



**BALTIMORE**  
*Medical* SYSTEM

**The Integration of TB Screening and Care into  
Primary Health Care:  
A FQHC's Perspective**



# BALTIMORE

*Medical* SYSTEM

## International Services

David MBEYA  
Program Manager

# Goals/Objectives

- Introducing BMS
- Refugee Health Program
- Standards of Care/Guidelines
- Data
- Conclusion



# Who Are We?

BMS has been deeply involved with community health services throughout the City and the county since 1984.

- 6 Community Health Centers
- 8 school based sites

BMS serves nearly 50,000 patients. ( ~125,000 visits per year).

Several programs to assist patients: Deaf services, International Services, Health Benefits Advisors, Pharmacy Assistance, Outreach, CHW, Substance Abuse...

- Primary care services:
  - Adult Medicine
  - Family Practice
  - Pediatrics & Adolescent Medicine
- Obstetrics & Gynecology
- Behavioral Health



# Who Do We Serve?

- Diverse patient population from different backgrounds and cultures. Approximately 60 countries and 30 languages.
  - ~10,000 active Hispanic Patients
  - 3,500 active non-Spanish, non-English speakers including refugees
- The 10 top Languages:
  - Spanish
  - Nepali
  - Arabic
  - Burmese
  - Tigrinya
  - American Sign Language
  - French
  - Amharic
  - Kinyarwanda
  - Swahili



# Tuberculosis Testing

The Refugee Health Program has set the tone in recent years at BMS when it comes to Tuberculosis testing and management LTBI patients.

- Piloting and implementing the IGRA test.
- Coordinating the transfer of LTBI treatment for Baltimore City patients
- Staff training
- LTBI management



# Refugee Health Program

BMS screens refugees and asylees from 3 Jurisdictions at our Highlandtown location.

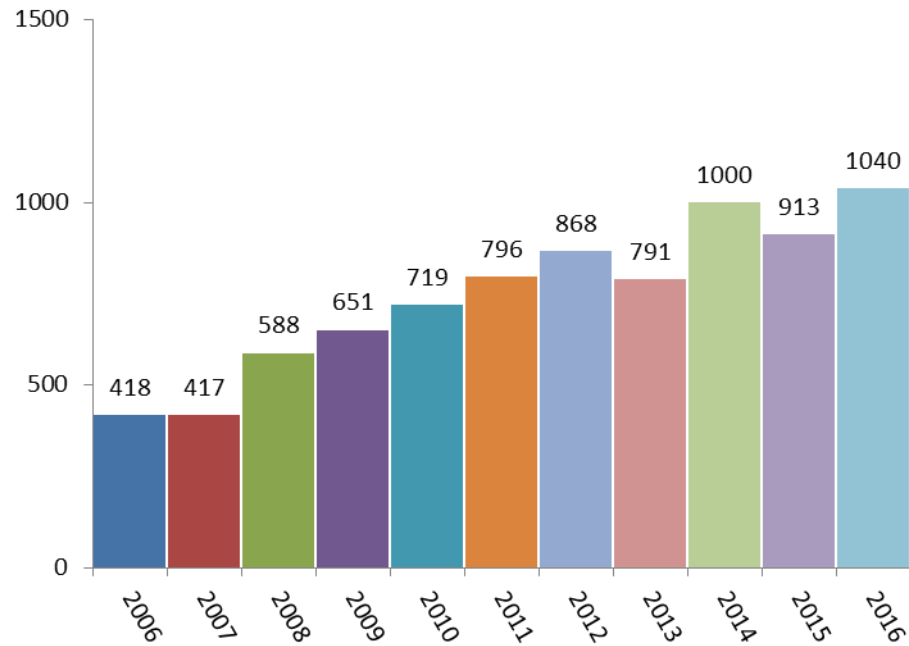
- Baltimore City
- Baltimore County
- Anne Arundel County

Approximately 1000-1200 screened annually.



# Refugee Health Assessments

## Yearly Refugees Health Screenings





# Refugee TB Screening

Late 2011 the Refugee Program piloted a new blood test, an IGRA test: QuantiFERON® TB Gold.

- More accurate
- Not affected by BCG
- Target group: 5 years old and over
- Operationally: Eliminates the need to return for a PPD reading for 92% refugees



Following the trial period, implemented Spring 2012 to both refugees and other patients with health insurance.

Others would remain on the TST.

# Refugee TB Screening

Fall 2012, commissioner's advisory redirected the care and management of Latent TB to Primary Care Providers.

