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To: Directors of Laboratories that Perform Treponemal and Non-Treponemal Syphilis Testing

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# Reporting of Treponemal and Non-Treponemal Syphilis Testing and the Correct Syphilis Testing Algorithm for CDC Defined Reverse Sequence Syphilis Testing

## PLEASE DISTRIBUTE WIDELY

Dear Colleagues,

This letter is a notification regarding the reporting requirements of treponemal and non-treponemal syphilis testing as part of an effort to strengthen syphilis surveillance activities. The following are reportable to local and tribal health departments (LTHD):

- All reactive treponemal and non-treponemal syphilis testing performed at a laboratory. This includes those with non-reactive confirmatory treponemal and non-treponemal syphilis testing results. The reactive syphilis tests which are reportable include the following:
  - Rapid Plasma Reagin (RPR)
  - Venereal Disease Research Laboratory (VDRL)
  - Treponema Pallidum – Enzyme Immunoassay (EIA)
  - Treponema Pallidum – Microhemagglutination Assay (MHA-TP)
  - Treponema Pallidum – Chemoluminescence Immunoassays (CLIA)
  - Treponema Pallidum – Hemagglutination Assay (TPHA)
  - Treponema Pallidum Particle Agglutination (TPPA)
  - Fluorescent Treponemal Antibody Absorbed test (FTA-ABS)
  - Rapid Syphilis Tests (Trinity)
  - Polymerase Chain Reaction (PCR) for Treponema Pallidum
  - Darkfield tests for Treponema Pallidum
  - Other antibody/antigen tests for syphilis.

- All TPPA (Treponema Pallidum Particle Agglutination) results used to confirm a discordant initial treponemal result as part of the Centers for Disease Control and Prevention (CDC) - defined reverse sequence algorithm.

Treponemal and non-treponemal syphilis testing results are essential components of both state and national syphilis surveillance systems. Among individuals who have been diagnosed with, or who have evidence of a syphilis infection follow-up data is needed to classify syphilis infections as being recent, new, and/or repeat infections. This information is used to determine linkages to other cases of syphilis, evaluate syphilis testing efforts, determine the care and treatment of those infected with syphilis and identify unmet health care needs. A reporting policy which includes initial reactive syphilis tests with negative treponemal and non-treponemal syphilis testing results will allow DHS to implement disease intervention control practices as recommended by the CDC for national syphilis surveillance.

Statutory authority is granted to the state epidemiologist to determine reportable laboratory, medical, or epidemiologic information related to the diagnosis, surveillance, control, and prevention of communicable diseases as follows:

> 252.05 (2) "Each laboratory shall report as prescribed by the department those specimen results that indicate that an individual providing the specimen has a communicable disease, or having a communicable disease, has died, or that the department finds necessary for the surveillance, control, diagnosis, and prevention of communicable diseases."

Results may be reported via directly interfaced Electronic Laboratory Report (ELR), web-based laboratory reporting (WLR), or traditional paper-based reports. Questions regarding electronic methods of reporting, ELR or WLR, can be directed to the Wisconsin Electronic Disease Surveillance System at DHSWEDSS@dhs.wisconsin.gov. Information regarding traditional paper-based reports can be located on the DHS sexually transmitted (STI) webpage, https://www.dhs.wisconsin.gov/std/health-pros.htm, including contact information regarding any questions.

## Reverse Sequence Syphilis Testing

To ensure the timely reporting of all syphilis cases, it is necessary that all of the syphilis testing be performed, to the best of the laboratory's ability, from the same blood specimen. This includes performing reflex syphilis testing per the CDC recommendations. The traditional CDC model is performing a non-treponemal test first, and if reactive, reflexively performing the treponemal test afterwards. Before a patient is considered to have syphilis, both a treponemal and non-treponemal test should be performed. If either or both of these results are reactive, the results should be sent to the LTHD.

Reverse Sequence testing starts with a treponemal test first. If the treponemal test is reactive, a non-treponemal test is performed. Because of the sensitivity and specificity of the initial treponemal test for most reverse sequence testing, a TPPA may need to be performed. This would happen reflexively if the treponemal and non-treponemal tests are discordant (the treponemal is reactive the non-treponemal test is non-reactive). While it may seem discordant results might not mean exposure to syphilis, there have been instances where the TPPA results showed the patient has in fact been exposed to syphilis. This is why reflexive testing to the TPPA is vital in discovering these cases as soon as possible.

For more information on traditional and reverse sequence testing, please see the 2021 CDC STI Treatment Guidelines for syphilis under the Traditional and Reverse Sequence Testing Sections.

Periodically, inconclusive test results may happen. If the initial treponemal test is inconclusive, both the non-treponemal and the TPPA should be performed to determine the accuracy of the initial treponemal test result. If the TPPA is inconclusive, a three-week follow-up test should be performed to determine if the patient was sero-converting at the time of the initial test. If medical personnel have questions regarding this, please have them call or email to the names below.

For individuals with a previous history of syphilis, including testing and treatment, the non-treponemal tests are the only test which need to be performed. Non-treponemal test titers will be matched to determine if the new result is indicative of a new syphilis case or a previous syphilis case. Educating medical personnel on which syphilis testing to order can help them avoid ordering the wrong test. Also, while medical personnel may have most of the syphilis reactive test results, health departments may have additional reactive syphilis test results to determine if specimens are from a new or previous case of syphilis. Any questions regarding syphilis reporting and or syphilis testing can be directed to:

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Thank you very much for your help in assisting the Wisconsin STI Unit in strengthening its surveillance and disease intervention activities for syphilis in Wisconsin.