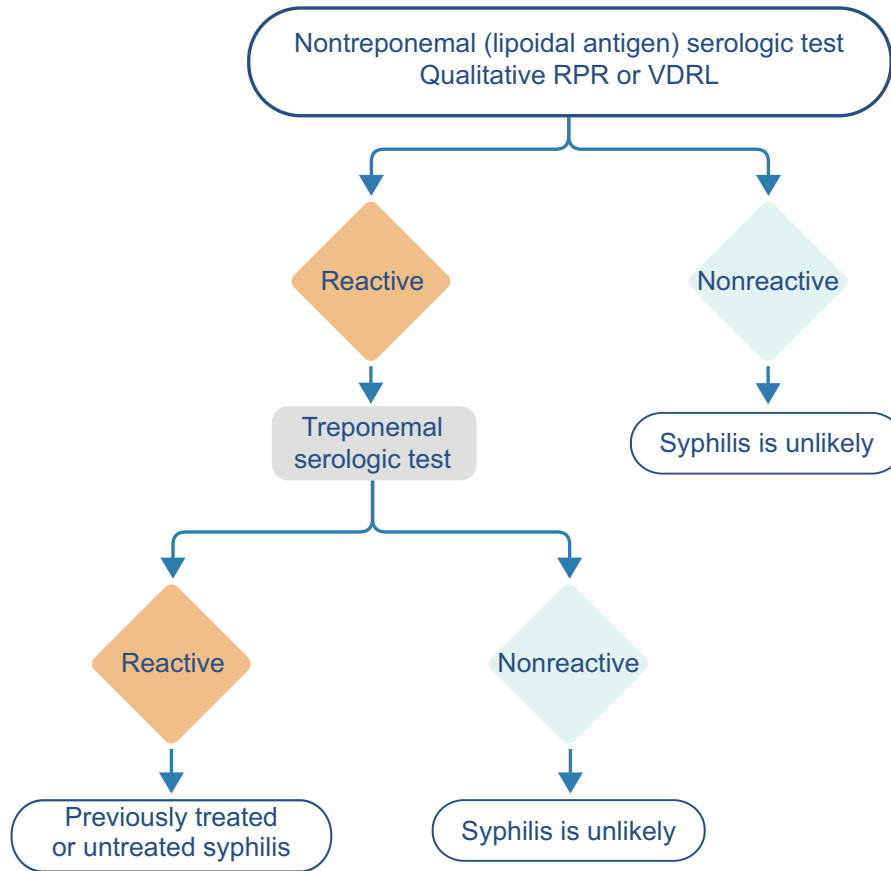


Traditional Algorithm for Syphilis Screening



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- Screen with lipoidal antigen test (e.g., RPR, VDRL), then, if reactive, follow with a treponemal test (e.g., EIA, CIA, TP-PA).
- Lipoidal antigen tests detect IgM and IgG antibodies directed against lipoidal antigens released due to cell damage from the host and bacteria. These antibodies may not be detected until six weeks after infection.
- 80% of public health labs reported using the traditional algorithm.

Abbreviations

CIA = chemiluminescence immunoassay

EIA = enzyme immunoassay

RPR = rapid plasma regain

TPPA = *Treponoma pallidum* particle agglutination

VDRL = Venereal Disease Research Laboratory

Pros

- More cost-effective in low-prevalence settings.
- Detects active syphilitic infection.
- Can measure treatment response.
 1. 4-fold *decrease* in titer indicates successful treatment.
 2. 4-fold *increase* in titer indicates reinfection, treatment failure, or testing too soon after treatment. Recommended not to retest until at least eight weeks after treatment.

Cons

- A manual process involving a trained operator and pipetting steps. Often, tests are batched to efficiently use the manual operator's time, which can delay results.
- Decreased sensitivity in early primary and latent syphilis. May miss up to 40% of untreated late latent syphilis as titer may return to nonreactive without treatment.
- If a non-treponemal test is not reactive and early primary or latent syphilis is suspected, a treponemal test should be sent. If early primary syphilis is suspected and the treponemal test is also not reactive, a physical exam may assist with diagnosis, and testing should be repeated in two to four weeks.
- False positive results possibly caused by other conditions (i.e., recent vaccination, HIV, malarial infections, injection drug use, autoimmune disorders).

Key Points

- Overall, the decision to use the traditional or reverse syphilis algorithm should be based on patient population, test costs, volume, and workflow. Clinicians should correlate the patient's symptoms and risks to make an accurate diagnosis.
- The traditional algorithm may be well suited for smaller laboratories with a low test volume since manual nontreponemal tests are typically less expensive and have minimal effect on workflow.
- The reverse algorithm may be more appropriate for smaller laboratories serving a population with an increased risk of syphilis, as the traditional algorithm may miss people with early primary and latent syphilis.
- Automated reverse algorithm platforms may improve workflow efficiency and provide a better turnaround time while also identifying more cases of early primary and latent syphilis.

References

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