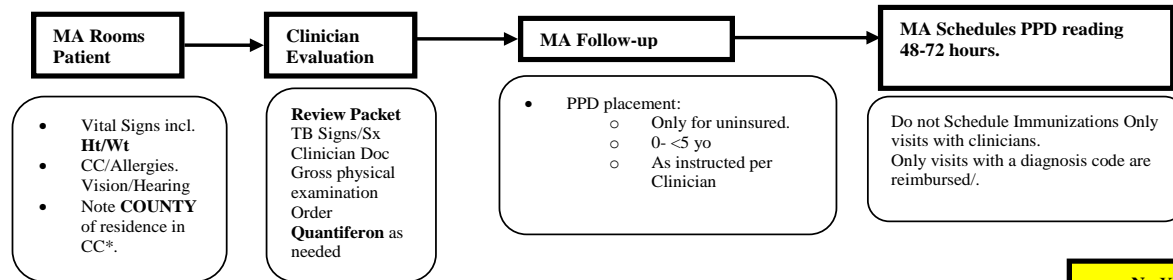
The refugee Health Team worked with BCHD:

- LTBI protocols
- Referral process for active cases/uninsured
- Class B waivers
- Consulting with clinicians for specific cases
- In-service training for clinical and program staff

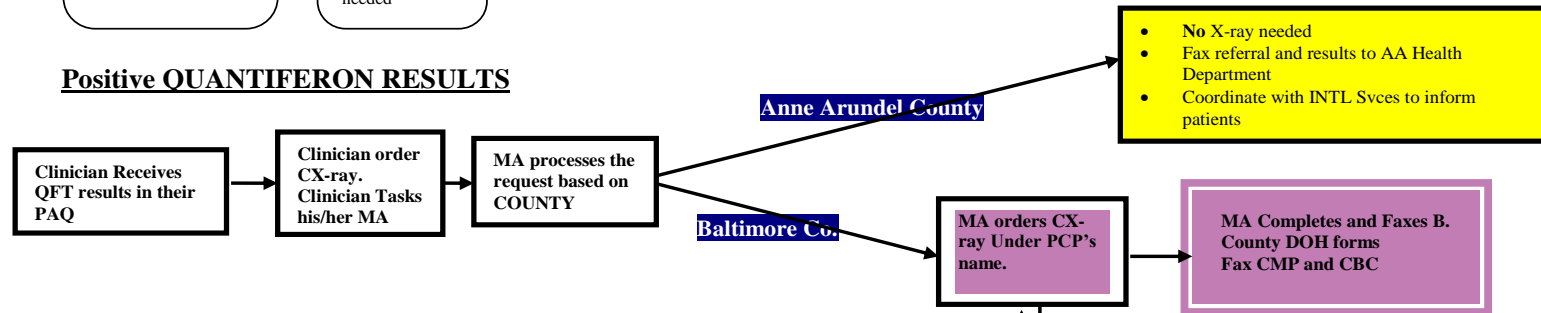


# Transition to PCP

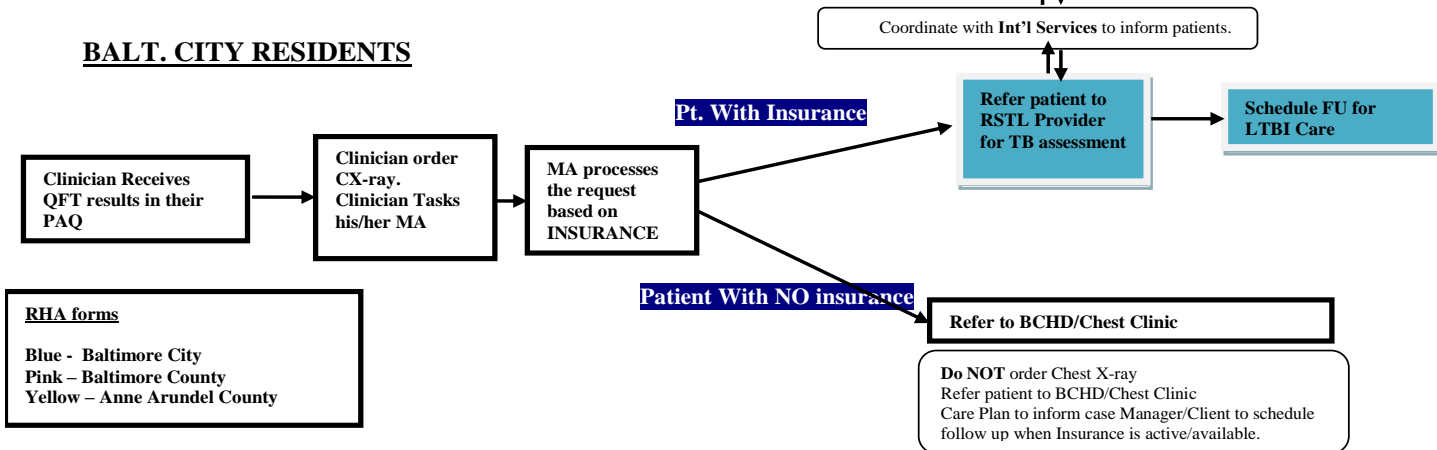
## Clinician's Visit



## Positive QUANTIFERON RESULTS



## BALT. CITY RESIDENTS



# Integration into Care

- TB assessments for new and existing patients.
- TB Questionnaire is embedded in several of our clinical guidelines and EMR templates.
- Various guidelines/forms are readily available to clinical staff for screening, testing, and patient education.
- Educate and train staff on existing clinical guidelines and resources.



