Tuberculosis Screening & Follow-Up

Created: November 2015
Updated: October 2016
Approved by the BCPRA Hemodialysis Committee
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IMPORTANT INFORMATION
This BCPRA guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to www.bcrenalagency.ca for the most recent version.

For information about the use and referencing of BCPRA provincial guidelines/resources, refer to http://bit.ly/28SFr4n.
1.0 Scope

This guideline provides tuberculosis (TB) screening and follow-up recommendations and procedures for incident (new to dialysis) adult hemodialysis patients.

The guideline is applicable to in-centre units as new hemodialysis patients are usually started in-centre.

2.0 Summary of the Literature & Internet

Tuberculosis (TB) is a disease caused by the bacteria *Mycobacterium tuberculosis* that is spread from person to person through droplets in the air. TB usually affects the lungs, but it can also affect other parts of the body, such as lymph nodes, the brain, kidneys or the spine.

M. tuberculosis can exist in an active or latent state in the human body:

1. **Active TB**, also called TB disease, is usually symptomatic and often transmissible. With active TB, tests for TB bacteria are usually positive and radiologic tests may be abnormal.

2. **Latent TB infection** (LTBI), also called TB infection, is the presence of latent or dormant TB bacteria in the body but no evidence of active TB. This means that the person does not have TB symptoms, there is no evidence of radiographic changes consistent with active TB and microbiologic tests are negative. LTBI is not infectious; however, if left untreated, healthy persons diagnosed with LTBI have a 5-10% lifetime risk of progressing to active TB. This percentage increases significantly when additional risk factors exist, such as end-stage kidney disease, with cited relative risks ranging from 7 to 50 times the background incidence (Canadian TB Standards, 7th Edition, 2014).

This guideline provides recommendations aimed at reducing the incidence of active TB in the chronic kidney disease (CKD) population in BC through incident screening and identification and treatment of dialysis patients with LTBI. Treatment of patients with LTBI will reduce the number of active TB cases in the dialysis population, avoiding time and labour intensive contact follow-up. Fewer active cases will, in turn, reduce transmission of TB within the larger CKD population.

The TB screening program recommended for dialysis patients in this guideline includes 3 components:

1. **TB screening (risk assessment) questionnaire**
2. **Chest radiography (x-ray)**
3. **Interferon Gamma Release Assays (IGRA)**
   - IGRAs are a new blood immune assay test that demonstrates high sensitivity and specificity for detecting LTBI (sensitivity and specificity rates of 75-83% and >95% respectively in the general population). [BC Centre for Disease Control (BCCDC) website, 2015].
   - IGRAs are particularly useful in some immunocompromised populations (including those on dialysis) as the traditional tuberculin
skin test (TST) has a high false negative rate (because of a high prevalence of anergy in dialysis patients). The IGRA is reported to be a more sensitive test than the TST in the dialysis population, while offering a comparable level of specificity. (Ferguson, 2014). Further, compared to the TST, the IGRA was associated more strongly with risk factors for LTBI in end-stage kidney disease. (Rogerson, 2013).

- There are two types of IGRA tests available in BC: (1) QuantiFERON®-TB Gold In-Tube Test (QFT-GIT); and (2) T-SPOT®.TB test (T-Spot). These tests appear to have similar sensitivity and specificity, however, QFT-GIT is easier to use and less expensive. As a result, QFT-GIT is used more often in TB screening of dialysis patients in BC.

### 3.0 Recommendations

**Recommendation #1:**
**Screen all incident (new) hemodialysis patients for TB within one week of their first chronic hemodialysis run.** Exceptions include patients who have had:

- A previous reactive IGRA test with documented LTBI treatment; or
- Documented previous active TB disease or LTBI which has been treated; or
- TB screening when they started peritoneal dialysis (PD) following the same protocol as recommended in this guideline.

In general, repeat or serial IGRA testing is not recommended. However, in certain circumstances, it may be appropriate - most commonly with TB exposure as a part of contact investigation or with high-risk travel. Consultation with TB Services on case by case basis is recommended.

Please ensure that CORR data elements are up to date in PROMIS (within the past 30 days).

**Recommendation #2:**
**Utilize a three-component protocol to screen for TB:**
1. TB screening (risk assessment) questionnaire.
2. IGRA blood test - see notes below.
3. Chest x-ray within the past 3 months.

