# DIAGNOSIS OF SEXUALLY TRANSMITTED INFECTIONS IN PREGNANT WOMEN AND MALE PARTNERS

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## BACKGROUND

- Porto Alegre, the capital of the state of Rio Grande do Sul, has the highest rates of congenital syphilis and HIV in Brazil.
- Although studies have shown that congenital syphilis and HIV acquisition during pregnancy are associated with untreated sexual partners, male sexual partners infrequently attend clinics for diagnosis and treatment.
- Other treatable sexually transmitted infections (STIs) including gonorrhea (GC), trichomonas (TV), and chlamydia (GC) are associated with poor pregnancy and neonatal outcomes, but are currently only diagnosed by syndromic algorithms.

## METHODS

- From 9/2018-11/2019, we offered all pregnant women and their male sexual partners clinic-based STI testing for HIV and syphilis (via lateral flow assay rapid tests provided by the Brazilian Government) and for GC, CT and TV (via PCR-based testing provided by Gene Xpert, Sunnyvale Ca) in 10 public health clinics in Porto Alegre
- Participating women and men also answer a brief survey via audio computer assisted survey instrument regarding demographics, partnerships and sexual behaviors.

**Table 1: Factors associated with pregnant women being diagnosed with any STI, syphilis or Chlamydia**

| | Any STI OR (95% CI) | Any STI AOR (95% CI) | Syphilis OR (95% CI) | Chlamydia OR (95% CI) |
|---|---|---|---|---|
| Individual factors | | | | |
| Age | 0.9 (0.86-0.94)* | 0.9 (0.87-0.97)* | 0.94 (0.9-1) | 0.8 (0.8-0.9)* |
| Ethnicity (non-white) | 2.1 (1.3-3.4)* | 1.8 (1.1-3.1)* | 2.8 (1.4-5.5)* | 1 (0.5-2.1) |
| Education (elementary vs more than elementary) | 2.4 (1.5-3.9)* | 2 (1.2-3.4)* | 1.5 (0.8-2.9) | 1.7 (0.9-3.4) |
| Crowding? | 1 (0.9-1.1) | | 1 (0.92-1.2) | 0.9 (0.8-1.1) |
| Employed (no) | 1.5 (0.98-2.5) | | 0.6 (0.3-1.2) | 0.6 (0.3-1.2) |
| Asking for $ from family (yes) | 1.5 (0.94-2.4) | | 1.5 (0.8-3) | 1.33 (0.7-2.7) |
| Unable to get care because of money | 1.2 (0.74-2) | | 1 (0.5-2) | 1 (0.5-2.2) |
| Recruited at Hospital based clinic | 0.5 (0.2-0.9)* | 0.6 (0.3-1.3) | 0.7 (0.3-1.6) | 0.5 (0.2-1.4) |
| Gestational age at recruitment | 1 (0.99-1) | | 1 (0.99-1) | |
| Partnership | | | | |
| Have other children (yes) | 1.5 (0.94-2.4) | | 1.5 (0.7-3.3) | 1.2 (0.5-2.8) |
| Planned pregnancy (yes) | 0.6 (0.4-0.99)* | | 0.7 (0.4-1.3) | 0.7 (0.4-1.4) |
| Length of relationship (<1 year) | 2.6 (1.5-4.3)* | 2 (1.1-3.6)* | 1.5 (0.7-3) | 2.3 (1.14-4.7)* |
| Fought with partner in last week (yes) | 2 (1.2-3.3)* | | 2.3 (1.1-4.8)* | 1.9 (0.9-3.9) |
| Risk factors | | | | |
| Drug use in 6 months | 1.8 (0.9-3.7) | 1.1 (0.5-2.5) | 2.1 (0.86-5.1) | 1 (0.8-1.2) |
| Alcohol use during pregnancy | 2.1 (1.3-3.5)* | 1.7 (0.96-3) | 1.4 (0.7-2.7) | 1.9 (0.97-3.9) |
| Alcohol hazard score | 1.3 (1.1- 1.5)* | | 1 (0.8-1.3) | 1.3 (1.04-1.5)* |
| Age of sexual debut | 0.9 (0.8-1) | | 0.84 (0.7-1) | 0.98 (0.8-1.2) |
| Number of sexual partners (<5 vs >20) | 0.6 (0.2-1.8) | | 0.5 (0.12-1.7) | 2.1 (0.3-16.5) |
| Vaginal Sex during pregnancy | 0.9 (0.5-1.8) | | 0.98 (0.4-2.4) | 0.7 (0.3-1.6) |
| Anal Sex during pregnancy | 1.2 (0.7-2) | | 1.5 (0.74-3.1) | 0.5 (0.2-1.4) |
| Oral Sex during pregnancy | 0.7 (0.4-1) | | 0.7 (0.4-1.3) | 0.5 (0.3-1) |
| Condom use during pregnancy (yes) | 1.8 (0.9-3.7) | 1.9 (0.9-4.1) | 1.4 (0.5-3.8) | 1.6 (0.6-4.3) |
| Outside sexual relationships in pregnancy (yes) | 2.3 (1.3-11.3)* | 2.5 (0.9-7.4) | 1.5 (0.4-5.5) | 3.8 (1.2-11.3)* |
| Any STI symptoms/diagnoses? | 1.1 (0.7-1.7) | | 1.4 (0.73-2.7) | 1.3 (0.7-2.5) |

