TB Nurse Assessment

Lori Eitelbach, BSN, RN

June 5, 2024

Comprehensive TB Nurse Case Management
June 5 – June 6, 2024
San Antonio, Texas

Lori Eitelbach, BSN, RN has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

TB NURSE ASSESSMENT

COMPREHENSIVE TB NURSE CASE MANAGEMENT

JUNE 5, 2024

HEARTLAND NATIONAL TB CENTER

SAN ANTONIO, TEXAS

LORI EITELBACH, BSN, RN

DISCLOSURES

- No conflicts of interest.
- No relevant financial relationships with any commercial companies pertaining to this educational activity.

OBJECTIVES

- Understand purpose of client assessment
  - Develop POC with goal to successfully complete treatment
- Identify components of client assessment
  - Demographics
  - Medical History
  - Co-morbidities
  - Medications
  - Signs and Symptoms of TB
  - TB History
  - Social History

NURSING PROCESS

https://learnnursingeasycoin.wordpress.com/2022/11/20/nursing-process-overview-assessment-phase/

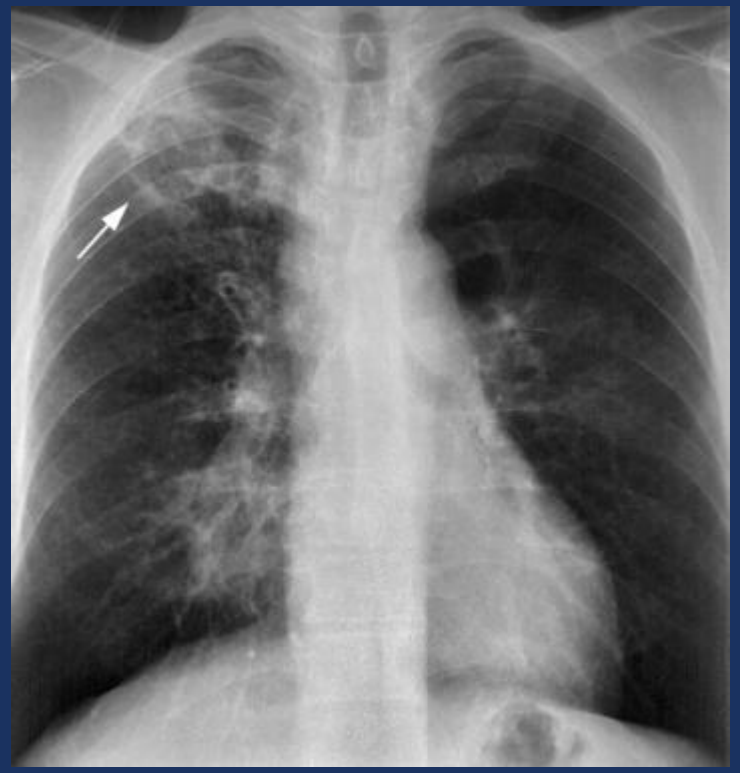
STEPS IN ASSESSMENT PROCESS

1. Notification of case and gathering of data/medical records
2. Time frame of client visit and interview
3. Initial home visit
4. Evaluate residence
5. Determine infectiousness
6. Conduct client assessment
7. Provide client and family education
8. Establish plan for ensuring access to care and adherence
9. Assessment summary

STEP 1: NOTIFICATION OF CASE AND GATHERING DATA

- Gather background information and medical records in preparation for first interview
- Hospital, PCP, Health Department
- Important information to obtain includes:
  - Prior imaging, especially CXR's or Chest CT's
  - Microbiology and chemistry lab results
  - TST or IGRA results
  - H&P's, admission or discharge summaries, office visit notes, med lists, allergies, prior TB or TBI treatment notes

RADIOLOGY



Obtain prior imaging reports and actual images, if possible.

Are there comparisons available?

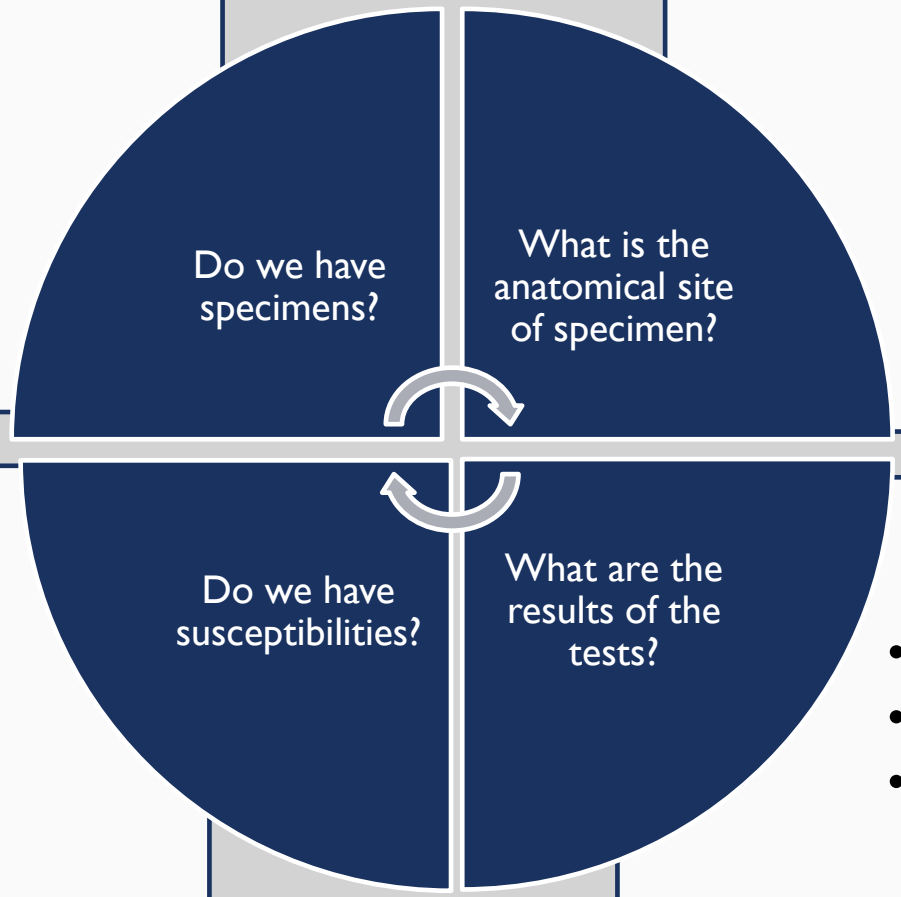
What radiographic evidence do we have for disease?

- Cavities
- Infiltrates
- Opacities
- Locations of abnormalities
- Bone destruction
- Adult vs child
- HIV/immunosuppressed

Determine stability, improvement or worsening of findings.