See Appendix 1 for an overview of the workflow.

**TB screening (risk assessment) questionnaire (see Appendix 2 for example of screening questionnaire & Appendix 3 for samples of PROMIS screen shots)**

This questionnaire is available as a fillable form in PROMIS. Print the questionnaire from PROMIS (demographics will auto populate), discuss the questions with the patient and enter the responses into PROMIS. BC Centre for Disease Control (BCCDC) will have access to the completed questionnaire, along with the results of the IGRA test and chest x-ray, in PROMIS for analysis.

**IGRA testing (see Appendix 4 for example of IGRA lab requisition)**

The IGRA lab requisition is available in PROMIS (demographics will auto populate). Print the requisition from PROMIS and place with the blood sample prior to sending to the laboratory. BE SURE TO USE THE IGRA LAB REQUISITION IN PROMIS and not the standard lab requisition. Refer to “Section 4.0 Procedures” for details.
IGRA blood samples may be drawn in any hospital with an in-centre HD unit that has been designated (trained and set up) as an IGRA collection site by the BCCDC Provincial Health Laboratory. Pre-analytical processing of samples is performed in any hospital that has been designated (trained and set up) as an IGRA processing site. Accurate results rely on specific collection methods and care of samples after the blood draw.

- Samples are drawn from the HD fistula/graft or central venous catheter by the RN using the established protocol (Appendix 6).
- Samples are sent to the laboratory in the hospital in which the HD unit resides (IGRA collection site) as soon as possible after drawing.
- If the receiving laboratory is a designated IGRA processing site:
  - Samples are incubated for 16-24 hours.
  - Samples are centrifuged and the plasma portion pipetted off into new vials.
  - Plasma samples are transported to the BCCDC Public Health Laboratory for analysis.
- If the receiving laboratory is NOT a designated IGRA processing site:
  - The receiving laboratory packages the samples (insulated so that the samples are maintained at room temperature).
  - The receiving laboratory transports the samples to a designated IGRA processing site within the HA for processing (Note: samples must be incubated with 16 hours of collection at the designated IGRA processing site).

BCCDC will have access to the results of the IGRA test, along with the completed questionnaire and chest x-ray report, in PROMIS for analysis. The results of the IGRA tests are usually available within 1 week of the sample being drawn.

**Chest x-ray (see Appendix 5 for example of chest x-ray requisition)**

The chest x-ray requisition is available in PROMIS (demographics will auto populate). Print the requisition from PROMIS and give to the patient. BE SURE TO USE THE CHEST X-RAY REQUISITION IN PROMIS and not the standard radiology requisition. Refer to “Section 4.0 Procedures” for details.

The patient may have his/her chest x-ray at any hospital medical imaging department. Once the report is available, a copy will be sent by the medical imaging department to the HD unit and to the BCCDC. BCCDC will manually upload the report into PROMIS.

If the patient has had a chest x-ray within the past 3 months, a repeat chest-ray is not required. Enter the date and location the x-ray was completed into PROMIS. BCCDC will manually upload the x-ray report into PROMIS. Refer to “Section 4.0 Procedures” for details. If this report/image is inconclusive, BCCDC will advise the HD unit to provide the patient with a chest x-ray requisition specific for ruling out TB.

BCCDC will have access in PROMIS to all 3 components of TB screening to complete their analysis - the completed TB screening questionnaire, IGRA test results and the chest x-ray report.

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1 All hospitals with in-centre HD units are IGRA collection sites.
Recommendation #3:
The renal unit staff advises BCCDC by clicking on the “Alert BCCDC” button in PROMIS when the 3 screening activities have been completed for a new HD patient:
1. Responses to the TB screening questionnaire have been entered into PROMIS.
2. IGRA blood sample and requisition has been sent to the local hospital laboratory and entered into PROMIS. Refer to “Section 4.0 Procedures” for details.
3. Chest x-ray requisition has been given to the patient or the date and location of a chest x-ray completed within the past 3 months has been entered into PROMIS. Refer to “Section 4.0 Procedures” for details.

Once BCCDC receives the “Alert” from the renal unit, they will check PROMIS for the completed TB screening questionnaire, the IGRA blood test result and the chest x-ray report. If any of these components are missing two weeks after the “Alert” was sent, BCCDC will notify the patient’s HD unit. The HD unit will be responsible for following-up with the patient.

