

Guide to interpretation of syphilis tests in Alberta, 2008

Diagnosis of syphilis

A diagnosis of syphilis should be considered in anyone with signs or symptoms compatible with syphilis and also in the individuals *at risk* for syphilis:

- those who have had contact with a known case of syphilis.
- men who have sex with men.
- sex workers.
- those with street involvement/homeless.
- injection drug users.
- those with multiple sexual partners.
- those with a history of syphilis, HIV and other STIs.
- those originating from or having sex with an individual from a country with a high prevalence of syphilis; it should be noted that screening for syphilis (using a non-treponemal test) is routinely performed in all immigration applicants to Canada who are older than 15 years.
- in Alberta: persons of aboriginal ethnicity
- sexual partners of any of the above.

Types of tests:

1) Syphilis enzyme immunoassay (EIA)

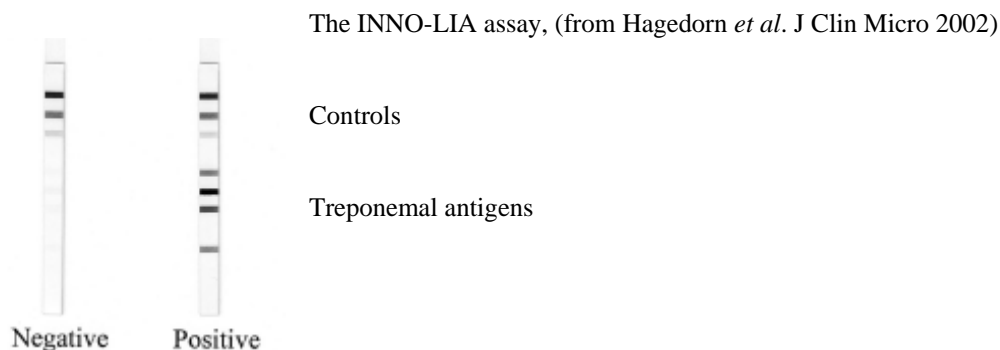
This is the screening test for syphilis and measures IgM and IgG antibody specific for *Treponema pallidum*. It is equivalent to the old TPPA or FTA-Abs tests but is more accurate and is automated. Estimated turn around time for test result is within 24-48 hours of receipt at the lab.

2) Rapid Plasma Reagin (RPR)

This is used for staging infection, following response to treatment and determining re-infection. It is a non treponemal test, and measures antibody against cardiolipin, providing a crude indicator of disease activity. Estimated turn around time for test result is 24 -48 hours.

3) Syphilis INNO-LIA

This is the confirmatory test for syphilis. This assay measures antibody against three recombinant proteins from *T. pallidum*, and one synthetic peptide. It is manual and laborious, but is the most accurate test available. Estimated turn around time for test result is 7 days.



Other subspecies

Note that all serological tests for syphilis will also pick up antibody against other subspecies of *T. pallidum*, i.e. *T. pallidum* subsp. *pertenue*, “yaws”, *T. pallidum* subsp. *carateum* “pinta”, *T. pallidum* subsp. *endemecium* “bejel”. These non-venereal treponemal infections are reported to be on the increase related to deteriorating social conditions in some parts of the world. Consider patient origin and travel, patient age (these are usually acquired in childhood), distribution of lesions (if any). Generally speaking because of the difficulty in distinguishing between reactive serologic tests for syphilis and non-venereal trepanematoses, most clinicians in Canada would manage the patient as a case of syphilis (often late latent syphilis). For a good review see Farnsworth and Rosen, *Clinics in Dermatology*, 24: 181-90, 2006. (2).