BACTERIOLOGY

- Sputum
  - Natural
  - Induced
  - Gastric washings/aspirates
  - Bronchial washing/BAL
- Biopsy
  - Tissue
- Fluid
  - CSF
  - Wound aspirates
  - Urine
  - Swabs (ex. Cervical)



- Lung
- Pleura
- Laryngeal
- Lymph node
- Abdomen
- Kidney
- Bone

- Pansensitive
- INH or Rifampin Resistance
- Multi-drug Resistant (MDR)
- Extensively Drug Resistant (XDR)

- AFB Smears
- NAAT, PCR, HPLC
- Cultures

STEP 1 NOTIFICATION OF CASE AND GATHERING DATA, CONTINUED

- Review report for:
  - Completeness
  - Case's risk of transmission
  - Determination of necessary control measures
- Contact provider or institution immediately for important missing information or if inappropriate treatment plans are noted
- Discuss case with referring provider, IP and/or client to get good picture of client's case and to help with infectiousness determination

STEP 2: TIME FRAME OF CLIENT VISIT AND INTERVIEW

Schedule appt w/ client for assessment and development of POC

- Conduct face to face interview (not over phone) < 1 business day of notification for cases indicating infectiousness
- Conduct interview of non-infectious clients < 3 business days of notification
- Go to place of residence for client <3 business days of initiating contact investigation

DIGNITY AND RESPECT

- Build rapport – do not interrogate or judge - Keep An Open Mind!
- Confidentiality - duty of anyone entrusted with health information to keep that information private
- Privacy - right of an individual to keep his or her health information private
- Ensure client's comfort
- Respect their surroundings
  - Put on mask discreetly at front door
  - Don't have to wear mask if outside
- Watch for use of stigmatizing language

STEP 3: INITIAL HOME VISIT

Prepare your client for the length of each visit.

Arrive on time or call if you're going to be late.

Respect their home; ask if you should take off your shoes; consider your cultural competencies.

Physical comfort may influence how complete and informative your client's answers will be. Do they prefer to sit on couch? Outside?

A thorough understanding of your client will yield a high-quality treatment plan and may produce better adherence and outcomes.

STEP 4: EVALUATE THE RESIDENCE

Air flow

Size

Initial visit acts as guide to how sick the client is and for possible cues to the level of transmission

- Frequency and quality of cough; client's appearance
- People who reside in home with client

Sunlight

STEP 5: DETERMINE INFECTIOUSNESS

What does it mean to be infectious?

What factors predict possible TB transmission?

- Site of disease
- Sputum bacteriology
- Radiographic findings
- Increased aerosolization of respiratory secretions
  - Coughing
  - Singing
  - Sneezing
- Age
- Treatment status

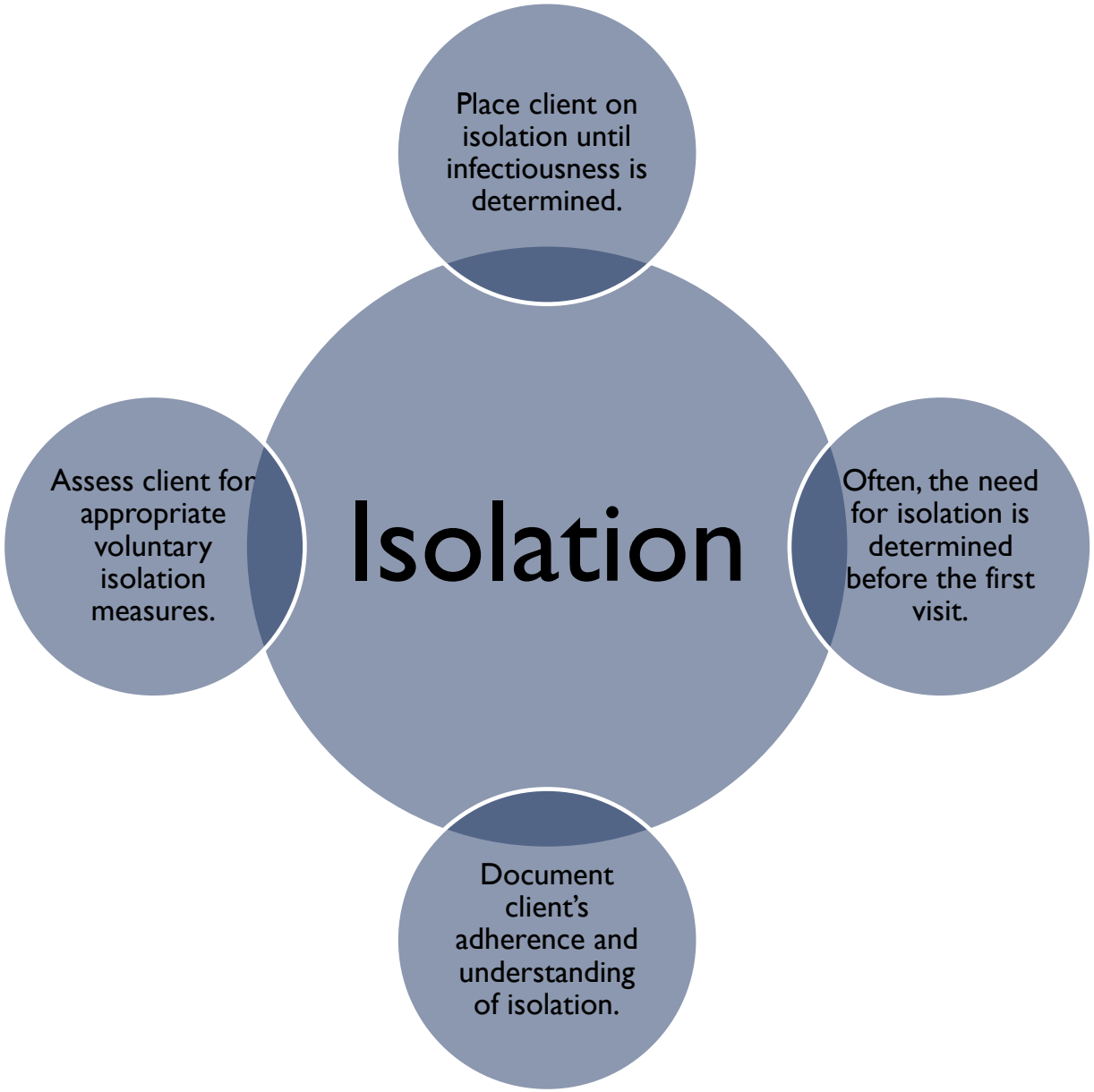
INFECTIOUSNESS OF PEOPLE KNOWN TO HAVE OR SUSPECTED OF HAVING TB DISEASE*

Factors associated w/ noninfectiousness	Factors associated w/ infectiousness
• No cough • No cavity in the lung • No acid-fast bacilli on sputum smear • Extrapulmonary (non-pulmonary) TB disease • Receiving adequate treatment for 2 weeks or longer • Not undergoing cough-inducing procedures • Negative sputum cultures	• Presence of a cough • Cavity in the lung • Acid-fast bacilli on sputum smear • TB disease of the lungs, airway, or larynx • Not receiving adequate treatment • Undergoing cough-inducing procedures (e.g., bronchoscopy, sputum induction, and administration of aerosolized medications) • Positive sputum cultures