Recommendation #4:
HA HD programs and local laboratories are responsible for establishing processes to educate HD nurses on the collection and handling of blood samples from fistulas/grafts/central venous catheters as per Appendix 6.

Recommendation #5:
After analysis of the results, BCCDC TB Services will issue a letter/report, including recommendations.

*In Island Health, BCCDC will fax copies of the TB screening questionnaire, IGRA blood test results and the chest x-ray report to the Island Health TB Clinic (BCCDC will also upload a copy of the chest x-ray report into PROMIS). The Island Health TB Clinic will analyze the results and issue a letter/report, including recommendations. The Island Health TB Clinic will fax a copy of the letter/report to BCCDC TB Services. BCCDC TB Services will upload the letter/report into PROMIS. Island Health TB Clinic will follow-up on the results with the patient/appropriate care providers.

BCCDC TB Services will manually upload the letter/report, including recommendations, into PROMIS. Letters/reports will be available in PROMIS within 1 month of the three tests being received by the BCCDC. To review the letter/report in PROMIS, go to “Document History - TB Services Recommendations.”

There are five types of letters/reports based on the results:
1. Non-reactive IGRA
2. Reactive IGRA (Latent TB infection)
3. Inconclusive IGRA
4. Active TB
5. Incidental Findings (chest x-ray findings unrelated to TB)

Distribution of the letters/reports and follow-up of results will depend upon the outcome of the testing. See Appendix 7 for an overview of letter/report distribution and follow-up for each type of result. Copies of the letters/reports for different result types are available in Appendix 8.
**Recommendation #6:**
Implement appropriate TB precautions within the dialysis unit as per follow-up protocols. LBTI is not infectious, therefore, there are no specific infection control procedures required for patients diagnosed with LTBI. If active TB is identified, local facility infection control procedures should be implemented and reported to BCCDC.

**4.0 Procedure**

*Dialysis unit responsibilities: as were originally framed to be done prior to program startup:*

1. Designate a person(s) responsible for setting up and maintaining TB screening processes and to ensure the process is completed for every new HD patient (e.g., Patient Care Coordinator).

2. Establish a method to track new HD patients and status of TB screening components (e.g., excel worksheet, etc). In the long-term, this tracking will be supported by a report developed and available in PROMIS.

3. Add to pre-printed orders for new chronic HD patients:
   - Complete TB screening questionnaire
   - IGRA blood test (QFT-GIT)
     *Vancouver General Hospital: IGRA blood test (T-SPOT)*
   - Chest x-ray within the past 3 months

4. Once patient is registered in PROMIS, print the following documents from PROMIS and add to new HD patient package:
   - Auto-populated TB screening questionnaire
   - Auto-populated laboratory requisition for IGRA (QFT-GIT) blood test
   - Auto-populated chest x-ray requisition (unless a chest x-ray was completed within the previous 3 months)
   *It is important to use the forms in PROMIS that are auto-populated. DO NOT USE STANDARD LAB REQUISITIONS/CHEST X-RAY FORMS.*

5. Obtain blood collection tubes for IGRA testing (hospital laboratory to provide).
**Procedure:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Action</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| 1 Preparation | • Enter name of patient on TB tracking spreadsheet.  
• Ensure PROMIS CORR data elements are up-to-date (within the past 30 days). | RN/Unit Clerk |
| 2 TB screening questionnaire | After patient is registered in PROMIS, print questionnaire from PROMIS (see Appendix 2 for an example of a printed questionnaire & Appendix 3 for PROMIS screen shots).  
• Go to the Monitoring Menu  
• Select the TB Screening Questionnaire form  
• Select Patient  
• Enter assessment date, check the box next to “population at risk” and identify “renal TB screening” in the drop-down box  
• In Risk Factors section, check “chronic renal disease/dialysis”  
• Save  
• Go to Reports Menu  
• Select TB Services  
• Select TB Screening Questionnaire  
• Select Run Report button to print out TB Screening Questionnaire with Assessment  
• Place form in new patient chart  

