

Concordance of syphilis infection between same sex male partners attending a sexual health clinic in Melbourne, Australia: a cross-sectional study

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Background

Syphilis remains a major public health problem with high incidence rates in many settings, including among men who have sex with men (MSM). There is limited understanding of the determinants of syphilis transmission between men.

Large variations in estimated syphilis transmission rates have been shown in previous studies (between 9 to 80% of sexual contacts), all of which are more than 30 years old. Only one previous study includes MSM.¹

Aims

The aim of this study was to examine the concordance of early infectious syphilis between men within sexual partnerships and to determine potential factors associated with syphilis transmission in MSM.

Methods

This was a retrospective observational study of routinely collected clinical data. Male partners attending Melbourne Sexual Health Centre between March 2011 and April 2016, where at least one man was diagnosed with early infectious syphilis, were identified from linkage of partner records. Of 1011 MSM couples attending together, 43 couples (86 men) had one or both partners diagnosed with infectious syphilis and were included in the study. All syphilis diagnoses were independently reviewed by 2 clinicians and correlated with the 2015 CDC syphilis case classifications for clinical and laboratory diagnoses.

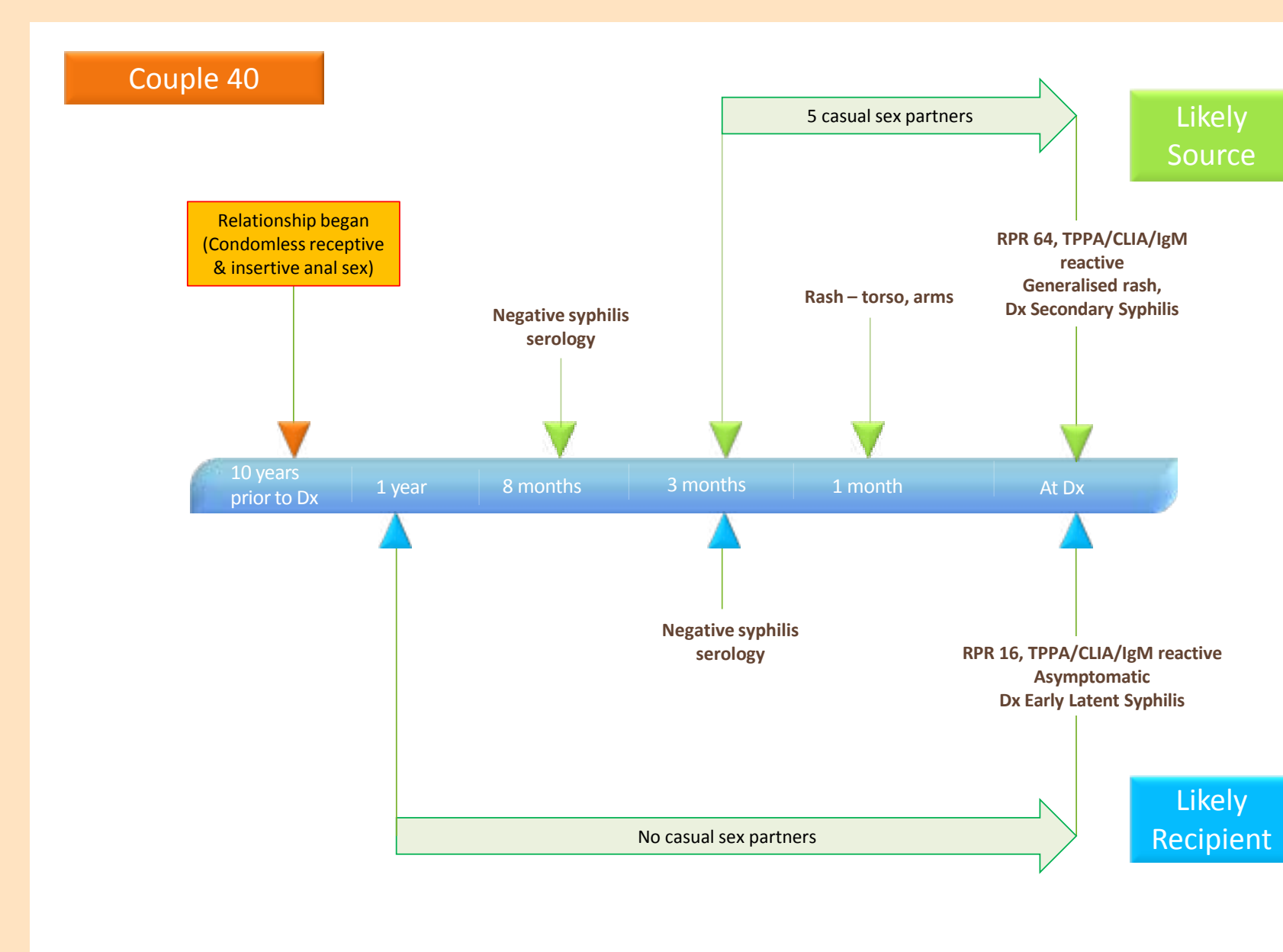
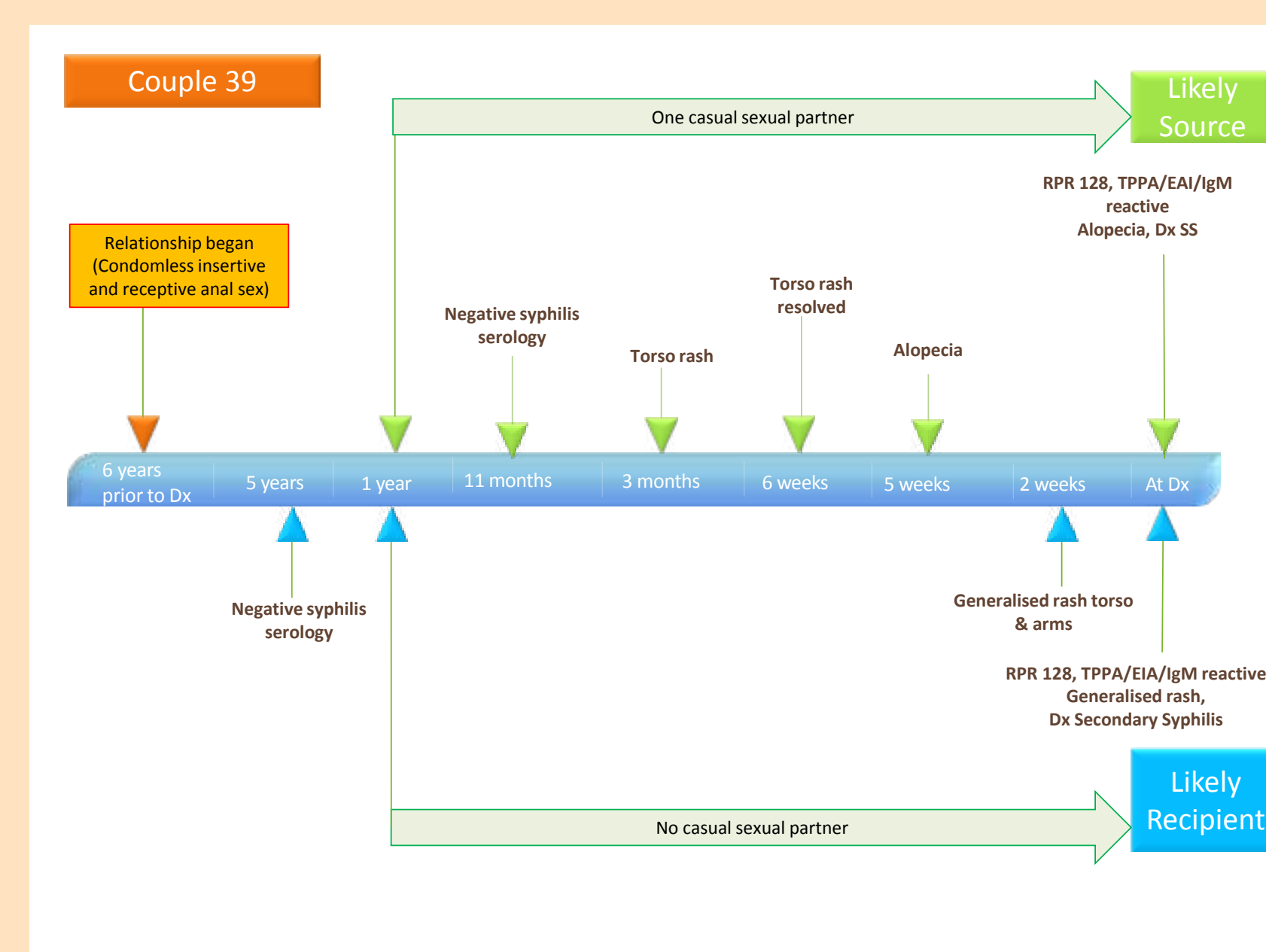
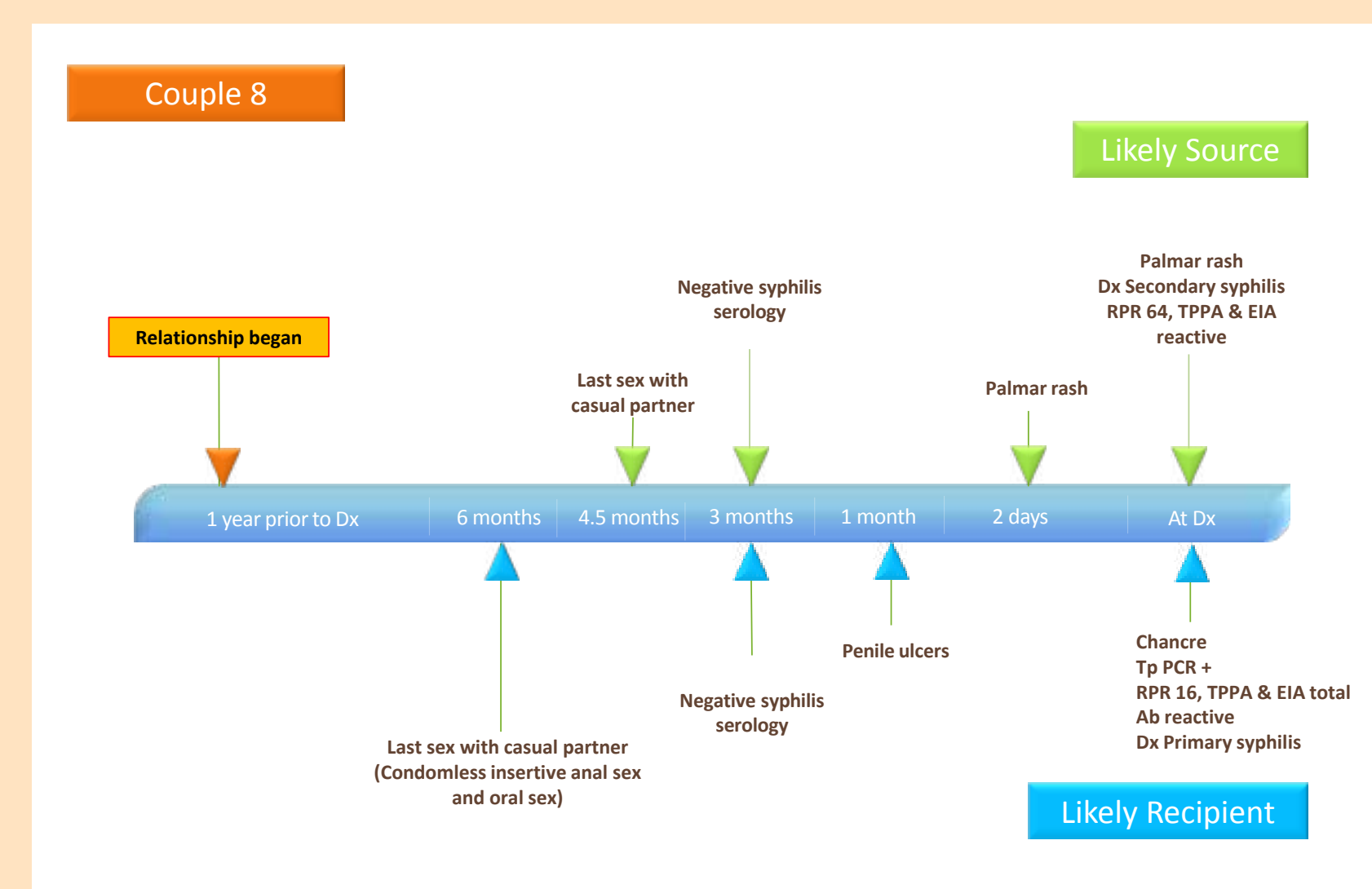
Diagnosis was by serology (various combinations of *Treponema pallidum* (Tp) Enzyme Immunoassay and Chemiluminescent Immunoassay for specific total & IgM antibody, Tp Particle Agglutination and Rapid Plasma Reagin) and/or Tp polymerase chain reaction (PCR) testing from mucocutaneous lesions, performed by the Victorian Infectious Diseases Reference Laboratory. Potential predictive factors for concordant diagnoses were calculated using Fisher's exact test.