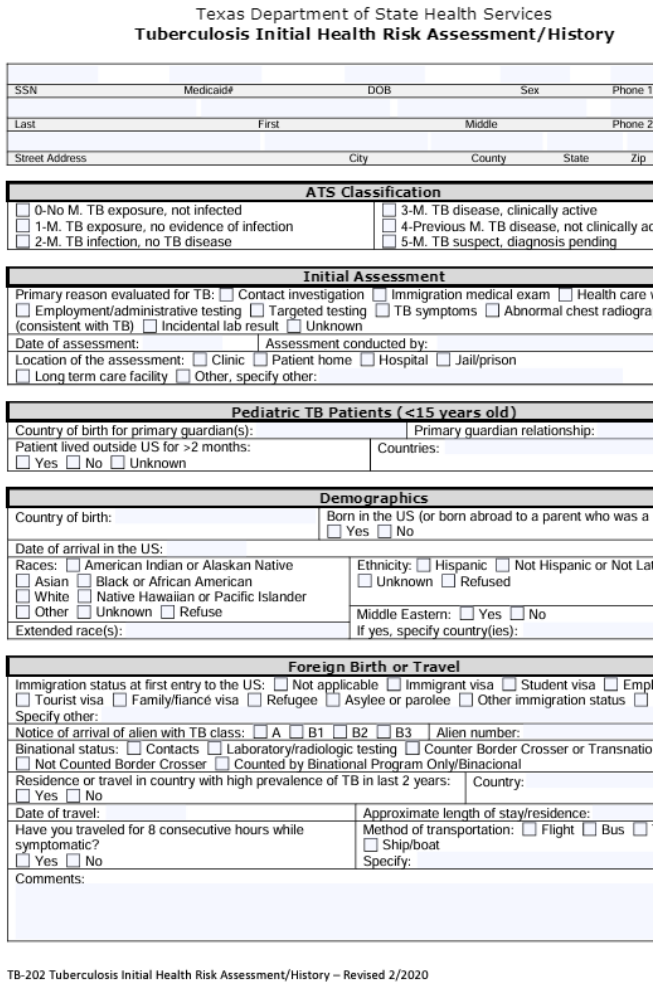
*Infectiousness depends on a variety of factors. Clinicians should consider all of these factors when determining whether a TB client should be considered infectious.

https://www.cdc.gov/tb/education/corecurr/pdf/chapter7.pdf

DETERMINE THE NEED FOR ISOLATION



STEP 6: CONDUCT CLIENT ASSESSMENT



Texas Department of State Health Services
Tuberculosis Initial Health Risk Assessment/History

SSN | Medicaid# | DOB | Sex | Phone T
Last | First | Middle | Phone 2
Street Address | City | County | State | Zip

ATS Classification

☐ 0-No M. TB exposure, not infected
☐ 1-M. TB exposure, no evidence of infection
☐ 2-M. TB infection, no TB disease
☐ 3-M. TB disease, clinically active
☐ 4-Previous M. TB disease, not clinically ac
☐ 5-M. TB suspect, diagnosis pending

Initial Assessment

Primary reason evaluated for TB: ☐ Contact investigation ☐ Immigration medical exam ☐ Health care
☐ Employment/administrative testing ☐ Targeted testing ☐ TB symptoms ☐ Abnormal chest radiogra
(consistent with TB) ☐ Incidental lab result ☐ Unknown

Date of assessment: | Assessment conducted by:

Location of the assessment: ☐ Clinic ☐ Patient home ☐ Hospital ☐ Jail/prison
☐ Long term care facility ☐ Other, specify other:

Pediatric TB Patients (<15 years old)

Country of birth for primary guardian(s): | Primary guardian relationship:

Patient lived outside US for >2 months: ☐ Yes ☐ No ☐ Unknown | Countries:

Demographics

Country of birth: | Born in the US (or born abroad to a parent who was a ☐ Yes ☐ No

Date of arrival in the US:

Races: ☐ American Indian or Alaskan Native ☐ Asian ☐ Black or African American ☐ White ☐ Native Hawaiian or Pacific Islander ☐ Other ☐ Unknown ☐ Refuse

Ethnicity: ☐ Hispanic ☐ Not Hispanic or Not Lat ☐ Unknown ☐ Refused

Middle Eastern: ☐ Yes ☐ No

Extended race(s): | If yes, specify country(ies):

Foreign Birth or Travel

Immigration status at first entry to the US: ☐ Not applicable ☐ Immigrant visa ☐ Student visa ☐ Empl
☐ Tourist visa ☐ Family/fiancé visa ☐ Refugee ☐ Asylee or parolee ☐ Other immigration status ☐
Specify other:

Notice of arrival of alien with TB class: ☐ A ☐ B1 ☐ B2 ☐ B3 | Alien number:

Binational status: ☐ Contacts ☐ Laboratory/radiologic testing ☐ Counter Border Crosser or Transnatio
☐ Not Counted Border Crosser ☐ Counted by Binational Program Only/Binacional

Residence or travel in country with high prevalence of TB in last 2 years: ☐ Yes ☐ No | Country:

Date of travel: | Approximate length of stay/residence:

Have you traveled for 8 consecutive hours while symptomatic? ☐ Yes ☐ No

Method of transportation: ☐ Flight ☐ Bus ☐ Ship/boat
Specify:

Comments:

TB-202 Tuberculosis Initial Health Risk Assessment/History – Revised 2/2020

TB-202

TB Initial Health Risk Assessment/History Form

https://www.dshs.texas.gov/tuberculosis-tb/texas-dshs-tb-program-tb-forms-resources

SSN	Medicaid#	DOB	Sex	Phone 1
Last	First	Middle		Phone 2
Street Address	City	County	State	Zip

ATS Classification

☐ 0-No M. TB exposure, not infected	☐ 3-M. TB disease, clinically active
☐ 1-M. TB exposure, no evidence of infection	☐ 4-Previous M. TB disease, not clinically active
☐ 2-M. TB infection, no TB disease	☐ 5-M. TB suspect, diagnosis pending

Initial Assessment

Primary reason evaluated for TB: ☐ Contact investigation ☐ Immigration medical exam ☐ Health care worker ☐ Employment/administrative testing ☐ Targeted testing ☐ TB symptoms ☐ Abnormal chest radiograph (consistent with TB) ☐ Incidental lab result ☐ Unknown

Date of assessment:	Assessment conducted by:

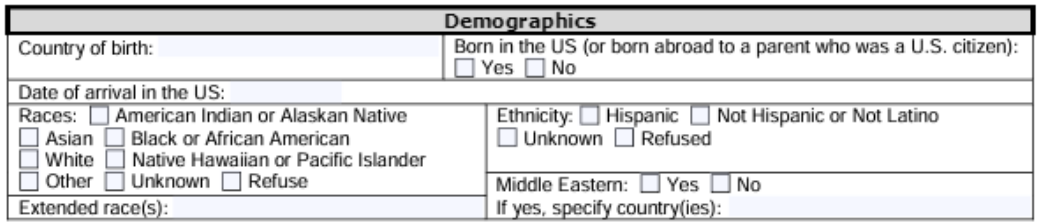
Location of the assessment: ☐ Clinic ☐ Patient home ☐ Hospital ☐ Jail/prison ☐ Long term care facility ☐ Other, specify other:

Pediatric TB Patients (<15 years old)

Country of birth for primary guardian(s):	Primary guardian relationship:
Patient lived outside US for >2 months: ☐ Yes ☐ No ☐ Unknown	Countries:

Class	Type	Description
0	No TB exposure Not infected	No history of TB exposure and no evidence of M. tuberculosis infection or disease Negative reaction to TST or IGRA
1	TB exposure No evidence of infection	History of exposure to M. tuberculosis Negative reaction to TST or IGRA (given at least 8 to 10 weeks after exposure)
2	TB infection No TB disease	Positive reaction to TST or IGRA Negative bacteriological studies (smear and cultures) No bacteriological or radiographic evidence of active TB disease
3	TB clinically active	Positive culture for M. tuberculosis OR Positive reaction to TST or IGRA, plus clinical, bacteriological, or radiographic evidence of current active TB
4	Previous TB disease (not clinically active)	May have past medical history of TB disease Abnormal but stable radiographic findings Positive reaction to the TST or IGRA Negative bacteriologic studies (smear and cultures) No clinical or radiographic evidence of current active TB disease
5	TB suspected	Signs and symptoms of active TB disease, but medical evaluation not complete