Fill out form with patient.  
Enter information on form into PROMIS.  
• Select Monitoring Menu  
• Select Assessment and Questionnaire  
• Select TB Services  
• Select Patient Name  
• Enter information  
• Select “Save”  
Discard hard copy form once entered into PROMIS.  
Note that TB screening questionnaire has been entered into PROMIS on TB tracking spreadsheet. | Unit Clerk  
RN  
Unit Clerk |
## Tuberculosis Screening & Follow-Up

### Component 3: IGRA (QFT-GIT) blood test

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Print lab requisition from PROMIS (auto-populates with demographics & name of test - see Appendix 4 for an example).  
- Select Patient  
- Go to Reports Menu  
- Select TB Services  
- Select IGRA QFT Requisition  
- Select Ordering Physician — Dr Victoria Cook (BCCDC TB physician)  
  *Island Health — select Ordering Physician — Dr Alasdair Polson (Island Health TB Clinic Physician)  
- Select Clinic  
- Select Location (HD Unit)  
- Select Run Report to print IGRA QFT requisition.  
  *Vancouver General Hospital: Cross out “QFT Gold in Tube” on the pre-populated requisition. Check off “T-Spot.”  
- Provide requisition to RN.  
Collect blood sample (check with local laboratory as to limitations on days that samples can be received).  
- Draw blood as per the procedure in Appendix 6.  
- Attach label to sample (usual patient label) & send sample & requisition to hospital laboratory.  
Document completion of blood test.  
- Note that blood sample was collected on TB tracking spreadsheet  
- Enter into PROMIS that blood sample was collected (see Appendix 3, form C).  
  - “Nurse Completes - II” Tab: QFT & Date Ordered in PROMIS.  
  *Vancouver General Hospital: Enter T-Spot (not QFT).  
| Unit Clerk | RN or Lab | Unit Clerk |

### Component 4: Chest x-ray

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| If no chest x-ray done in the past 3 months, print out chest x-ray requisition from PROMIS (see Appendix 5 for an example) & give to patient.  
- Go to Reports  
- Select TB Screening Chest X-Ray Requisition  
- Select patient  
- Select ordering physician: Dr Victoria Cook (BCCDC TB physician)  
  *Island Health: Select ordering physician: Dr Alasdair Polson (Island Health TB Clinic physician)  
- Select Clinic  
- Select Location (HD Unit)  
- Select Run Report to print chest x-ray requisition  
- Instruct patient to have chest x-ray done at hospital medical imaging department within the week.  
| Unit Clerk |
## Tuberculosis Screening & Follow-Up

<table>
<thead>
<tr>
<th>Component</th>
<th>Action</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| If chest x-ray done in the past 3 months, do not repeat.  
- Go to the Monitoring Section in PROMIS  
- Select TB services  
- Go to the "Nurse Complete II" Tab (see Appendix 3, form C).  
- Enter the date the CXR was completed and the location into the comments section.  
- BCCDC will review the report and upload into PROMIS. | Unit Clerk |
| Document status of chest-x-ray (see Appendix 3, form C).  
- Note that chest-x-ray requisition was given to patient or completed in past 3 months on TB tracking spreadsheet.  
- If no chest x-ray done in the past 3 months, enter Chest X-Ray Ordered and the date on the “Nurse Completes - II” Tab in PROMIS.  
- If chest x-ray done in the past 3 months, document in PROMIS as per the previous section. | Unit Clerk |
| Advise BCCDC that all 3 activities are complete. | RN/Unit Clerk |
| Once all 3 activities have been completed:  
- Go to Monitoring  
- Go to Patient Information tab  
- Click the “Alert button” at the bottom left of the screen (see Appendix 3, form A).  

Note: Both the Date Chest X-Ray Ordered and the Date IGRA Ordered must be completed for the Alert button to be active to then be able to press and send the alert to BCCDC. | RN/Unit Clerk |
| Close out  
Note that BCCDC has been “alerted” that all activities have been completed on TB tracking spreadsheet. | RN/Unit Clerk |

**BCCDC contact for questions:** TB Nurse Consultant, 604-707-5678 or tbnurseconsultants@bccdc.ca
5.0 References


6.0 Sponsors

This BCPRA guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoid opinion-based statements where possible; refer to www.bcrenalagency.ca for the most recent version.