# Who Do We Test?

- Employment Requirement
- Contractual agreement: New **OB** patients at St. Agnes



# Who Do We Test?

- Employment Requirement
- Contractual agreement: New **OB** patients at St. Agnes

The screenshot shows a medical history form for an OB patient. The form is titled "OB/GYN Details" and includes a navigation bar with options like "Alerts", "Sticky Note", "Referring Provider", "HIPAA", "Advance Directives", and "Screening Sum". The patient's name is "11. Thyroid dysfunction" and the date is "01/28/2016 10:00 AM". The form is titled "Histories - Obstetrics" and is in "Read-only" mode. The "Infection History" section is highlighted, and it contains a table of questions with "No" and "Yes" radio buttons. The table is titled "Default All to Neg." and includes questions about TB, genital herpes, rash, Hepatitis B, C, STI, HPV, Gonorrhea, HIV, Chlamydia, and Syphilis. There is also a section for "Other (enter other infections or exposure to infections in Past Medical History accessed in the Medical/Surgical/Interim section)".

No	Yes	No	Yes	No	Yes
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# Who Do We Test?

- Employment Requirement
- Contractual agreement: New **OB** patients at St. Agnes
- **Pediatric population:** Annually assessed during Well Child Visits or physicals (MDHK)

The screenshot shows a medical software interface for a patient named Manuel (\*Test (M)). The patient's details include DOB: 10/23/1990 (26 years), Weight: 105.00 lb (47.63 Kg), Address: 5108 Midwood Ave, Baltimore, MD 21212, Insurance: Medicaid, Parent/Guardian: Natalie 8.3 (\*Test), and Referring: Diokno, Eugene MD. The form is titled "Tuberculosis Risk Assessment:" and contains five questions with radio button options for Yes and No. The questions are: 1. Has your child been exposed to anyone with a case of TB? 2. Was your child, or a household member, born in an area where TB is common (e.g., Africa, Asia, Latin America, and the Caribbean)? 3. Has your child, or a household member, lived more than a year in an area where TB is common? 4. Does your child have daily contact with adults at high risk for TB (e.g., those who are HIV infected, homeless, incarcerated, and /or illicit drug users)? 5. Does your child have HIV infection? At the bottom of the form, there is a "Risk Assessment" field and a "Save and Close" button.

Manuel (\*Test (M)) DOB: 10/23/1990 (26 years) Weight: 105.00 lb (47.63 Kg)

Address: 5108 Midwood Ave  
Baltimore, MD 21212  
Contact: (443) 418-7552 (H)...

Insurance: Medicaid  
Parent/Guardian: Natalie 8.3 (\*Test)  
Pref. Language: English

PCP: Non, BMS PCP  
Referring: Diokno, Eugene MD

Alerts

01/10/2017 01:19 PM : "BMS Tuberculosis RA"

**Tuberculosis Risk Assessment:**

(1 month and yearly thereafter)

1. Has your child been exposed to anyone with a case of TB?  Yes  No

2. Was your child, or a household member, born in an area where TB is common (e.g., Africa, Asia, Latin America, and the Caribbean)?  Yes  No

3. Has your child, or a household member, lived more than a year in an area where TB is common?  Yes  No

4. Does your child have daily contact with adults at high risk for TB (e.g., those who are HIV infected, homeless, incarcerated, and /or illicit drug users)?  Yes  No

5. Does your child have HIV infection?  Yes  No

Risk Assessment

Save and Close



# Who Do We Test?

- Employment Requirement
- Contractual agreement: New **OB** patients at St. Agnes
- **Pediatric population:**  
Annually assessed during Well Child Visits or physicals (MDHK)
- **Adult patients:**
  - New Immigrants to our Practice
  - Patients deemed at-risk based on risk assessment questionnaire





# Who Do We Test?



TST Risk Assessment X

All Negative

**High risk:** \_\_\_\_\_

> = 5 mm induration is considered positive with risk factors listed below

	No	Yes
1. Is the patient HIV positive?	<input type="radio"/>	<input type="radio"/>
2. Has the patient ever had a chest x-ray that was "suggestive" of TB?	<input type="radio"/>	<input type="radio"/>
3. Has the patient had close contact with someone who has infectious TB?	<input type="radio"/>	<input type="radio"/>
4. Has the patient had an organ transplant?	<input type="radio"/>	<input type="radio"/>
5. Is the patient immunosuppressed for other reasons (e.g., taking the equivalent of 15 mg of prednisone per day)?	<input type="radio"/>	<input type="radio"/>

**Intermediate Risk:** \_\_\_\_\_

> = 10 mm induration is considered positive with risk factors listed below

	No	Yes
1. Does the patient have any chronic medical problems that increase their risk?	<input type="radio"/>	<input type="radio"/>
2. Was the patient born in a country where TB is prevalent?	<input type="radio"/>	<input type="radio"/>
3. Has the patient traveled outside the US since their last TB test?	<input type="radio"/>	<input type="radio"/>
4. Does the patient use or have they ever used IV drugs?	<input type="radio"/>	<input type="radio"/>
5. Is the patient working or living in a congregate setting (e.g., homeless shelter, jail/prison, nursing home)?	<input type="radio"/>	<input type="radio"/>
6. Is the patient a healthcare worker?	<input type="radio"/>	<input type="radio"/>
7. Is the patient less than 4 years old?	<input type="radio"/>	<input type="radio"/>

**Low Risk:** \_\_\_\_\_

> = 15 mm induration is considered positive.