DEMOGRAPHICS



Demographics	
Country of birth:	Born in the US (or born abroad to a parent who was a U.S. citizen): ☐ Yes ☐ No
Date of arrival in the US:	
Races: ☐ American Indian or Alaskan Native ☐ Asian ☐ Black or African American ☐ White ☐ Native Hawaiian or Pacific Islander ☐ Other ☐ Unknown ☐ Refuse	Ethnicity: ☐ Hispanic ☐ Not Hispanic or Not Latino ☐ Unknown ☐ Refused
	Middle Eastern: ☐ Yes ☐ No
Extended race(s):	If yes, specify country(ies):

- Attempt to get as much information as possible including middle name and social security number, if possible
- Current address, previous address, length of residence
- ALL phone numbers by which client can be reached
- Emergency contact names and numbers

Foreign Birth or Travel	
Immigration status at first entry to the US: ☐ Not applicable ☐ Immigrant visa ☐ Student visa ☐ Employment visa ☐ Tourist visa ☐ Family/fiancé visa ☐ Refugee ☐ Asylee or parolee ☐ Other immigration status ☐ Unknown Specify other:	
Notice of arrival of alien with TB class: ☐ A ☐ B1 ☐ B2 ☐ B3	Alien number:
Binational status: ☐ Contacts ☐ Laboratory/radiologic testing ☐ Counter Border Crosser or Transnational ☐ Not Counted Border Crosser ☐ Counted by Binational Program Only/Binacional	
Residence or travel in country with high prevalence of TB in last 2 years: ☐ Yes ☐ No	Country:
Date of travel:	Approximate length of stay/residence:
Have you traveled for 8 consecutive hours while symptomatic? ☐ Yes ☐ No	Method of transportation: ☐ Flight ☐ Bus ☐ Train ☐ Ship/boat Specify:
Comments:	

FOREIGN BIRTH OR TRAVEL

PREVIOUS HISTORY OF TB AND/OR EXPOSURE

Previous History of TB and TB Infection

Recurrence or previous diagnosis of TB or TB infection: ☐ TB Disease ☐ TB Infection ☐ No ☐ Unknown	
History: ☐ Documented ☐ Self report	Previous TB occurred in US: ☐ Yes ☐ No
State/Country:	State case number (if reported in Texas after 1993):
Most recent year of previous diagnosis:	More than one previous episode: ☐ Yes ☐ No ☐ Unk
Start date previous TB treatment: Stop date previous TB treatment: Previous TB drug regimen/Dosage (mg): Previous TB treatment documented: ☐ Yes ☐ No ☐ Unknown Previous TB treatment considered complete: ☐ Yes ☐ No ☐ Unknown	Start date previous TB infection treatment: Stop date previous TB infection treatment: Previous TB infection drug regimen/Dosage (mg): Previous TB infection treatment documented: ☐ Yes ☐ No ☐ Unknown Previous TB infection treatment considered complete: ☐ Yes ☐ No ☐ Unknown
Previous positive IGRA: ☐ Yes ☐ No ☐ QFT ☐ T-SPOT Date:	Date of chest X-Ray: Result: ☐ Abnormal ☐ Normal ☐ Unknown
Previous positive TST: ☐ Yes ☐ No Induration: mm Date:	Abnormal result: ☐ Cavitary ☐ Non-cavitary
Comments:	

History of TB Exposure

Known exposure to active TB case: ☐ Yes ☐ No	How many years: ☐ Greater than 3 years ☐ 3 years or less
Date:	Relationship to patient:
Comments:	

- Has your client ever been diagnosed with TB or LTBI in the past?
- When and for how long?
- Is your client a contact to another active case? MDR case?
- Obtain prior documentation if possible!

SYMPTOM ASSESSMENT

Symptoms			
TB symptoms screening performed: ☐ Yes ☐ No		Patient is symptomatic: ☐ Yes ☐ No ☐ Unknown	
Date of TB symptoms assessment:			
Symptom	***Onset date***	***Symptom***	***Onset date***
Chest pain: ☐ Yes ☐ No ☐ Not applicable		Weight loss (>10%): ☐ Yes ☐ No ☐ Not applicable	
Shortness of breath: ☐ Yes ☐ No ☐ Not applicable		Frequent urination, bloody urine or flank pain: ☐ Yes ☐ No ☐ Not applicable	
Fever/chills: ☐ Yes ☐ No ☐ Not applicable		Headache, decreased level of consciousness or neck stiffness: ☐ Yes ☐ No ☐ Not applicable	
Night sweats: ☐ Yes ☐ No ☐ Not applicable		Swelling of joint/vertebra: ☐ Yes ☐ No ☐ Not applicable	
Cough (persistent x3 weeks): ☐ Yes ☐ No ☐ Not applicable		Enlarged cervical lymph nodes: ☐ Yes ☐ No ☐ Not applicable	
Productive cough: ☐ Yes ☐ No ☐ Not applicable		Swelling of lymph nodes: ☐ Yes ☐ No ☐ Not applicable	
Hemoptysis: ☐ Yes ☐ No ☐ Not applicable		Eye pain or blurry vision: ☐ Yes ☐ No ☐ Not applicable	
Fatigue: ☐ Yes ☐ No ☐ Not applicable		Pain swelling in other locations: ☐ Yes ☐ No ☐ Not applicable	
Loss of appetite: ☐ Yes ☐ No ☐ Not applicable		Other: ☐ Yes ☐ No ☐ Not applicable Specify other:	
Source of symptom information: ☐ Patient interview ☐ Relative/friend ☐ Medical record ☐ Other Specify other:		Respiratory isolation indicated: ☐ Yes ☐ No Date placed in respiratory isolation:	
Notes:			

- History of presenting signs and symptoms
- When did your client's symptoms first begin?
  - Many clients can't remember when they first felt sick
  - Refer back to important dates and times
- Why is it important to know when symptoms first appeared?
  - Determining infectious period
  - Conducting contact investigation
- Record all signs and symptoms of TB including date of onset
- Use comments field when necessary to document details

ASSESSING SYMPTOMS

- Cough – productive/non-productive, duration, SOB/pain
- Hemoptysis – color, quality, amount
- Night Sweats – duration, soaked sheets, how often
- Weight Loss – duration, how much, nausea/vomiting, access to food
- Fever – how high, duration, how often

VITAL SIGNS

Clinical			
Date of clinical assessment:			
Weight: lbs kgs		Recommendations based on BMI:	
Height: ft in cm			
Weight at least 10% less than ideal body weight: ☐ Yes ☐ No		Comments:	
Estimated weight, 3 months ago: lbs kg			
Blood pressure: systolic diastolic			
Date temperature collected:		Temperature: F C	