Developed by:
- A working group of representative groups of renal clinicians and directors/managers, BC laboratories, BCCDC TB Services, Island TB Clinic and the BC Provincial Renal Agency

Approved by:
- BCPRA Hemodialysis Committee
- BCPRA Medical Advisory Committee
- Provincial Committee for Implementation of TB Screening for Dialysis Patients (BCPRA/ BCCDC, BC Public Health Microbiology and Reference Lab)

7.0 Appendices

Appendix 1: TB Screening & Follow-Up Workflow for Incident (New) Hemodialysis Patients

Appendix 2: Printed report of TB Screening Questionnaire

Appendix 3: TB Questionnaire Snapshot — PROMIS

Appendix 4: Example of IGRA Lab Requisition in PROMIS

Appendix 5: Example of Chest X-Ray Requisition in PROMIS
Appendix 6: QuantiFERON-TB Gold In-Tube Test
Blood Collection and Tube Handling Technique

Appendix 7: Distribution of Reports/Letters & Follow-Up of Results

Appendix 8: Samples of Follow-Up Reports/Letters for Different Results:
• 8a: Non-reactive IGRA: Letter 1
• 8b: Reactive IGRA (Latent TB Infection):
  Letters 2a, 2b, 3, 4, 5 and 6
• 8c: Inconclusive IGRA: Letter 7
Appendix 1: TB Screening & Follow-Up Workflow for Incident (New) Hemodialysis Patients

Note 1: For specifics on report distribution and follow-up result type, refer to appendices 7 and 8.
Appendix 2: Example of TB Screening Questionnaire

1. Please complete all yellow highlighted sections (unless pre-populated with correct information).
Appendix 3: TB Questionnaire Snapshot- PROMIS

Form A: TB Screening Questionnaire
Appendix 3: TB Questionnaire Snapshot- PROMIS

Form B: “Nurse Completes - I” Tab

Form C: “Nurse Completes - II” Tab
## Appendix 4: Example of IGRA Lab Requisition

### PHSA Laboratories

**Public Health Microbiology & Reference Laboratory**

**Zoonotics Diseases & Emerging Pathogens Requisition**

**BC Centre for Disease Control, 655 West 12th Avenue, Vancouver, BC V5Z 4R4**

www.phsa.ca/boodpublichealthlab

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### Section 1 - Patient Information

<table>
<thead>
<tr>
<th><strong>PERSONAL HEALTH NUMBER</strong> (for client province health number and private)</th>
<th><strong>DOB (DD/MM/YYYY)</strong></th>
<th><strong>GENDER</strong></th>
<th><strong>DATE RECEIVED</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TB100016</td>
<td>26/NOV/1994</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

**PATIENT SURNAME**: Jane

**ADDRESS**: 123 Main

**CITY**: Vancouver

**POSTAL CODE**: V6Z1J6

---

### Section 2 - Healthcare Provider Information

**ORDERING PHYSICIAN**: (Previous MDs)

**ADDITIONAL COPIES TO**: (Address/MD) -

1. PROMS
2. BCDC TB Services
3. 

**CLINIC OR HOSPITAL**: Vancouver Hospital and H.S.C., 805 12TH Ave West, Vancouver, V5Z 1J6

**PHSA CLIENT NO.**: 

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### Section 3 - Test(s) Requested

**VIRUSES**

- Arbovirus Panel
- Eastern Equine Encephalitis, Western Equine Encephalitis, Powassan, St. Louis Encephalitis
- Dengue Virus Antibody
- Hanta Virus Antibody
- West Nile Virus Antibody
- Other, specify:

**Travel / Clinical History Required for Above Tests:**

**Signs / Symptoms**

- Asymptomatic
- Insect bite
- Type Location
- Neurological
- Other, specify:

**BACTERIA**

- Anti-Streptolysin O (ASO)
- Bartonella henselae
- Antibody
- PCR
- Brucella abortus Antibody
- Borrelia burgdorferi (Lyme disease) Antibody
- Borrelia hermsii Antibody
- Brucella abortus Antibody
- Coxiella burnetii (Q-fever) Antibody
- Diptheria Antitoxin
- Francisella tularensis Antibody
- Helicobacter pylor Antigen (Feces)
- Legionella sp. urinary Antigen
- Leptospira spp.
- Antibody
- PCR
- Mycobacterium avium intracellulare (Ricky Mountain Spotted Fever)
- TB Interferon Gamma Release Assay
- QFT Gold In Tube
- T spot

