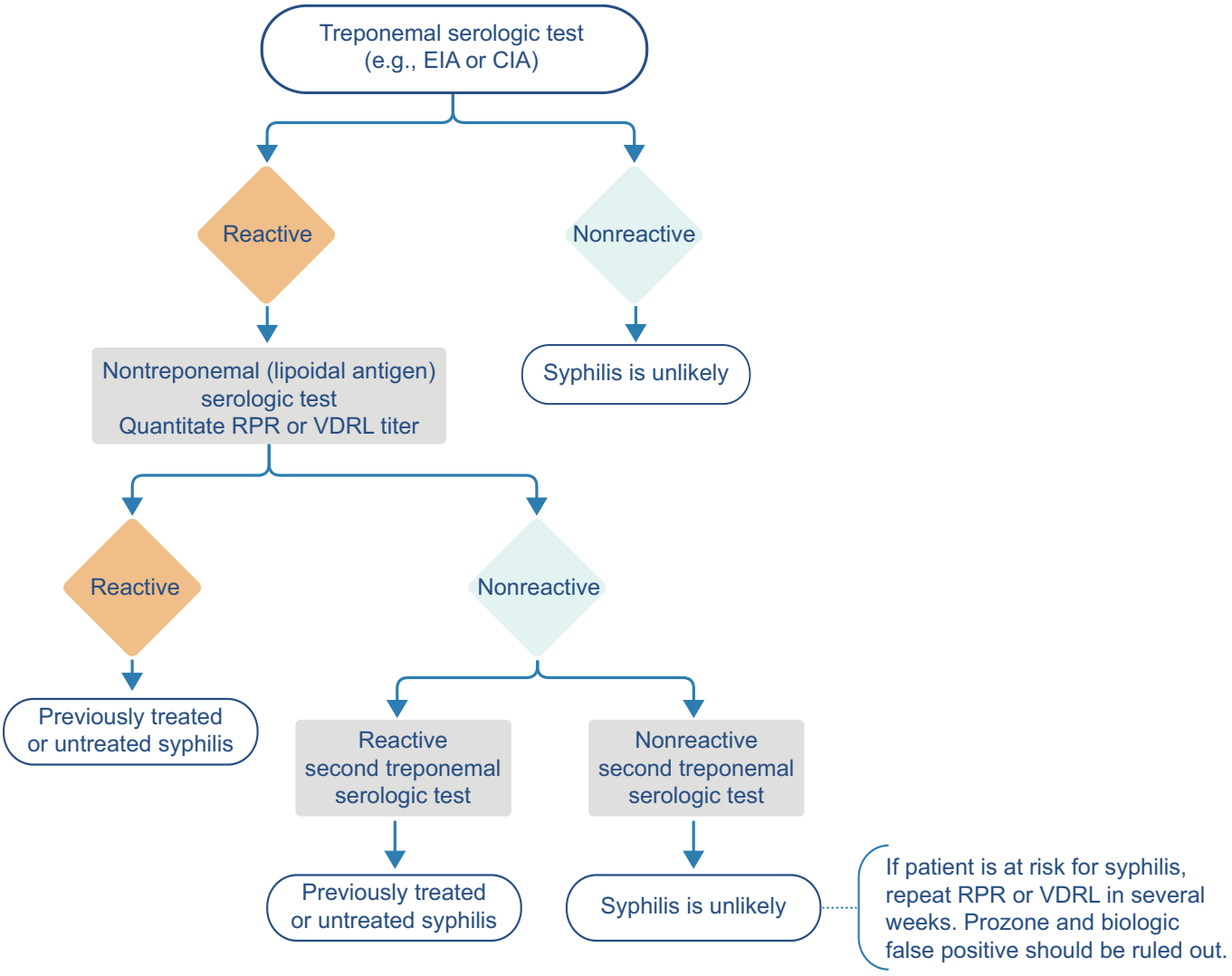
Reverse Algorithm for Syphilis Screening



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- In the reverse screening algorithm, a treponemal test is performed first. If reactive, a nontreponemal test is performed. If results differ between the treponemal and nontreponemal tests, an additional different treponemal test is performed (preferably the TP-PA).
- Treponemal tests are now automated, which allows for a higher volume of testing, rapid results, and reduced costs.
- 20% of public health labs perform the reverse screening algorithm.

Abbreviations

CIA = chemiluminescence immunoassay

EIA = enzyme immunoassay

RPR = rapid plasma regain

TPPA = *Treponoma pallidum* particle agglutination

VDRL = Venereal Disease Research Laboratory.

Pros

- Rapid results.
- Cost-effective in high-volume settings.
- Consider reverse screening in populations with higher syphilis risk and community infection cases.
- Cost savings are preventing congenital and neurosyphilis with an accurate diagnosis.
- Identifies more cases of syphilis, presumably past treated due to those previously treated, but additional confirmation testing increases the cost.
- Detects primary infection earlier than lipoidal antigen tests (RPR/VDRL).

Cons

- Antibody remains positive for life in 85% of persons; therefore, it cannot be used in a person with previously treated syphilis to see if the patient has been reinfected.
- May have a 0.6% false-reactive rate.
- False-positive results may be caused by other conditions, including related spirochete subspecies (e.g., endemic treponematosis, yaws, pinta, bejel), in the presence of other diseases and conditions.

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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