



**MLS: Laboratory Update**  
**Discordant Results from Reverse Sequence Syphilis Screening**  
**February 18, 2011**

**Purpose of this Message:** To make the laboratory community aware of a recent Morbidity and Mortality Weekly Report (MMWR) regarding the discordant findings from a CDC study of the performance of reverse sequence screening for syphilis.

**Reference**

Morbidity and Mortality Weekly Report (MMWR) Weekly / Vol. 60 / No. 5 February 11, 2011 **Discordant Results from Reverse Sequence Syphilis Screening — Five Laboratories, United States, 2006–2010**  
[http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6005a1.htm?s\\_cid=mm6005a1\\_e&source=govdelivery](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6005a1.htm?s_cid=mm6005a1_e&source=govdelivery)

**BACKGROUND**

CDC recommends syphilis serologic screening with a nontreponemal test, such as the rapid plasma reagin (RPR), unheated serum reagin (USR) or Venereal Disease Research Laboratory (VDRL) test, to identify persons with possible untreated infection; this screening is followed by confirmation using one of several treponemal tests [fluorescent treponemal antibody absorption (FTA), *Treponema pallidum* particle agglutination (TP-PA)]. Recently, the availability of automatable treponemal enzyme and chemiluminescence immunoassays (EIA/CIA) has led some laboratories to adopt a reverse sequence of screening in which a treponemal EIA/CIA is performed first, followed by testing of reactive sera with a nontreponemal test.

**What is already known on this topic?**

Reverse sequence syphilis screening identifies a large proportion of patients with reactive treponemal enzyme or chemiluminescence immunoassays (EIA/CIA) and nonreactive nontreponemal test results, causing uncertainty about patient management.

**What is added by this report?**

Data from five laboratories that tested 140,176 serum specimens with reverse sequence syphilis screening indicated that, among patients with reactive EIA/CIA results, 56.7% had nonreactive nontreponemal test results and among these discordant sera, 12.2% - 60.0% were nonreactive with a second treponemal test, suggesting they were false-positive results.

**What are the implications for public health practice?**

CDC continues to recommend traditional screening using a nontreponemal test followed by testing of reactive sera with a treponemal test. When reverse sequence screening is used, CDC recommends reflexively testing all sera that produce reactive EIA/CIA results with a quantitative nontreponemal test and reflexively testing sera with discordant results (i.e., reactive EIA/CIA and nonreactive RPR/VDRL test) with a confirmatory *Treponema pallidum* particle agglutination assay (TP-PA). All test results should be reported promptly and concurrently to the clinician and public health department.

**Testing at the MDH-PHL**

MDH-PHL provides confirmatory testing for syphilis by unheated serum reagin (USR) and fluorescent treponemal antibody absorption (FTA), and may be transitioning to *Treponema pallidum* particle agglutination (TP-PA) in the near future. Turn-around-time for all tests – is up to two days after receipt of specimen.

**When to send specimens for confirmation testing to MDH:**

For laboratories performing only an EIA/CIA screen, please send all reactive sera to MDH-PHL for confirmation by USR and FTA.

For laboratories performing an EIA/CIA screen then reflexing to a nontreponemal test, please send sera to MDH-PHL for USR and FTA confirmation if the EIA/CIA is reactive and the nontreponemal test is negative.

For laboratories performing only a nontreponemal screen, please send all reactive specimens to MDH-PHL for USR and FTA confirmation.

For laboratories performing a nontreponemal screen followed by a treponemal confirmation test, there is no need to submit any specimens for confirmation. However, these results are reportable to MDH.

**MDH Contacts**

For laboratory-related questions, please call MDH Virology laboratory at: 651-201-5248; or Dave Boxrud, Virology Supervisor at 651-201-5257; [dave.boxrud@state.mn.us](mailto:dave.boxrud@state.mn.us)

For any questions regarding the diagnosis of syphilis including testing algorithms or interpretations as well as to report a case of syphilis, please call MDH Syphilis Surveillance Laboratory Coordinator, Cindy Lind-Livingston at 651-201-4024; [cindy.lind@state.mn.us](mailto:cindy.lind@state.mn.us)

Thank you,

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**\*\*Please forward this to all appropriate personnel within your institution and Health System\*\***

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