**PARASITES**

- Echinococcus spp. Antibody
- Entamoeba histolytica (Amoebic) Antibody
- Schistosoma spp. Antibody
- Strongyloides sp. Antibody

**THYROID HISTORICAL REQUIRED FOR ABOVE TESTS:**

- Travel within past 12 months, specify:

**SYPHILIS**

- VDRL (CSF sample only)
- L. M. CSF in sterile leak proof tube
- Treponema pallidum Nucleic Acid Testing
- Submit sputum, tissue or body fluid
- Darkfield (DF) Microscopy
- Direct Fluorescent Assay (DFA) Microscopy

**SYPHILIS**

<table>
<thead>
<tr>
<th><strong>Signs / Symptoms</strong></th>
<th>Asymptomatic</th>
<th>Rash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other, specify:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FUNGI**

- Blastomyces dermatitidis Antibody
- Coccidioides sp. Antibody
- Cryptococcus neoformans Antigen
- Histoplasma sp. Antibody
- Other, specify:

**TB IGRA TESTING CRITERIA**

1. TST negative, uncompromised
2. TST positive, BCG negative
3. TST positive, Aboriginal / Foreign born
4. Hemolysin patient

**For all other indications and additional information, consult the Public Health Microbiology & Reference Laboratory’s Guide to Programs and Services at**

www.phsa.ca/boodpublichealthlab

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Form DCZP_100_0001F Version 2.0 03/2015
Appendix 5: Example of Chest X-Ray Requisition

Requisition For Chest X-Ray

Name: ADEMO00001, JANE
DOB: 31-JUL-1946
PHN:

Address: 123 MAIN, VANCOUVER, BC, V6Z1Y6
Phone: CELL:
HOME/RESIDENTIAL:

Ordering Physician: COOK, VICTORIA J
Ordering Physician’s MSP #: 27172

Exam Requested: CHEST PA and LATERAL
Exam Reason: Rule Out TB - Renal TB Screening

Requisition For Chest X-Ray

Hospital of Radiology Service performing x-ray:

X-ray Date: __________________________ X-ray Number: __________________________

X-ray instructions: Please return x-ray (unread) with this requisition to the office serving your Health Authority

Copy to Ordering Physician: COOK, VICTORIA J
Location: Hemodialysis Unit
Clinic: Abbotsford Rgnl. Hosp. & C.C.
Address: 32900 Marshall Road, Abbotsford, V2S 0C2
Fax:

Billing instructions: Please send packing slip to BCCDC TUBERCULOSIS SERVICES
655 WEST 12TH AVE
VANCOUNVER BC
V5Z 4R4

Copy to: BCCDC TB SERVICES
655 WEST 12TH AVE
VANCOUNVER BC
V5Z 4R4
Appendix 6: QuantiFERON-TB Gold In-Tube Test Blood Collection and Tube Handling Technique

Step 1: Blood Collection

**Before dialysis,** collect 1 mL blood into each tube (the black mark on the side of the tubes indicates the 1 mL fill volume). Hold tube on needle for 2 - 3 seconds after flow ceases. Repeat tube if not close to black fill line.

Blood should not be over the black mark on the tube. Suction should automatically stop after there is enough blood (1 mL) in the tube.

Order of collection:
1. Tall red (this is to purge air; there is no need to fill the whole tube. Discard this tube after use.)
2. Grey cap (Nil Control)
3. Red cap (TB Antigen)
4. Purple cap (Mitogen Control)

Step 2: Tube Shaking

Immediately after filling tubes, shake them ten (10) times, just firmly enough to ensure entire inner surface of tube is coated with blood, to solubilize antigens on the wall of the blood tube. Tubes should be between 17 and 25°C at time of blood filling. Over-energetic shaking may cause gel disruption and could lead to aberrant results.

Step 3: Label Tubes & Send to Local Laboratory

When labelling the tube, do not cover the black mark and the window. Send tubes to the local laboratory at the in-centre unit hospital as soon as possible (tubes must be incubated within 16 hours of collection). Do not refrigerate or freeze the blood samples. The laboratory will incubate, centrifuge, aliquot and ship samples to the BC Public Health Microbiology and Reference Lab, Zoonotic Diseases & Emerging Pathogens Program.

