blood tests:

Date (2010)	Aug 30	Sept 27	Oct 27
Total Bilirubin	14	14	111*
ALT	22	40	1966*
ALP	131	117	274*
INR			1.66*

INH-Hepatitis

- Most common serious complication of INH-therapy
- Overall incidence 1 in 1000 persons treated
- Alcohol and age-related increase in risk
- Fatalities and fulminant failure requiring transplant have been reported
- Informing patients of symptoms essential
- Baseline liver testing recommended
- Serial measurements recommended in those with underlying liver disease, hepatotoxins, symptoms

Take home points

- LTBI therapy is effective but has risk of serious adverse events
- Before testing someone for LTBI, consider their risk of developing active disease
- Risk:benefit of LTBI therapy \neq Risk:benefit of active therapy
- Websites such as TSTin3d and BCGatlas can help inform your decision to treat someone for LTBI
- A well-informed patient and health care team is the best means of preventing irreversible harm