	No	Yes
Persons with no known risk factors for TB*	<input type="radio"/>	<input type="radio"/>

\* Although skin testing programs should be conducted only among high-risk groups, certain individuals may require TST for employment or school attendance. An approach independent of risk assessment is not recommended by the CDC or the American Thoracic Society.

From [http://www.cdc.gov/tb/Publications/guidelines/AppendixB\\_092706.pdf](http://www.cdc.gov/tb/Publications/guidelines/AppendixB_092706.pdf)

Include this screening information in document

# Risk Assessment Data

- **2015** 11,520 patients assessed for TB
  - 8,500 not at-risk
  - 3,020 at-risk: ~1,100 tested
  - Not tested: Previous positive/treated, asymptomatic
  - 833 adults/remaining are under the age of 18
- **2016** 11,979 patients assessed for TB
  - 8,192 not at-risk
  - 3,787 at-risk: ~1,400 tested
  - 423 adults



Almost 50% of pediatric assessments were performed at our SBH suites

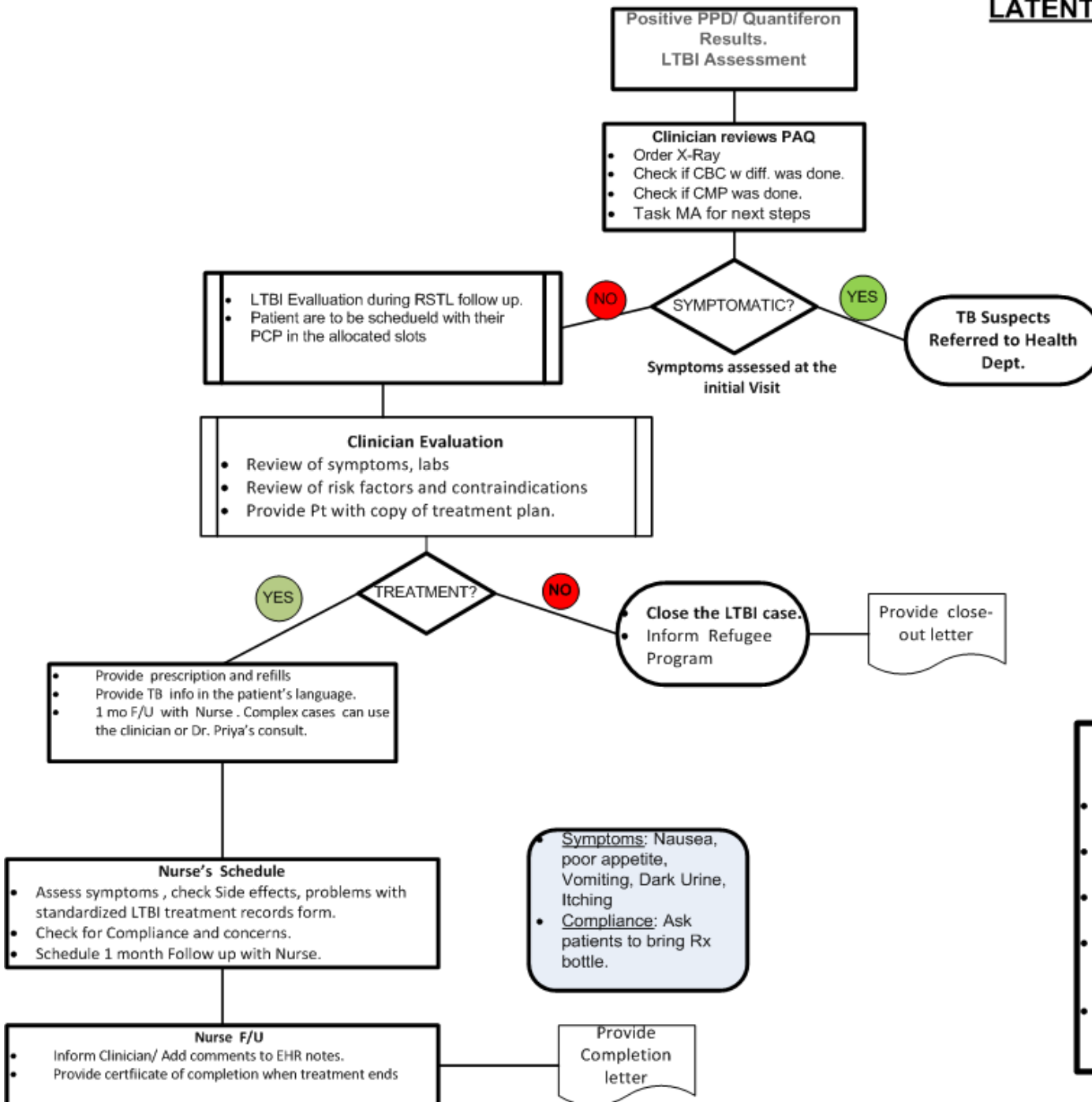
# Workflow

- All other counties: Patients are referred to the Local Health Department. Clinician may order a Chest X-Ray.
- Baltimore City residents: Patients with Latent TB are treated in-house by the PCP and nursing team.