Notes:
1. If the QuantiFERON tubes are collected after other bloodwork is collected (e.g., q6 weeks), there is no need to use the tall red tube as a purge tube
2. Do not use the Nil tube as a purge tube. Tubes are purchased as a set and cost $20/set.
3. If several tubes in a lot are faulty, notify the Zoonotic Lab of the lot number for further investigation.
4. If another tube must be used for collection, set aside the remaining tubes in the set for future use, as needed.
5. Check the expiry date of the collection tubes prior to blood collection.

Adapted from: QuantiFERON®-TB Gold Instruction Sheet

BC Provincial Renal Agency • Suite 700-1380 Burrard St. • Vancouver, BC • V6Z 2H3 • 604.875.7340 • BCRenalAgency.ca October 2016
Appendix 7: Distribution of Reports/Letters & Follow-Up of Results

Process Flowchart_v3 August 26, 2016

**Note:** Island Health faxes copies of all letters to BCCDC and uploads into PROMIS.

**LETTER 1**
- BCCDC mails letter to nephrologist, renal unit, GP, and uploads report into
- BCCDC mails follow up recommendations report to GP/PH
- Island Health Patient: contacts patient directly with appointment and faxes appointment information to dialysis unit
- N/A, N/A Patient: GP/PH contacts patient for follow up

**LETTER 2a**
- BCCDC/Island Health Patient: contacts patient directly with appointment and faxes appointment information to dialysis unit

**LETTER 2b**
- BCCDC/Island Health mails letter and requisition to patient, and uploads into PROMIS

**LETTER 3**
- BCCDC/Island Health mails letter and requisition to patient, and uploads into PROMIS

**LETTER 4**
- Nephrologist, GP, PH, renal unit notified of end of treatment (completed or not)
- Documentation uploaded into PROMIS

**LETTER 5**
- Nephrologist, GP, PH, renal unit notified of decision. Documentation uploaded into PROMIS

**LETTER 6**
- Nephrologist, GP, PH, renal unit notified of end of treatment (completed or not)
- Documentation uploaded into PROMIS

**LETTER 7**
- BCCDC/Island Health mails letter and requisition to patient, and uploads into PROMIS

**Active TB**
- BCCDC/Island Health will manage
- Nephrologist, GP, PH, renal unit notified of end of treatment (completed or not)
- Documentation uploaded into PROMIS

**Incidental Findings**
- No further follow up required

A copy of the chest x-ray report will be forwarded to the nephrologist with note for him/her to follow up based on clinical context.
8a: Letter Associated with Non-Reactive IGRA Results

LE TTER 1

August 30, 2016

Dr.

Re: Patient Name DOB:

The Provincial Tuberculosis (TB) Services has received a TB screening form regarding the above dialysis patient. There is no evidence of TB infection or disease. This patient is cleared for TB screening purposes. Further testing is not recommended at this time.

Follow up is recommended in accordance with disease specific protocols. Contact TB Services if symptoms develop or at the discretion of a physician.

If you have any further questions, please contact a TB Services Nurse Consultant at 604-707-5578.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control
Letter 2a

August 30, 2016

Dr.

Re: Patient Name, IGRA Result: DOB:

Reason screened:

Provincial Tuberculosis (TB) Services has received a TB screening form for this dialysis patient and there is evidence for latent TB infection (LTBI). Patients on dialysis are at a higher risk for developing active TB compared to the general population, so treatment is indicated barring significant contraindications. First line treatment of LTBI consists of isoniazid 300mg and vitamin B6 25mg daily for a period of 9 months. The diagnosis, treatment, side effects of the medication (including hepatitis, rash and GI upset) and need for clinical follow-up/blood work should be discussed with the patient prior to starting LTBI treatment. Alcohol and/or pregnancy should be avoided while on treatment. An exit chest film is not required at the completion of therapy if the baseline film was normal. TB medication can be obtained free of charge from the local public health office.