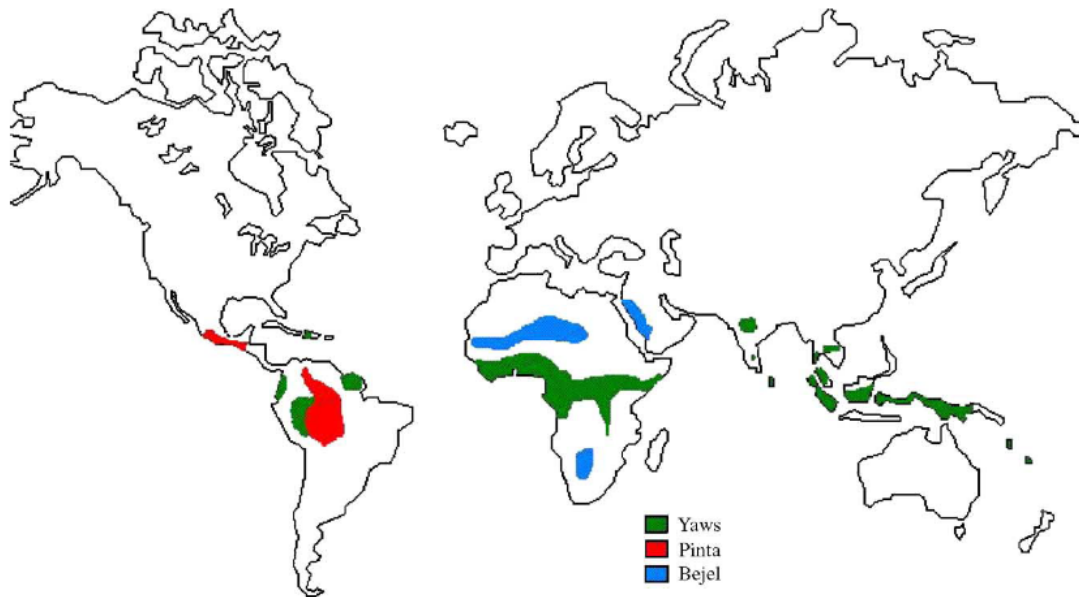


Fig. 1 Endemic treponematoses distribution (yaws in green, pinta in red, bejel in blue).

Syphilis EIA	RPR	Syphilis INNO-LIA	Interpretation	Recommended action
Negative	Not done	Not done	Not a case. Early incubating syphilis cases may be negative when tested prior to development of an antibody response. No additional testing done by lab if syphilis EIA negative.	Repeat serology ¹ <i>if at risk for syphilis</i>
Borderline	Non reactive	Negative	Not a case. Early incubating syphilis cases may be borderline when tested prior to full development of an antibody response.	Repeat serology ¹ <i>if at risk for syphilis</i> to rule out early seroconversion.
Borderline	Non reactive	Indeterminate	Probable non-specific reactivity, not a case. If repeat serology unchanged = not a case	Repeat serology ¹ to rule out early seroconversion.
Borderline	Non reactive	Positive	Case – either early primary or late stage or previously treated	Case investigation ³
Borderline	Reactive	Negative	BFP ²	Repeat serology ¹ to rule out early seroconversion.
Borderline	Reactive	Indeterminate	Likely a case If repeat serology unchanged = BFP ²	Case investigation ³ including repeat serology ¹
Borderline	Reactive	Positive	Case RPR 1-8 dils: early or previously treated or late stage RPR ≥ 8dils: Likely infectious case	Case investigation ³
Positive	Non reactive	pending	Case or BFP ² .	Await InnoLia result. If InnoLia negative, repeat serology ¹ <i>if at risk for syphilis</i> to rule out early seroconversion.
Positive	Non reactive	Negative	BFP ²	Repeat serology ¹ <i>if at risk for syphilis</i>
Positive	Non reactive	Indeterminate	Case or BFP ² . If repeat serology unchanged = BFP ²	Repeat serology ¹
Positive	Non reactive	Positive	Case – either early primary or late stage or previously treated	Case investigation ³ including repeat serology ¹
Positive	Reactive	pending	Highly likely to be a case. RPR titre > 8 dils pending the InnoLia may be indicative of an infectious case.	Depending on clinical situation, await InnoLia result. Immediate treatment may be warranted if patient unlikely to return for follow up or is pregnant and near term/in labour.
Positive	Reactive	Negative	BFP ² .	Repeat serology ¹
Positive	Reactive	Indeterminate	Highly likely to be a case. If repeat serology unchanged = BFP ²	Repeat serology ¹ Depending on clinical situation, immediate treatment may be warranted if patient unlikely to return for follow up or pregnant and near term/in labour.
Positive	Reactive	Positive	Case RPR 1-8 dils: early or previously treated or late stage RPR ≥ 8dils: Likely infectious case	Case investigation ³

Notes:

- ¹ Repeat serology typically repeated at 2-4 weeks after initial test to observe for rise in RPR titre or EIA/INNO-LIA seroconversion.
- ² BFP = biologic false positive reaction
- ³ Case investigation:
 - Basic demographics (e.g. age, gender, ethnicity, etc)
 - Previous history of syphilis or treatment for syphilis?
 - Sexual preference?
 - Pregnant?
 - Presence or absence of symptoms?
 - Sexual history?
 - Place of residence/travel?

For additional information:

1) Syphilis chapter in *Canadian Guidelines on Sexually Transmitted Infections, 2006 Edition*. Ottawa, ON: Public Health Agency of Canada, 2006 available at:

http://www.phac-aspc.gc.ca/std-mts/sti_2006/sti_intro2006_e.html

2) Contact:

- your local STD clinic OR
- STD partner notification nurse OR
- Alberta Health and Wellness STD Services at 780 427 2830

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