# LATENT TUBERCULOSIS INFECTION

## B-CITY Residents



### TB Suspect Referral

- Please Send all Relevant documents
- Send TB symptom evaluation details and clinician's contact info.
- Notify Health Department by phone.
- Complete appropriate referral form.
- Send Lab results, incl. LFTs and HIV

### IMPORTANT

- Appointments should be scheduled with an interpreter.
- IF CMP/CBC are normal, do not repeat beyond visit #2
- During Nurse visits, please also check immunization status
- Every patient should receive a Refugee Health Assessment Summary (RHAs) and LTBI information.
- Please confirm patient' contact information for outreach calls.

# Workflow

- Patients with a positive QFT or TST result are asked follow up questions.



Survey for Positive Tuberculin Skin Test

In the past year have you had any of the following:

	Neg	Pos		
Chronic fever:	<input checked="" type="radio"/>	<input type="radio"/>		
Frequent night sweats:	<input checked="" type="radio"/>	<input type="radio"/>		
Chronic unexplained cough:	<input checked="" type="radio"/>	<input type="radio"/>		
Any coughing of blood:	<input checked="" type="radio"/>	<input type="radio"/>		
Chronic weight loss:	<input type="radio"/>	<input type="radio"/>		
Any chronic unexplained respiratory symptoms:	<input type="radio"/>	<input type="radio"/>		
Have you had the BCG vaccination?	<input type="radio"/>	<input type="radio"/>	Date:	<input type="text" value="//"/>
Documentation of previous negative chest x-ray:	<input type="radio"/>	<input type="radio"/>	Date:	<input type="text" value="//"/>

Last TST results: TST mm size:  Date:  Interpretation:

Other:

Include this screening information in document

Save & Close Cancel

# Treatment and Education

- Clinicians prescribe the entire treatment regimen and advise patients on refills.
- Monthly monitoring by a Nurse while on treatment and follow-up with clinicians in case of complications.
- Nurse visit consists of monitoring for medication intake and assessing for adverse reactions/LFTs.



# Treatment and Education

**Table 8. Regimens for Treatment of Latent TB Infection And Recommended Monitoring**

<i>Drugs</i>	<i>Interval</i>	<i>Dose</i>	<i>Medical Monitoring</i>
<b>Adults Recommended</b>			<b>Adults - INH (9 months) and RIF (4 months)</b>
Isoniazid (INH) 9 months Provide only one month supply at a time	Daily	INH 5 mg/kg (Max: 300 mg)	<p><b>Clinical Monitoring</b>  <i>Pretreatment:</i> ask about previous TB drugs, oral contraceptives (if using rifampin) and other medications, history of liver disease, alcoholism and allergies. <b>When using rifampin, use barrier method of contraception, increase methadone, etc.</b> (See Appendix C).</p> <p><i>Monthly (in person):</i> check for anorexia, nausea, vomiting, abdominal pain, dark urine, jaundice, scleral icterus, rash, fatigue, fever or paresthesias.</p> <p><b>Laboratory (AST, ALT &amp; bilirubin)</b>  <i>Pretreatment:</i> only necessary for persons with a history of liver disease (e.g., hepatitis B or C, alcoholic hepatitis or cirrhosis), persons who have a history of past or current alcohol abuse or injection drug abuse, HIV infection or women who are pregnant or &lt; 3 months post-partum.</p> <p><i>During treatment:</i> Monthly LFTs are recommended if baseline tests elevated, history of or risks for liver disease, the patient is pregnant/postpartum, or there are adverse reactions to treatment.</p>
	Twice Weekly DOT	INH 15 mg/kg (Max: 900 mg)	
<b>HIV-Negative Adults - Alternative</b>			
Rifampin (RIF) 4 months Provide only one month supply at a time	Daily	RIF 10 mg/kg (Max: 600 mg)	<p><i>During treatment:</i> Monthly LFTs are recommended if baseline tests elevated, history of or risks for liver disease, the patient is pregnant/postpartum, or there are adverse reactions to treatment.</p>
<b>Children* (ages 0-18)</b>			<b>Children - INH (9 months)</b>
Isoniazid (INH) 9 months Provide only one month supply at a time	Daily	INH 10-20 mg/kg (Max 300 mg)	<p><b>Clinical Monitoring</b>  <i>Pretreatment:</i> ask about other medications and medical conditions, allergies.</p> <p><i>Monthly (in person):</i> check for anorexia, nausea vomiting, abdominal pain, dark urine, jaundice, scleral icterus, rash, fatigue, fever or paresthesias.</p> <p><b>Laboratory - no routine studies needed.</b></p>
	Twice Weekly DOT	INH 20-40 mg/kg (Max: 900 mg)	

\* Rifampin six months daily is an alternative regimen for children (10-20 mg/kg, maximum 600 mg), particularly those exposed to INH resistant disease.