An appointment has been made for this patient on _______ at the _______ located at: _______

If the patient is unable to make this appointment, please contact us at 604-707-2692 to discuss other appointment times.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control

BC Provincial Renal Agency • Suite 700-1380 Burrard St. • Vancouver, BC • V6Z 2H3 • 604.875.7340 • BCRenalAgency.ca

October 2016
Appendix 8: Samples of Follow-Up Reports/Letters for Different Results

8b: Letter Associated with Reactive IGRA (Latenet TB) Results

Letter 8b

August 30, 2016

Dr.

Re: Patient Name, IGRA Result: DOB:

Reason screened:

Provincial Tuberculosis (TB) Services has received a TB screening form for this dialysis patient and there is evidence for latent TB infection (LTBI). Patients on dialysis are at a higher risk for developing active TB compared to the general population, so treatment is indicated barring significant contraindications. First line treatment of LTBI consists of isoniazid 300mg and vitamin B6 25mg daily for a period of 9 months. The diagnosis, treatment, side effects of the medication (including hepatic, rash and GI upset) and need for clinical follow-up/blood work should be discussed with the patient prior to starting LTBI treatment. Alcohol and/or pregnancy should be avoided while on treatment. An exit chest film is not required at the completion of therapy if the baseline film was normal. TB medication can be obtained free of charge from the local public health office.

We encourage you to review the patient, the LTBI brochure at www.bccdc.ca/LTBIfacts and the 4.5-minute video explaining LTBI in a number of languages at www.bccdc.ca/TBVideos.

If the decision is to start LTBI treatment, please arrange an appointment with public health.

If you require further information, please contact a TB Services Nurse Consultant at (604) 707-5576.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control
Appendix 8: Samples of Follow-Up Reports/Letters for Different Results

8b: Letter Associated with Reactive IGRA (Latent TB) Results

Letter

August 30, 2016

Dr.

Re: Patient Name

DOB:

Reason screened:

TB Services has received TB screening results for the above dialysis patient and there is evidence for latent TB infection (LTBI). Treatment for LTBI is recommended.

We have notified this patient’s General Practitioner and their local Public Health Office to review LTBI treatment options with the patient. We will inform you of the patient’s decision regarding treatment.

If you require further information, please contact a TB Services Nurse Consultant at (604) 707-5678.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control
8b: Letter Associated with Reactive IGRA (Latenet TB) Results

Letter 4

August 30, 2016

To: Patient Name  DOB:

This patient has initiated treatment for latent TB infection. The patient has been prescribed [Choose an item].

Your office will be notified when treatment ends. TB Services would be happy to provide additional advice upon request. If you require further information, please contact TB Services at the number above.

Sincerely,
TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control
8b: Letter Associated with Reactive IGRA (Latent TB) Results

August 30, 2016

To: Patient Name  DOB: 

This patient has refused treatment for latent TB infection.

If this patient develops symptoms suggestive of active TB such as cough lasting longer than three weeks' duration, haemoptysis or unexplained weight loss or fever, please send the patient for a chest x-ray, collect 3 sputum samples for AFB smear and culture, and contact TB Services.

If you require further information, please contact TB Services at the number above.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control
Appendix 8: Samples of Follow-Up Reports/Letters for Different Results

8b: Letter Associated with Reactive IGRA (Latenet TB) Results

Letter 6

August 30, 2016

To: Patient Name DOB:

This patient has completed treatment for latent TB infection. No further follow up is necessary.

If this patient develops symptoms suggestive of active TB such as cough lasting longer than three weeks' duration, haemoptysis or unexplained weight loss or fever, please send the patient for a chest x-ray, collect 3 sputum samples for AFB smear and culture, and contact TB Services.

If you require further information, please contact TB Services at the number above.

Sincerely,
TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control

Provincial Health Services Authority
Better health.
Appendix 8: Samples of Follow-Up Reports/Letters for Different Results

8c: Letter Associated with Inconclusive IGRA Results

Letter 7

August 30, 2016

To: Patient Name  DOB:

You recently had a blood test for Tuberculosis (TB) at your dialysis unit, which needs to be repeated.

This blood test will show if you have “sleeping” TB infection. Treatment for “sleeping” TB is available and can prevent active TB in the future.

The TB blood test can be drawn at various locations. This information has been included with this letter along with another blood test requisition.

Please contact us if you have any questions or concerns at the number above.

Sincerely,

TB Services

Provincial TB Services, Clinical Prevention Services
BC Centre for Disease Control

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October 2016