MEDICAL HISTORY

Medical History	
Date medical history collected:	
Allergies: ☐ Yes ☐ No	Comments:
Arthritis/gout: ☐ Yes ☐ No Use of ☐ Remicade ☐ Humira ☐ Enbrel	Comments:
Autoimmune: ☐ Yes ☐ No	Comments:
Cancer: ☐ Head ☐ Neck ☐ Other Specify other:	Comments:
Chronic malabsorption syndrome: ☐ Yes ☐ No	Comments:
Chronic renal failure: ☐ Yes ☐ No	Comments:
Corticosteroids (received equivalent of >15 mg/d Prednisone for >1 month): ☐ Yes ☐ No	Comments:
Diabetes mellitus: ☐ Yes ☐ No ☐ Type 1 ☐ Type 2	Comments:
Diabetes controlled: ☐ Yes ☐ No ☐ Unknown	Comments:
Controlled through: ☐ Pills ☐ Insulin ☐ Unknown	Comments:
GI/gastrectomy or jejunoileal bypass: ☐ Yes ☐ No	Comments:
Gynecological: ☐ Yes ☐ No	Comments:
Heart disease/PVD: ☐ Yes ☐ No	Comments:
Hypertension/CVA: ☐ Yes ☐ No	Comments:
Intellectual disability/developmental delay: ☐ Yes ☐ No	Comments:
Leukemia: ☐ Yes ☐ No	Comments:
Liver disease/hepatitis (risk factors HepB/C: IDU, HIV+ or birth in Asia, Africa or Amazon basin): ☐ Yes ☐ No	Comments:
Lymphoma: ☐ Yes ☐ No	Comments:
Mental illness(es): ☐ Yes ☐ No ☐ Anxiety ☐ Depression ☐ Schizophrenia ☐ Other ☐ Unknown Specify other: When (select all that apply): ☐ Currently ☐ Within past 12 months ☐ Ever	Comments:
Neurological/seizures: ☐ Yes ☐ No	Comments:
Organ transplant: ☐ Yes ☐ No	Comments:
Post partum: ☐ Yes ☐ No	Comments:
Respiratory problems: ☐ Yes ☐ No	Comments:
Silicosis/asbestosis: ☐ Yes ☐ No	Comments:
Skin disease: ☐ Yes ☐ No	Comments:
STD: ☐ Yes ☐ No	Comments:
Surgeries/hospitalizations: ☐ Yes ☐ No	Comments:
Thyroid: ☐ Yes ☐ No	Comments:
Vision/hearing disorder: ☐ Yes ☐ No	Comments:
Other medical history: ☐ Yes ☐ No Specify other:	Comments:

Primary care provider: ☐ Yes ☐ No	Name of primary care provider:	Phone:
Specialty care provider: ☐ Yes ☐ No		
Specialty type: ☐ Pulmonologist ☐ Infectious disease ☐ Internal medicine ☐ Neurologist ☐ Other Specify other:	Name of specialty care provider: Phone:	
HIV status: ☐ Indeterminate ☐ Negative within past year ☐ Not offered ☐ Positive ☐ Refused ☐ Test done-results unknown ☐ Unknown	City/County HIV#:	
CD4 count, if HIV+:	Date, if HIV+:	
HIV counseling and referral provided: ☐ Yes ☐ No		

Medications taking (excluding TB drugs)				
Medication	Start date	Dosage/schedule	Stop date	Prescribing Provider/Facility
(Attach additional medication list, if needed)				
Name of person taking history:				
Name of interpreter (if used):				
Barriers to compliance: ☐ Yes ☐ No Comments:				
Live virus immunization in last 6 weeks: ☐ Yes ☐ No Date:				
Immunizations received: ☐ FluMist (influenza) ☐ MMR (measles, mumps, rubella) ☐ MMRV (measles, mumps, rubella, varicella) ☐ Rotavirus ☐ Herpes zoster (shingles) ☐ Smallpox ☐ Varicella ☐ Yellow fever				

- List all medications your client takes including vitamins, herbal supplements and OTC medicines.
- Get as much detail as possible including who prescribed the med, start date, dosage and schedule.
- From now on, no acetaminophen.

COMORBIDS

- Respiratory – COPD vs cancer vs TB vs NTM, imaging correlation
- Cardiac – potential drug interactions
- Mental health problems – potential drug interactions, compliance, DOT concerns
- Renal – check labs, dialysis – DOT, timing of meds
- Liver disease – Hep B or C, cirrhosis, check labs, ETOH, acetaminophen products
- Diabetes – potential drug interactions, controlled vs uncontrolled, complications
  - higher risk of TB and face worse treatment outcomes
- TNF-inhibitors – increased risk of TB, anergy
  - Antibodies against TNF-alpha cause increased susceptibility of TB. Clients treated with TNF-alpha antagonists have increased risk of TB.
- HIV – CD4 count, viral load, ART, TB med substitution, complications, anergy
  - HIV weakens immune system making it harder for body to fight TB
  - People with HIV are 15-20 x more likely to develop active TB
- Malnutrition
  - Weight gain of 5% or less during the first 2 months of therapy is associated with an increased risk of relapse, even after controlling for other factors

A diagnosis of TB disease in a client should trigger testing for diabetes and HIV

Rifamycins and Psychotropic Drugs: Drug-Drug Interactions

General Tuberculosis (TB) Therapy Information

Many psychotropic drugs are metabolized via the Cytochrome P450 (CYP450) enzymatic system in the liver. Rifampin is a potent inducer of the Cytochrome P450 and accounts for many of the drug interactions that occur during TB therapy.

Rifabutin is a weaker inducer of the Cytochrome P450 system, potentially interacting with some of the same medications as Rifampin. Rifapentine is also a potent inducer of CYP450 enzymatic system in the liver with drug-drug interactions of a severity similar to those of rifampin.

Enzyme induction effects can last 2-4 weeks after discontinuation of a rifamycin. Medication should be readjusted after the discontinuation of Rifampin treatment.

Brand/Generic	Clinical Uses	Interactions	Recommendations
Anti-Psychotics			
Abilify / Aripiprazole	Schizophrenia, Bi-Polar Disorder, Major Depressive Disorder	RIF: Theoretically ↓ Aripiprazole levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Clozarine / Clozapine	Schizophrenia	RIF: ↓ Clozapine to sub-therapeutic levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Geodon / Ziprasidone	Schizophrenia, Bi-Polar Disorder	RIF: May ↓ Ziprasidone levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Haldol / Haloperidol	Tourette's Disorder	RIF: May ↑ Haloperidol clearance	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Invega / Paliperidone	Schizophrenia	RIF: May slightly ↓ Paliperidone levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin. Consider switching to alternate anti-psychotic agent. Alternate recommendation: (Co-administration of Risperidone with Rifampin avoided in clinical practice.)
Risperdal / Risperidone	Schizophrenia, Bi-Polar Disorder, Major Depressive Disorder	RIF: ↓ Risperidone levels 43% - 51%	
Seroquel / Quetiapine	Schizophrenia, Bi-Polar Disorder, Alzheimer's Disease	RIF: Theoretically ↓ Quetiapine levels	
Zyprexa / Olanzapine	Schizophrenia, Bi-Polar Disorder	RIF: May ↑ Olanzapine clearance	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Anti-Anxiety Agents			
Ambien / Zolpidem	Insomia	RIF: ↓ Zolpidem levels 63%	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin. Consider switching to alternate anxiolytic agent or anti-depressant.
Buspar / Buspirone	Anxiety Disorders	RIF: ↓ Anxiolytic effects of Buspirone; ↓ 83.7% - 89.8% levels	Buspirone should be avoided in patients receiving Rifampin. Buspirone should be used only with caution and consideration of appropriate dosage adjustment. Increase clinical monitoring
Valium / Diazepam	Anxiety Disorders, Muscle Spasms	RIF: ↓ Diazepam effectiveness	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Versed / Midazolam	Anxiety Disorders, Surgical Premedication	RIF: ↓ Anxiolytic effects of Midazolam, ↓Plasma concentrations (95.9% decrease in AUC) and pharmacodynamic effects of Midazolam	Midazolam should be avoided in patients receiving Rifampin. Midazolam should be used only with caution and consideration of appropriate dosage adjustment. Increased clinical monitoring is recommended when a patient is concurrently receiving Midazolam and a Rifamycin.
Xanax / Alprazolam	Anxiety Disorders, Panic Disorders	RIF: Theoretically ↓ Alprazolam levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Anti-Depressants			
Aventyl / Nortriptyline	Depression	RIF: May ↓ to subtherapeutic levels	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Celexa / Citalopram	Depression	RIF: ↓ Citalopram levels	
Cymbalta / Duloxetine	Depression, Generalized Anxiety Disorder, Diabetic Neuropathy, Fibromyalgia, Osteoarthritis Pain	RIF: May ↓ effects of Duloxetine	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Desyrel / Trazodone	Depression	RIF: May ↓ effects of Trazodone	
Effexor XR / Venlafaxine	Depression, Social Anxiety Disorder, Panic Disorders	RIF: May ↓ effects of Venlafaxine	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Lexapro / Escitalopram	Depression, Generalized Anxiety Disorder	RIF: May ↓ effects of Escitalopram (when co-administered with a potent CYP3A4 inhibitor (Ritonavir), it did not significantly affect the pharmacokinetics of Escitalopram)	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Prelsig / Desvenlafaxine	Depression	RIF: May ↓ effects of Desvenlafaxine	
Wellbutrin XL / Bupropion HCl	Depression, Seasonal Affective Disorder, Smoking Cessation	RIF: May ↓ effects of Bupropion HCl	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.
Zoloft / Sertraline	Depression, Obsessive Compulsive Disorder, Post Traumatic Stress Disorder, Social Anxiety Disorder, Premenstrual Dysphoric Disorder	RIF: May bring about the loss of Sertraline efficacy; may double Sertraline clearance	Increase clinical monitoring; consider dose adjustment at initiation of therapy with a Rifamycin.