**Treatment Completion:** nine months daily = 270 doses within 12 months. Six months daily = 180 doses within nine months. Nine months twice weekly DOT= 76 doses within 12 months. Six months twice weekly DOT = 52 doses within nine months. Four months daily rifampin (or rifabutin) = 120 doses within six months.



# LTBI Management

- The nursing team monitors patients monthly



The screenshot shows a medical software interface with a navigation pane on the left and a main content area. The navigation pane includes options like History, Summary, SOAP, Finalize, Adult SO/GI, Checkout, Screening Tools, Order Management, Cosign Orders, Allergies, Immunizations, Past Medical Hx, Family History, Social History, Counseling Details, Tobacco Cessation, Problem List, Disease Mgmt, Procedures, Tuberculin Skin Test, Document Library, and Demographics. The "TBI" option is highlighted with a red box. The main content area displays "Completion Information" with fields for TST Date (10/11/2016), CXR Date (10/06/2016), 1st Test Date (10/06/2016), CXR Results (Negative), TST Results (12 mm), and QuantiFeron (negative IU/mL). Below this is a table of symptoms with Yes/No radio buttons. The table includes symptoms like Loss of appetite, Fatigue/Malaise, Nausea/Vomiting, Dizziness, Scleral icterus, Rash, Pruritus, Fever, Paresthesia, Pregnant, ETOH intake, and Takes meds regularly. A "Comments" field is present below the table. At the bottom, there is a table with columns for Frequency, Dose, Date Started, and Date, with a row showing "daily for 6 months", "250", "10/11/2016", and "04/11/2017". Buttons for "Save & Close" and "Generate Letter" are also visible.

Frequency	Dose	Date Started	Date
daily for 6 months	250	10/11/2016	04/11/2017
		//	//



# LTBI Management

- Completion Letter

10/11/2016 08:29 AM : "BMSI LTBI Tx" x

Navigation

**LTBI Treatment Record**

Treatment Date: 10/11/2016  
Rx Bottle #: 2308887  
Urine Color: pale yellow  
LMP: 10/04/2016

**Completion Information**

TST Date: 10/11/2016  
1st Test Date: 10/06/2016  
TST Results: 12 mm  
QuantiFeron: negative IU/mL

CXR Date: / /  
CXR Results:

**All Normal**


Loss of appetite	<input checked="" type="radio"/>	<input type="radio"/>	Pruritus	<input type="radio"/>	<input checked="" type="radio"/>
Fatigue/Malaise	<input type="radio"/>	<input checked="" type="radio"/>	Fever	<input checked="" type="radio"/>	<input type="radio"/>
Nausea/Vomiting	<input checked="" type="radio"/>	<input type="radio"/>	Paresthesia	<input checked="" type="radio"/>	<input type="radio"/>
Jaundice	<input type="radio"/>	<input checked="" type="radio"/>	Pregnant	<input checked="" type="radio"/>	<input type="radio"/>
Scleral icterus	<input type="radio"/>	<input type="radio"/>	ETOH intake	<input type="radio"/>	<input checked="" type="radio"/>
Rash	<input type="radio"/>	<input checked="" type="radio"/>	Takes meds regularly	<input checked="" type="radio"/>	<input type="radio"/>

Comments

Medication	Frequency	Dose	Date Started	Date
Isoniazid	daily for 4 months	6	10/11/2016	10/11/2016
			/ /	/ /

Save & Close  
Generate Letter

Encounter Date:Time



# LTBI Management

## LTBI COMPLETION LETTER



Name: Test (*Testing)	TST Date: 10/11/2016	Results: 12 mm
Date of Birth: 11/27/1988	Quantiferon: negative IU/mL	First Test Done: 10/06/2016
Chest X-Ray Date: 10/06/2016	Results: Negative	

Our records indicate that you have recently completed your treatment for Latent Tuberculosis Infection (LTBI). The treatment has reduced the risk of developing active tuberculosis disease during your lifetime.

No further skin testing is necessary. Routine periodic chest x-rays are also unnecessary in the absence of significant pulmonary symptoms of tuberculosis. In the event you do develop symptoms suggestive of tuberculosis, seek medical attention. Some of the symptoms include:

- A cough that persists for a month or more
- Bringing up large amounts of sputum (phlegm)
- Persistent, unexplained fever, weakness or fatigue
- Sweating at night that leaves the bed clothes damp
- Unexplained loss of weight (10 pounds or more)

**Please keep this form among your important papers. The information provided on it will be important if you see your doctor or any other doctor for any of the above symptoms. It will also provide documentation should you be told you need TB testing in the future.**

Medication	Frequency	Dose	Date Started	Date Completed
Isoniazid	daily for 6 months	250	10/11/2016	04/11/2017

Erica Isles MD 10/11/2016 08:52 AM

Belair Edison Family Health Center  
3120 Erdman Avenue  
Baltimore, MD21213-1720  
(410)558-4800



# LTBI Data 2015

2,041 patients were screened for Tuberculosis:

