DIAGNOSTIC SERVICES OF MANITOBA SERVICES DE DIAGNOSTIC DU MANITOBA
Physician Alert

CLINICAL PRACTICE CHANGE

Date: November 8, 2012

To: All Physicians Involved in Treating Patients with Active Tuberculosis

From: Dr. Michelle Alfa, Dr. Martha Ainslie, Dr. William Libich, Dr. Maryanne Crockett

Re: **Molecular Resistance Reporting for Tuberculosis**

TAKE HOME MESSAGES:

1. Molecular detection of resistance genes has reduced the turn around time (TAT) for receiving information on antimicrobial resistance for *Mycobacterium tuberculosis* isolates (average TAT of four days versus 21 days previously).
2. When molecular resistance mutations are reported, add second-line agents as needed but only discontinue the first-line agents that have molecular resistance once growth-based results are subsequently reported.

Since April 2012 Diagnostic Services of Manitoba (DSM) Clinical Microbiology has been reporting the results of molecular resistance detection testing for rifampin (RMP), isoniazid (INH) and pyrazinamide (PZA) for *M. tuberculosis* isolates. Molecular testing is not available for ethambutol (EMB). Molecular testing has reduced the turn around time (TAT) to an average of four days versus 21 days for growth-based antimicrobial susceptibility results. The molecular resistance results will be available several weeks before the regular growth-based susceptibility results are available. If there is a discrepancy between molecular resistance and growth-based results, the growth-based results are to be used. This memo is intended to provide an update on modification of therapy when molecular resistance is detected.

If you receive results indicating molecular resistance to any of the first-line agents, the most prudent approach is to initiate therapy with one or more appropriate second-line agents and to **continue therapy with all of the first-line agents**. Once the growth-based results are subsequently reported, any first-line agent that shows resistance should then be discontinued. See the following example:

Date	Lab Result	Action
July 1, 2012	Patient diagnosed with active tuberculosis [culture was probe positive for *M. tuberculosis* complex]	Therapy with INH, RMP, PZA and EMB started
July 6, 2012	Molecular testing shows: RMP, PZA have no mutations for resistance but INH does have mutations that correlate with resistance	Add second-line agent(s) and continue INH, RMP, PZA, and EMB
July 24, 2012	Growth-based susceptibility results show: INH: high-level resistance; RMP, PZA, EMB are all sensitive	Stop INH but continue with the second-line agents that were started as well as RMP, PZA, and EMB
Aug 1, 2012	Growth-based susceptibility results for second-line agents	Modify as per susceptibility results for second-line agent(s)

If you have further questions or require clarification regarding this memo, please contact: Dr. M. Alfa (204-237-2105), Dr. M. Ainslie (204-787-1639), Dr. W. Libich (204-940-2580), or Dr. M. Crockett (204-789-3891).

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