KEY:
RIF = Rifampin

Rifamycins and Cardiovascular Agents: Drug - Drug Interactions

General Tuberculosis (TB) Therapy Information

Many cardiovascular agents are metabolized via the Cytochrome P450 (CYP450) enzymatic system in the liver. Rifampin is a potent inducer of the Cytochrome P450 and accounts for many of the drug interactions that occur during TB therapy.

Rifabutin is a weaker inducer of the Cytochrome P450 system, potentially interacting with some of the same medications as Rifampin. Rifapentine is also a potent inducer of CYP450 enzymatic system in the liver with drug-drug interactions of a severity similar to those of rifampin.

Generic	Clinical Effect	Interactions	Recommendations
Angiotensin Converting Enzyme (ACE) Inhibitors			
(Class Effect)	↓blood pressure	RIF: ↓ACEI levels ~30% (poor evidence, no studies)	Increase BP monitoring; Consider ACEI dose adjustment.
Angiotensin Receptor Blockers (ARB's)			
(Class Effect)	↓blood pressure •renoprotective	RIF: ↓ARB levels ~35% (poor evidence, no studies)	Increase BP monitoring; Consider ARB dose adjustment.
Beta Blockers			
metoprolol	↓blood pressure		Increase BP monitoring; Consider dose adjustment.
propranolol	↓blood pressure	RIF: ↓metoprolol levels 33%	Increase BP monitoring; Consider dose adjustment.
bisoprolol	↓blood pressure	RIF: doubled apparent oral clearance	Increase BP monitoring; Consider dose adjustment.
Calcium Channel Blockers (CCBs)		RIF: ↓bisoprolol levels 34%	
nifedipine	↓blood pressure	RIF: ↓nifedipine levels 92-97% (Contraindicated *)	Increase BP monitoring; Consider dose adjustment; Consider switching to other antihypertensive agents with less interaction. *Major interactions occurr between orally administered nifedipine and rifampin. IV administration significantly reduces the potency of the interactions.
amlodipine	↓blood pressure	RIF: theoretically ↓ amlodipine levels	Increase BP monitoring; Consider dose adjustment; Consider switching to other antihypertensive agents with less interaction.
diltiazem	↓blood pressure	RIF: ↓diltiazem levels	Increase BP monitoring; Consider dose adjustment; Consider switching to other antihypertensive agents with less interaction.
verapamil	↓blood pressure	RIF: ↓verapamil levels 93-99%	Increase BP monitoring; Consider dose adjustment; Consider switching to other antihypertensive agents with less interaction.
Thiazide Diuretics			
(Class Effect)	↓blood pressure	none noted	no contraindications
HMG CoA Inhibitors (Statins)			
atorvastatin	↓cholesterol levels ↓stroke •cardioprotective	RIF: ↓atorvastatin levels 80%	Increase BP monitoring; Consider alternate lipid lowering agent to minimize effect; Consider increasing Statin dose; Consider using Rifabutin in place of Rifampin.
rosuvastatin	↓cholesterol levels ↓stroke •cardioprotective	RIF: may ↓rosuvastatin levels	Increase BP monitoring; Consider increasing Statin dose; Consider using Rifabutin in place of Rifampin.
mvastatin	↓cholesterol levels ↓stroke •cardioprotective	RIF: ↓simvastatin levels 82-97%	Increase BP monitoring; Consider alternate lipid lowering agent to minimize effect; Consider increasing Statin dose; Consider using Rifabutin in place of Rifampin.
statin	↓cholesterol levels ↓stroke •cardioprotective	RIF: theoretically ↓statin levels	Increase BP monitoring; Consider alternate lipid lowering agent to minimize effect; Consider increasing Statin dose; Consider using Rifabutin in place of Rifampin.

Rifamycins and Anti-Diabetic Agents: Drug-Drug Interactions

General Tuberculosis (TB) Therapy Information

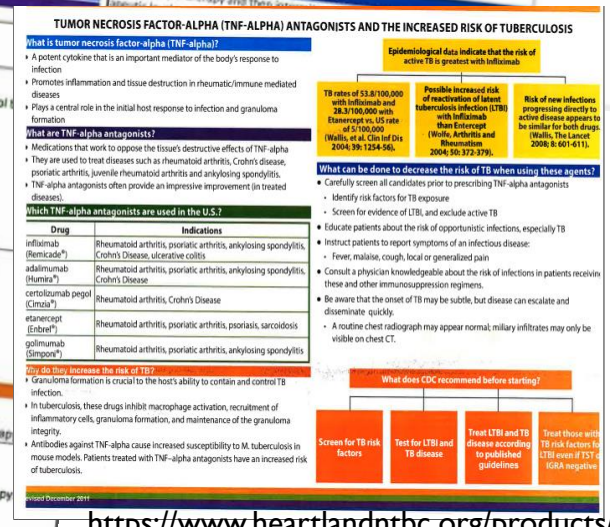
Developed by Kelly Bujnoch, PharmD Candidate 2011 with the assistance of Regina Tabor, RPh, DPh, Robert Petrossian and Barbara Seaworth, MD

Many diabetic medications are metabolized via the Cytochrome P450 (CYP450) enzymatic system in the liver. Rifampin is a potent inducer of the Cytochrome P450 and accounts for many of the drug interactions that occur during TB therapy.

Rifabutin is a weaker inducer of the Cytochrome P450 system, potentially interacting with some of the same medications as Rifampin.

Enzyme induction effects can last 2-4 weeks after discontinuation of rifampin. Glucose levels should be monitored and diabetic medications should be readjusted at the end of treatment.