- 246 were positive
- 84 were treated for LTBI

Languages	Count	Positive	Treated
English	774	54	12
Burmese/Hakha/Tidim/Chin	361	67	8
Spanish; Castilian	344	25	3
Arabic	98	13	8
Nepali	94	26	14
Tigrinya	93	20	15
Masalit	49	2	2
Swahili	38	6	5
Amharic	32	3	
Kinyarwanda	28	10	9
Dari	20	4	3
French	19	4	2
Farsi	16	4	1
Urdu	12	1	
Pashto	11	1	
Somali	11	1	

**162 Not Treated**

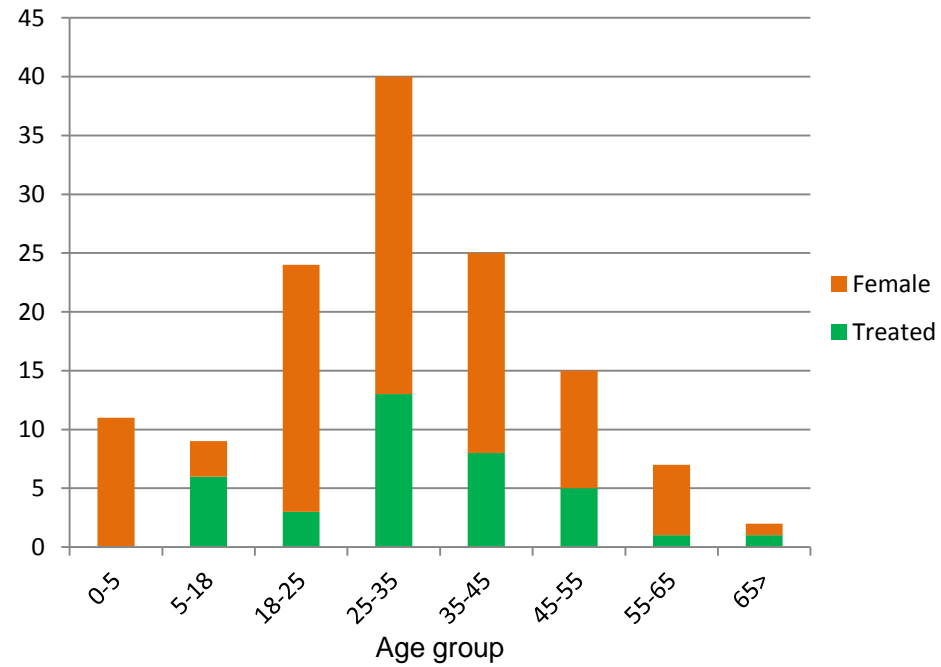
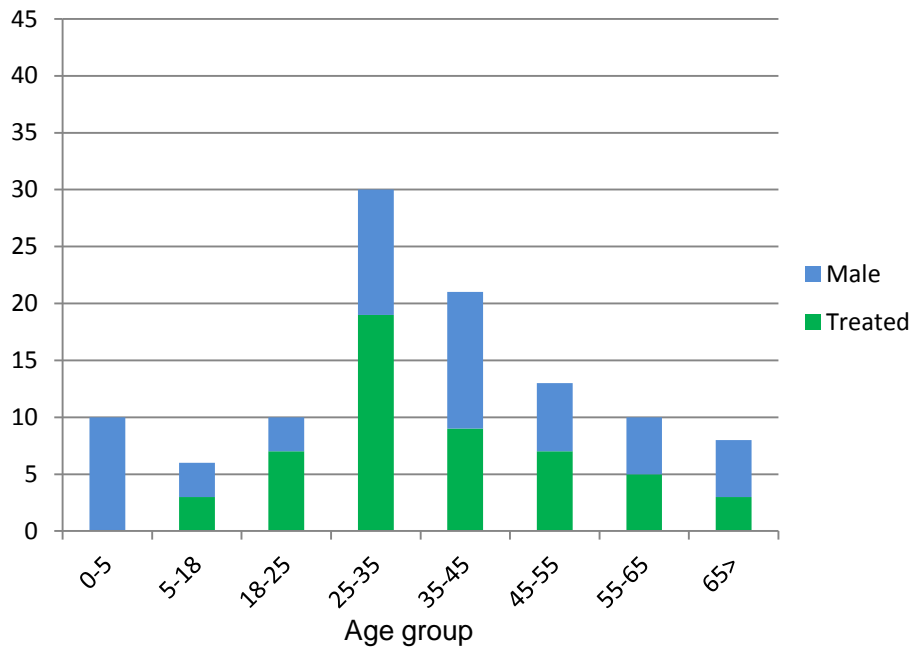
Residence	Count
B. City	38
B. County	102
Other counties	22

Anne Arundel, Howard, Harford, and Caroline



# LTBI Data 2015

## Breakdown by Gender and Age



# LTBI Data 2016

2,579 patients were screened for Tuberculosis:

- 250 were positive
- 65 were treated for LTBI

Language	COUNT	POSITIVE	Treated
English	860	63	11
Spanish; Castilian	537	24	4
Arabic	372	29	11
Burmese/Hakha/Tidim/Chin	194	44	4
Swahili	122	18	8
Nepali	91	14	6
Tigrinya	80	10	7
Spanish	56	3	1
Kinyarwanda	45	12	4
Dari	41	3	1
Amharic	35	10	5
French	27	5	
Khurdish	15	1	
Urdu	13	1	
Sudanese Arabic	12		
Farsi	11	3	1
Russian	10	1	
Pashto	8		

185 not treated

Residence	Count
B. City	45
B. County	123
Other Counties	17

Anne Arundel, Harford, Howard and PG County.

