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## INCIDENT SYPHILIS RATES AND PREDICTORS IN US WOMEN WITH HIV, 2005-2016

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**Background:**
Early syphilis rates in the US have increased 76% since 2013 and congenital syphilis rates are at a 20-year peak. Although defined as high-risk for STI screening, rates and predictors of syphilis in US women with HIV are not well described. We aimed to determine unique predictors of incident syphilis in a longitudinal US cohort of women living with HIV.

**Methods:**
This retrospective study included women enrolled in the US CFAR Clinical Network of Integrated Clinical Systems (CNICS) Cohort with at least one HIV clinic visit between 2005 and 2016. Data were extracted from the electronic medical record and patient reported outcomes (PRO) were collected every 6 months. Incident syphilis was defined as a newly positive nontreponemal serologic test after a previously negative test or a 4-fold increase in titer, both with positive confirmatory testing. Each year in care was analyzed separately and more than one incident syphilis infection was allowed. Univariate (UV) and multivariable (MV) logistic regression with auto-regressive correlation structure and generalized estimating equations (GEE) were used to model the incident syphilis outcome. Variables were chosen for the MV model based on prior studies, statistical significance in the UV model ($p<0.05$), and data completeness.

**Results:**
A total of 4,795 women in the CNICS cohort were included with 27,249 woman-years in care. Median age was 47, 63% of women were Black and 75% had acquired HIV from heterosexual sex. Overall, 4219 (88%) were tested for syphilis and 119 women (2.8%) had 125 incident infections (7.6 cases per 1000 person-years). In the unadjusted model, active drug abuse, prior IVDA, hepatitis C (HCV Ab+), HIV viral load >1000 copies/mL, black race and later year of entry to care predicted incident syphilis. In the adjusted model, independent predictors were prior IVDA (aOR 2.3, 95% CI 1.3-3.9), HCV Ab+ (aOR 2.1, CI 1.3-3.7), later year of entry to care (aOR 2.3, CI 1.4-3.9 for 2011-2016 compared to 1994-2004), and black race (aOR 2.3, CI 1.4-3.9 compared to white). Age and HIV VL were not predictors. (see Table)

**Conclusion:**
In a large national cohort of US women with HIV, history of IV drug use and hepatitis C infection were the best predictors of incident syphilis infection. Further studies are needed to determine if this association is mediated via transactional sex or high-risk sex partners. Guidelines should prioritize women with HIV and IVDA for syphilis screening and the prevention of congenital syphilis.