Brand	Generic	Clinical Effect	Rifampin (RIF) Drug-Drug Interactions	Recommendations
Biguanide (Metformin) Based				
Glucophage®	Metformin	↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑insulin sensitivity	None noted	No contraindications
Glucovance®	Glyburide+ Metformin	Glyburide: ↑Secretion of insulin from the pancreas Metformin: ↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑Insulin sensitivity	↓Glyburide levels 39% Metformin: None noted	•Consider glipizide as first choice sulfonylurea to minimize interactions •Increase monitoring •Consider dose adjustment of antidiabetic agents or alternative glucose control t Metformin: •No contraindications
Metaglip®	Glipizide+ Metformin	Glipizide: ↑Secretion of insulin from the pancreas Metformin: ↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑Insulin sensitivity	↓Glipizide levels 22% Metformin: None noted	
Janumet®	Sitagliptin+ Metformin	Sitagliptin: ↑Secretion of insulin from the pancreas • delays gastric emptying ↓Appetite ↓Glucagon release after meals Metformin: ↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑Insulin sensitivity	May ↓ sitagliptin levels Metformin: None noted	Sitagliptin: • Increase monitoring; interaction may be minimal and require no adjustments Metformin: •No contraindications
Sulfonylurea Based				
Micronase®	Glyburide	↑Secretion of insulin from the pancreas	↓Glyburide levels 39%	•Consider glipizide as first choice sulfonylurea to minimize interactions •Increase monitoring •Consider dose adjustment of antidiabetic agents or alternative glucose control therap
Amaryl®	Glimepiride	↑Secretion of insulin from the pancreas	↓Glimepiride levels 30%	
Glucotrol®	Glipizide	↑Secretion of insulin from the pancreas	↓Glipizide levels 22%	
Glucovance®	Glyburide + Metformin	Glyburide: ↑Secretion of insulin from the pancreas Metformin: ↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑Insulin sensitivity	↓Glyburide levels 39% Metformin: None noted	•Consider glipizide as first choice sulfonylurea to minimize interactions •Increase monitoring •Consider dose adjustment of antidiabetic agents or alternative glucose control therapy Metformin: •No contraindications
Metaglip®	Glipizide+ Metformin	↑Secretion of insulin from the pancreas Metformin: ↓Production of glucose by the liver ↓Absorption of glucose by intestines ↑Insulin sensitivity	↓Glipizide levels 22% Metformin: None noted	
Avandaryl®	Pioglitazone + Glimepiride	Pioglitazone: ↑Insulin sensitivity (body and liver cells) Glimepiride:	↓Pioglitazone levels 54%	



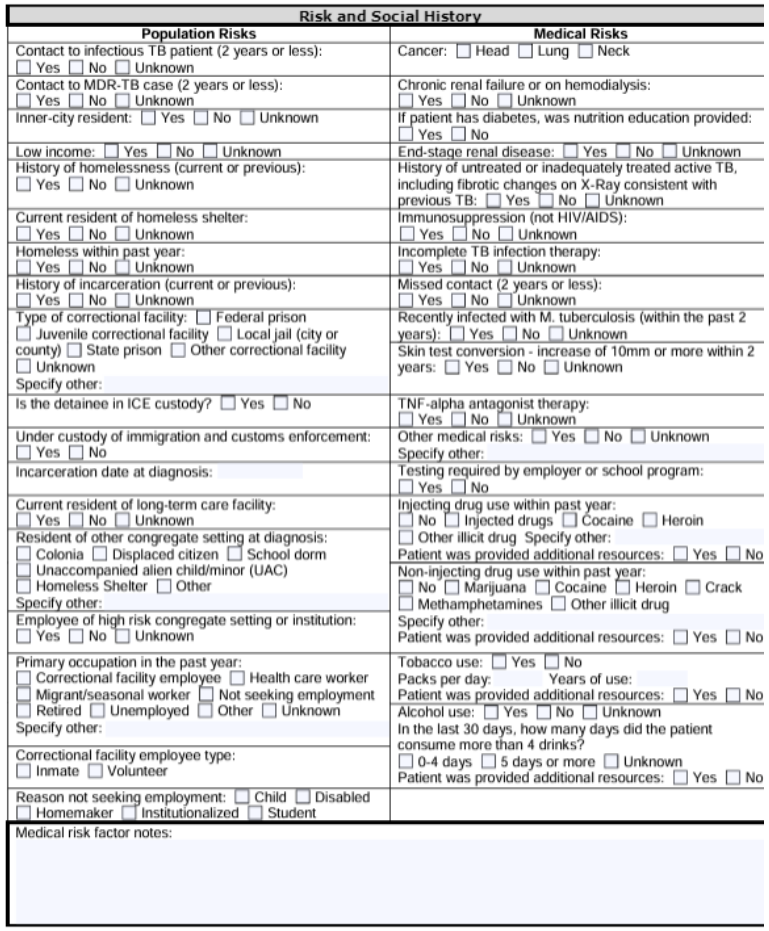
HEARTLAND NATIONAL TB CENTER
A PARTNERSHIP OF UT HEALTH NORTHEAST AND UTD

https://www.heartlandntbc.org/products/

Pregnant/Pregnancy	
pregnant: ☐ Yes ☐ No ☐ Unknown	If no, Patient pregnant within year previous to diagnosis: ☐ Yes ☐ No ☐ Unknown
of (date):	Outcomes(s): ☐ Live birth ☐ Miscarriage ☐ Still birth ☐ Termination ☐ Other Specify other:
	Outcome date:
evaluated: ☐ Yes ☐ No	Term delivery: ☐ Yes ☐ No ☐ Unknown
y clinical notes:	Baby evaluated for TB: ☐ Yes ☐ No ☐ Unknown Evaluation result: ☐ Positive ☐ Negative ☐ Indeterminate ☐ Other ☐ Unknown Specify other: Outcome of evaluation: ☐ TB infection ☐ TB infection window period ☐ TB suspect ☐ TB disease ☐ No TB disease or infection
	Live birth facility:
	Did anyone in the patient's household have a baby in the last 3 months? ☐ Yes ☐ No ☐ Unknown