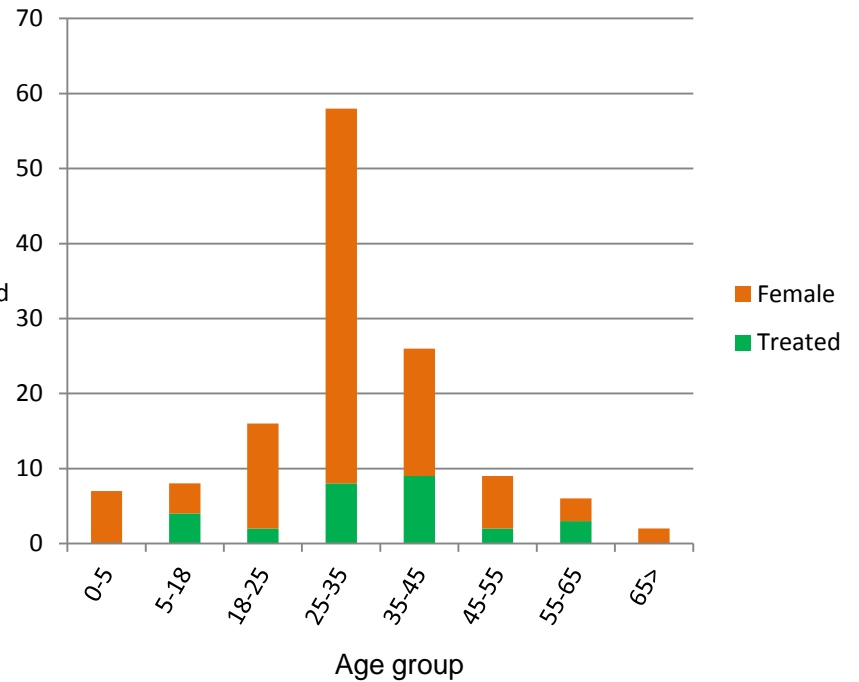
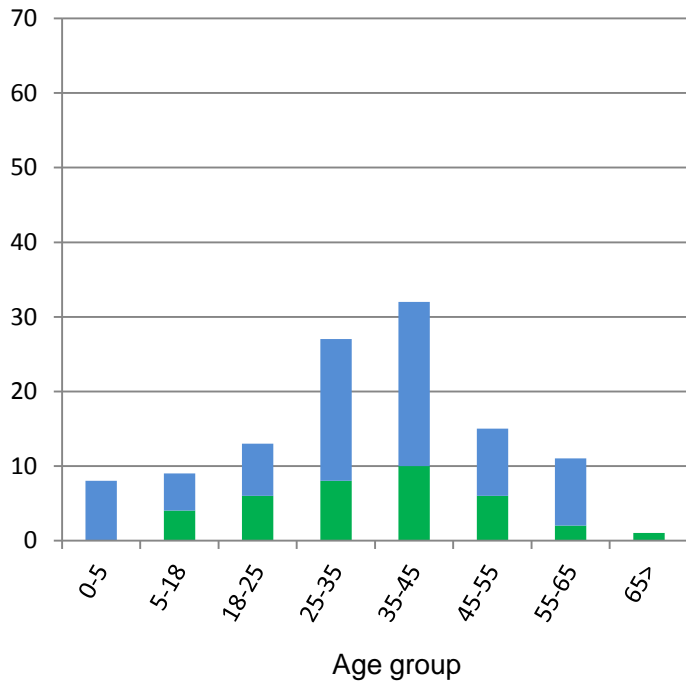
Of the 45 City residents

- 35 had Normal Chest Xray
- 10 did not:
  - B1 waivers
  - Pregnancy
  - Retested, Neg. QFT
  - Moved out
  - Prior Positive



# LTBI Data 2016

## Breakdown by Gender and Age



# Lessons Learned

- Better assessment for children
- No equivalent for Adult patients
  - ✓ Can be triggered after review of personal and family history
  - ✓ At the discretion of clinicians
  - ✓ More consistent screening
- Opportunities
  - ✓ Streamline process and training at other sites
  - ✓ Data collection for non-refugee patients
  - ✓ Improve tracking for unaddressed positive results and those sent to other counties



# Contact Information

**David N. Mbeya**

Int'l Services & Refugee Program Manager

Baltimore Medical System, Inc.

Tel: (443)703-3403

Email: [David.mbeya@bmsi.org](mailto:David.mbeya@bmsi.org)

Web: [www.bmsi.org](http://www.bmsi.org)