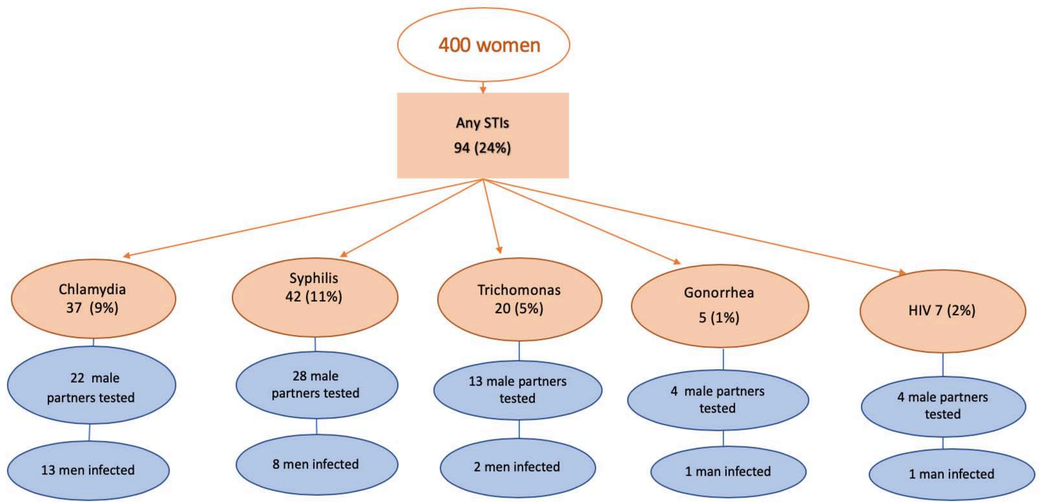
In Porto Alegre, Brazil, STIs are common in pregnant women and are currently not being addressed using syndromic management. Efforts to appropriately diagnose and treat STIs in both pregnant women and their sexual partners may decrease treatment failure and re-infection.







Figure 1: Flowchart of the frequency of STIS in pregnant women and their partners in Porto Alegre, Brazil.




## RESULTS

- Of 400 pregnant women recruited, 94 (24%) were diagnosed with an STI including 2% with HIV, 11% with syphilis, 9% with CT, 1% with GC, 5% with TV.
- All male partners were invited for evaluation, and 254 (63%) attended clinic and received testing.
- In these male partners, 10% were diagnosed with an STI including 5.2% with syphilis, 8.1% with CT, 1.2% with GC, 1% with TV, and 0.5% with HIV.
- In our multivariate analysis, younger age (AOR 1.1, 95% CI 1-1.2), being non-white (AOR 1.8, 95% CI 1.1-3.1), having less education (AOR 2 95% CI 1.2-3.4), having a relationship <1 year (AOR 2 95% CI 1.1-3.6), were all independent predictors of women being infected with an STI. Having symptoms of an STI (ulcer, vaginal/urethral discharge) was not predictive of having a diagnosis of STI (OR 1.1, 95% CI 0.7-1.7).
- The concordance rate of STIs between couples where both were tested ranged from 13% for TV and 60% for CT.

## CONCLUSIONS

- Underdiagnosed sexually transmitted infections are common in pregnant women and their partners in Porto Alegre, Brazil
- Having symptoms of an STI correlate poorly with having laboratory proven disease.
- Despite multiple efforts to recruit men to attend clinic, only 63% attended clinic to be appropriately diagnosed and treated
- Risk factors differ for chlamydia vs. syphilis infection in pregnant women. Being non-white and arguing with one's partner in the last week was associated with being diagnosed with syphilis. Being younger and having a shorter relationship was associated with Chlamydia infection.

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