PREGNANCY

RISK AND SOCIAL HISTORY



Risk and Social History

Population Risks	Medical Risks
Contact to infectious TB patient (2 years or less): ☐ Yes ☐ No ☐ Unknown	Cancer: ☐ Head ☐ Lung ☐ Neck
Contact to MDR-TB case (2 years or less): ☐ Yes ☐ No ☐ Unknown	Chronic renal failure or on hemodialysis: ☐ Yes ☐ No ☐ Unknown
Inner-city resident: ☐ Yes ☐ No ☐ Unknown	If patient has diabetes, was nutrition education provided: ☐ Yes ☐ No
Low income: ☐ Yes ☐ No ☐ Unknown	End-stage renal disease: ☐ Yes ☐ No ☐ Unknown
History of homelessness (current or previous): ☐ Yes ☐ No ☐ Unknown	History of untreated or inadequately treated active TB, including fibrotic changes on X-Ray consistent with previous TB: ☐ Yes ☐ No ☐ Unknown
Current resident of homeless shelter: ☐ Yes ☐ No ☐ Unknown	Immunosuppression (not HIV/AIDS): ☐ Yes ☐ No ☐ Unknown
Homeless within past year: ☐ Yes ☐ No ☐ Unknown	Incomplete TB infection therapy: ☐ Yes ☐ No ☐ Unknown
History of incarceration (current or previous): ☐ Yes ☐ No ☐ Unknown	Missed contact (2 years or less): ☐ Yes ☐ No ☐ Unknown
Type of correctional facility: ☐ Federal prison ☐ Juvenile correctional facility ☐ Local jail (city or county) ☐ State prison ☐ Other correctional facility ☐ Unknown Specify other:	Recently infected with M. tuberculosis (within the past 2 years): ☐ Yes ☐ No ☐ Unknown Skin test conversion - increase of 10mm or more within 2 years: ☐ Yes ☐ No ☐ Unknown
Is the detainee in ICE custody? ☐ Yes ☐ No	TNF-alpha antagonist therapy: ☐ Yes ☐ No ☐ Unknown
Under custody of immigration and customs enforcement: ☐ Yes ☐ No	Other medical risks: ☐ Yes ☐ No ☐ Unknown Specify other:
Incarceration date at diagnosis:	Testing required by employer or school program: ☐ Yes ☐ No
Current resident of long-term care facility: ☐ Yes ☐ No ☐ Unknown	Injecting drug use within past year: ☐ No ☐ Injected drugs ☐ Cocaine ☐ Heroin ☐ Other illicit drug Specify other: Patient was provided additional resources: ☐ Yes ☐ No
Resident of other congregate setting at diagnosis: ☐ Colonia ☐ Displaced citizen ☐ School dorm ☐ Unaccompanied alien child/minor (UAC) ☐ Homeless Shelter ☐ Other Specify other:	Non-injecting drug use within past year: ☐ No ☐ Marijuana ☐ Cocaine ☐ Heroin ☐ Crack ☐ Methamphetamines ☐ Other illicit drug Specify other: Patient was provided additional resources: ☐ Yes ☐ No
Employee of high risk congregate setting or institution: ☐ Yes ☐ No ☐ Unknown	
Primary occupation in the past year: ☐ Correctional facility employee ☐ Health care worker ☐ Migrant/seasonal worker ☐ Not seeking employment ☐ Retired ☐ Unemployed ☐ Other ☐ Unknown Specify other:	Tobacco use: ☐ Yes ☐ No Packs per day: Years of use: Patient was provided additional resources: ☐ Yes ☐ No
Correctional facility employee type: ☐ Inmate ☐ Volunteer	Alcohol use: ☐ Yes ☐ No ☐ Unknown In the last 30 days, how many days did the patient consume more than 4 drinks? ☐ 0-4 days ☐ 5 days or more ☐ Unknown Patient was provided additional resources: ☐ Yes ☐ No
Reason not seeking employment: ☐ Child ☐ Disabled ☐ Homemaker ☐ Institutionalized ☐ Student	

Medical risk factor notes:

- Does your client use tobacco, alcohol or recreational drugs?
- What is your client's educational level, housing situation and occupation?
- Has your client been incarcerated in the past?
- Does your client have a solid social network? – emotional, physical and financial support

STEP 7: PROVIDE CLIENT AND FAMILY EDUCATION

- Acknowledge and address your client's perceptions and concerns about their TB diagnosis and treatment
- Ensure your client communicates regularly about any changes with TB treatment or other co-morbidities they are concurrently being treated for
- Review the treatment plan regularly and adjust as needed
- Continue to educate client, family and identified contacts throughout treatment plan and reassess their understanding of TB

STEP 8: PLAN FOR ENSURING ACCESS TO CARE AND ADHERENCE

Create

- ... an adherence agreement

Help

- … clients keep appointments

Use

- … incentives and enablers to improve adherence

Encourage

- … client to seek support

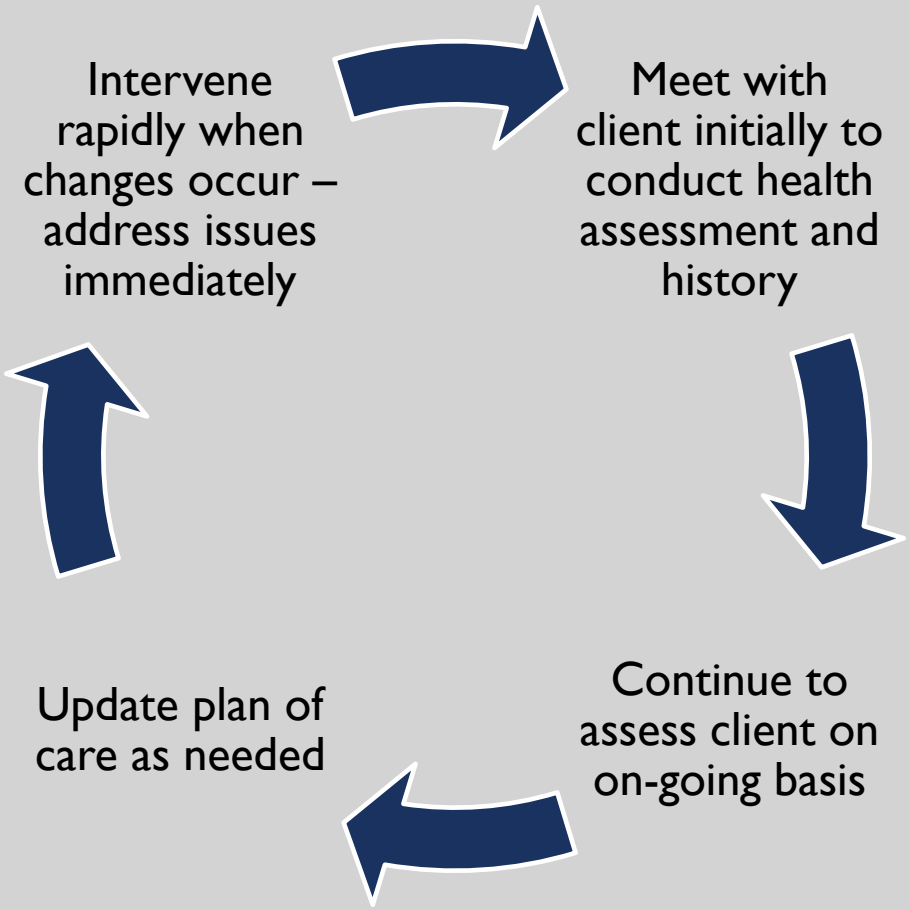
Give

- … TB drugs in easy-to-take preparations

Coordinate

- … other services

NURSING ASSESSMENT IS ONGOING



ASSESSMENT SUMMARY

Provide client and family education throughout journey

Utilize nursing process

Build rapport and ensure client confidentiality

Nurse is critical in identifying changes in client's status and need to update POC

Be aware of stigmatizing language

Assessment is ongoing and continuous

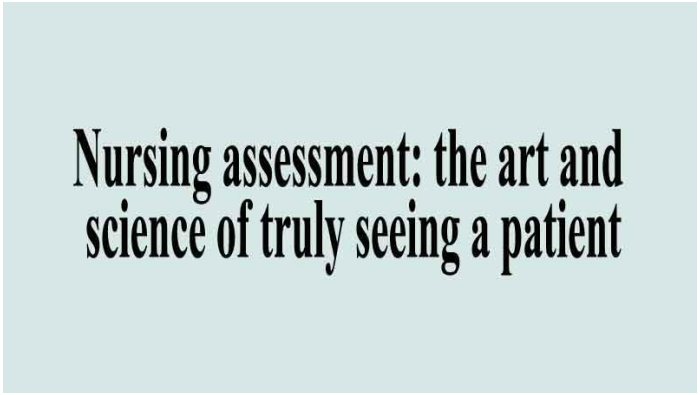
Obtain pertinent medical records and conduct thorough medical history

Identification of comorbid conditions is essential in developing effective POC

Conduct thorough medical and psychosocial assessment

Determine need for infectious period and need for isolation

CONCLUSION



- The TB Nurse Case Manager is responsible for:
  - Interviewing the client and completing the components of the client assessment which includes a medical history, co-morbidities, TB signs and symptoms and TB history.
  - Interacting in a non-judgmental manner and maintaining the client's privacy and dignity.
- The purpose of the client assessment is:
  - To better understand the client for the development of an effective POC with the end goal for the client to successfully complete their TB treatment.

THANK YOU!