Results

The 43 couples included 30 couples (60 men) with discordant syphilis results and 13 couples (26 men) who were both infected with syphilis, representing a concordance rate within couples of 30.2% (95% CI: 17.2 – 46.1%). 8 patients (9.3%) were HIV positive but there were no couples where both partners were HIV positive.

Concordant Relationships

- ❖ Among the 26 men where both were infected, 5 were diagnosed with primary syphilis (including 4 penile, 1 anal and no oral lesions), 10 with secondary syphilis (8 generalised rash, 3 penile, 2 anal and 1 with oral lesions), and 11 with early latent infection.
- ❖ Among couples where at least one partner had secondary syphilis, concordance was 53% (9/17) compared with 15% (4/26) for couples where neither partner had secondary syphilis ($p = 0.016$). A partner with secondary syphilis was the likely source of infection for 8 of the 9 concordant couples.
- ❖ Among couples where one was HIV positive, concordance was 62% (5/8) compared with 23% (8/35) for couples where both were HIV negative ($p = 0.042$). The HIV positive partner was the likely source of infection in 4 of the 5 concordant couples.
- ❖ Using behavioural and biological data (including serology and PCR results, clinical signs and symptoms and timing of syphilis testing) we have also demonstrated the likely direction of transmission in concordant couples. See flow charts that summarise behavioural and biological factors, below.



Symptoms & Staging

Of the 56 cases of syphilis, there were 10 (17.9%) cases of primary syphilis, 19 (33.9%) cases of secondary syphilis and 27 (48.2%) cases of early latent syphilis. 50% of primary syphilis cases, 57.9% of secondary syphilis cases and 37% of early latent syphilis cases were in concordant relationships.

The median duration of symptoms for men with primary syphilis was 14 (IQR 10 – 29) days before presentation. The median duration of symptoms for men with secondary syphilis was 14 (IQR 10-42) days.

Discussion & Conclusion

This study is to our knowledge the only study to identify factors associated with syphilis transmission between male sexual partners within partnerships. Our study showed a concordance rate for infection of 30%, within sexual partnerships. Furthermore, transmission between partners was more likely when at least one partner had secondary syphilis and also where one partner was HIV positive.

It is plausible that secondary syphilis would be associated with increased transmission risk of syphilis because of longer duration of infectiousness together with the presence of multiple or extensive infectious lesions including oral, genital, anal and cutaneous sites.

The association of syphilis transmission with HIV might be explained by behavioural (increased sexual risk) or biological factors. Recent studies have found high rates of asymptomatic oral shedding of treponemes from the oral cavities of HIV positive men² and impaired clearance of *T. pallidum* in HIV positive individuals.³

Further research is required to further elucidate the factors associated with syphilis transmission between men.

References

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