MDHHS
Michigan Department of Health & Human Services

SYPHILIS TESTING REFERENCE GUIDE

Syphilis is caused by the infection of treponema pallidum, a spirochete bacterium. There are two types of tests used to detect syphilis, treponemal and non-treponemal:

Treponemal tests include: **CIA, EIA, FTA, TP-PA, Trep. pallidum IgG/IgM (MIA)**

- Considered confirmatory tests.
- If **reactive** = **current or past infection**.
- Typically stays reactive, regardless of treatment.
- If **non-reactive** = client **not infected** with syphilis.

Non-treponemal antigen tests include: **RPR, USR, VDRL, STS*** (*plasma center only)

- Considered screening or monitoring tests.
- May be non-reactive or reactive, if reactive, should be diluted to establish **titer**.
- A **titer** is a measure of the amount of antibody formed in response to syphilis.
- **Titers** decline after proper treatment over a period of months to years.

Below are some titer dilutions depicting a fourfold increase and decrease:

1:128
1:64
1:32
1:16
1:8
1:4
1:2
1:1
NR

Titers should decline **at least** fourfold after proper treatment and can take from a few months - two years.

A fourfold increase/higher indicates a new infection.

Titers can fluctuate after treatment by increasing twofold (one dilution) while still decreasing overall.

RPRs are typically 1-2 titer dilutions higher than a VDRL or USR (possibly 3 dilutions higher than USR) on the same sample.

RPR 1:32 is comparable to:

VDRL 1:16 or 1:8

and

USR 1:16, 1:8, or 1:4 (possible)

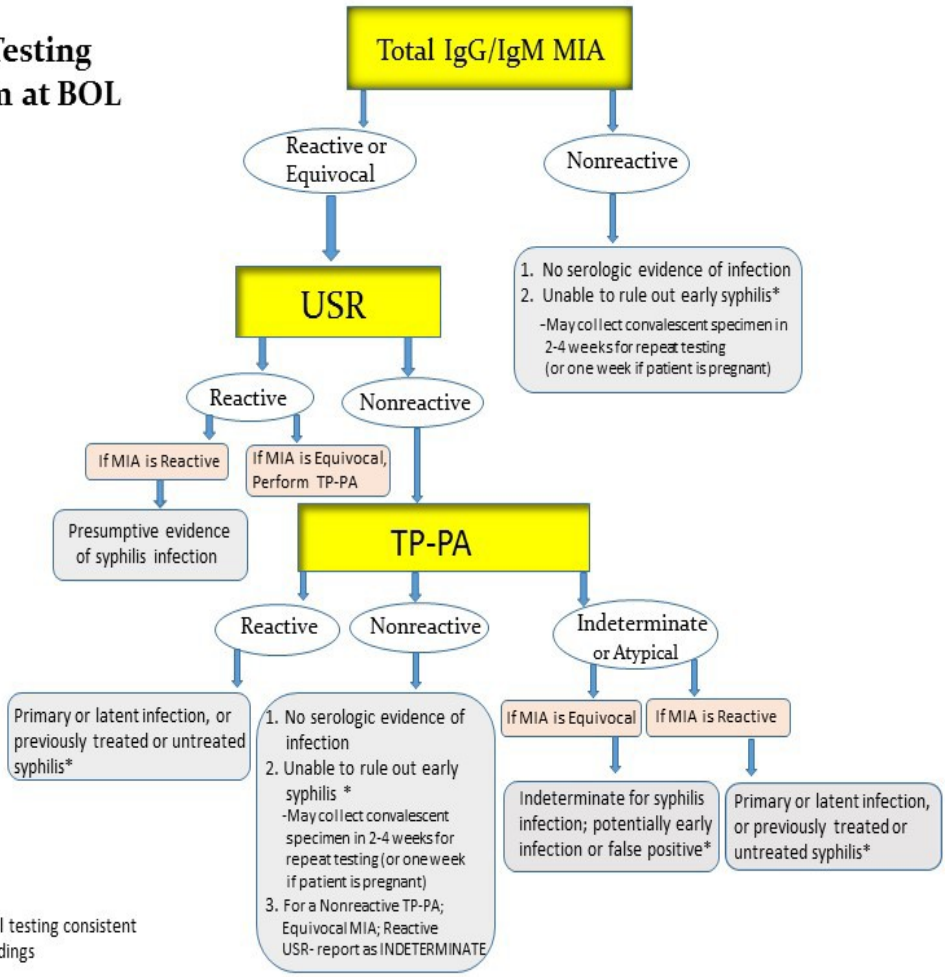
It is preferable to compare the **same non-treponemal tests** when determining a new infection or to verify adequate response to treatment on an individual.

Syphilis testing is typically done by **reverse algorithm**. [1]

This indicates that the treponemal (confirmatory) test is done initially and ***if reactive*** it should reflex (allow for) a non-treponemal test to be run on the sample. **If the sample doesn't reflex, a non-treponemal test should be ordered immediately.**

[1]A diagram of the reverse testing algorithm that the BOL at Michigan Department of Health and Human Services is on back

Reverse Testing Algorithm at BOL



*Recommend additional testing consistent with clinical history findings

Non-Treponemal (USR)/Treponemal Test Result	Interpretation Guide
Nonreactive Treponemal	No serologic evidence of syphilis infection. Recommend additional testing consistent with clinical history findings*.
Reactive USR/Reactive Treponemal	Presumptive evidence of syphilis infection.
Nonreactive USR /Nonreactive Treponemal	No serologic evidence of syphilis infection. Recommend additional testing consistent with clinical history findings*.
Nonreactive USR/Reactive Treponemal	Primary or latent infection, or previously treated or untreated syphilis. Recommend additional testing consistent with clinical history findings*.
Reactive USR/Nonreactive Treponemal (For special requests or forward algorithm testing)	Syphilis infection unlikely; biological false positive likely. Recommend additional testing consistent with clinical history findings*.
Reactive MIA Total (IgG/IgM)/Nonreactive USR/ Indeterminate or Atypical TP-PA (supplemental)	Presumptive evidence of syphilis infection.
Equivocal MIA Total (IgG/IgM)/Nonreactive USR/ Indeterminate or Atypical TP-PA (supplemental)	Indeterminate for syphilis infection; potentially early infection or false positive. Recommend additional testing consistent with clinical history findings*.
Equivocal or Reactive MIA Total (IgG/IgM)/ Nonreactive USR/Nonreactive TP-PA (supplemental)	No serologic evidence of syphilis infection. Recommend additional testing consistent with clinical history findings*.
Equivocal MIA Total (IgG/IgM)/Reactive USR/ Nonreactive TP-PA (supplemental)	Indeterminate for syphilis infection; potentially early infection or false positive. Recommend additional testing consistent with clinical history findings*.

***Specimen may have been collected before the production of detectable antibody. If recent infection is suspected, submit a convalescent specimen in 2-4 weeks (or one week if patient is pregnant). The predictive value of a reactive USR test in the serologic diagnosis of syphilis is increased when combined with a reactive treponemal test. Interpretation of results must be used in conjunction with the clinical signs and symptoms, medical history and other clinical/laboratory findings.