

**P729** **TREPONEMA PALLIDUM-PLATELET INTERACTIONS AND RELEVANCE TO TREPONEMAL INVASION**

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**Background** *Treponema pallidum* ssp. *pallidum* (*Tp*), the causative agent of syphilis, is an invasive pathogen that interacts with host cells during infection. In the bloodstream *Tp* encounters platelets, which are sentinel cells that activate and release specific components to enhance immune cell targeting to the site of infection/inflammation. Tumor cells and invasive pathogenic bacteria can associate with platelets and recognize these same secreted components, to allow for enhanced spread via the bloodstream. We have previously established that *Tp* interacts with platelets: in this study we probe the potential for *Tp* to activate platelets and to recognize specific platelet secretions.

**Methods** Viable *Tp* and platelets were co-incubated and platelet activation was compared relative to pre-activated (ACT) and resting (REST) platelets. Platelet activation was measured by assessing the median fluorescence intensity (MFI) of the platelet activation receptor CD41a via flow cytometry and fibrin clot formation (a downstream effect of platelet activation) via plate-based assays. A capillary tube chemotaxis assay quantified *Tp* migration towards specific secretions from activated platelets compared to inactive platelets.

**Results** *Tp* co-incubated with platelets and ACT platelets expressed comparable levels of CD41a, with an almost 150% greater CD41a expression level compared to that seen with REST platelets ( $P = 0.0118$ ). *Tp* co-incubated with platelets and ACT platelets produced similar levels of clotting, at a level that was significantly higher than for REST platelets ( $P = 0.0221$ ). *Tp* migration towards the secretions of activated platelets was over 2-fold higher than migration towards inactive platelets ( $P = 0.0030$ ).

**Conclusion** *Tp* activates platelets and migrates towards the secretions of activated platelets. Prior investigations have established that platelet activation, and subsequent secretion, enhances the permeability of endothelial cells lining the bloodstream. Taken together, these findings suggest the treponeme-platelet interaction may promote *Tp* entry and exit from the bloodstream and aid in *Tp* spread throughout the body.

**Disclosure** No significant relationships.

**P730** **THE DEMOGRAPHY OF CONGENITAL SYPHILIS ELIMINATION IN THE UNITED STATES**

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**Background** The absence of reported congenital syphilis cases in 16 states and territories across the United States of America in 2017 may be attributable to changes in prenatal care utilization within these states from 2013–2017. In order to determine whether there is a relationship between rates of reported congenital syphilis cases and prenatal care utilization in the United States, we assessed changes in 16 states and territories with a congenital syphilis rate of 0.0 per 100,000 per live births in 2017. We determined the association between rates of congenital syphilis and utilization from 2013 to 2017,

and explored the association between utilization and changes to state, territorial, and local mandates on congenital syphilis.

**Methods** We retrieved vital statistic data on congenital syphilis infections; prenatal care; and patient demographics. We retrieved public reports of mandate changes from state, territorial, and local public health agencies. Vital statistic data were collected by the United States Centers for Disease Control and Prevention National Vital Statistic System from 2013 to 2017. Cases included births of Non-Hispanic and Hispanic postpartum patients, who received congenital syphilis testing after live births in 2013, 2014, 2015, 2016, and 2017. We analyzed the incidence rate ratio (IRR) of congenital syphilis cases and prenatal care utilization. We then analyzed mandates to assess whether any changes to congenital syphilis screening could explain suppression or elimination of syphilis.

**Results** Increases in prenatal care utilization led to a decrease in congenital syphilis rates, and associations were stronger within states with an overrepresentation of Non-Hispanic white patients.

**Conclusion** While mandates may explain suppression or elimination of congenital syphilis, additional research is needed to determine whether the reduction is predicted by patient demographics, rather than mandated screening.

**Disclosure** No significant relationships.

**P731** **PREVALENCE OF SELF-REPORTED SYPHILIS AMONG BRAZILIAN YOUNG ADULTS: FINDINGS FROM A NATIONWIDE SURVEY**

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**Background** The number of cases of acquired syphilis are increasing in many countries. In Brazil, a previous official report based on compulsory notifications showed a sustained increase from 2.0 to 58.1 cases per 100,000 inhabitants over the last six years (2010–2017). We aimed to evaluate the prevalence of self-reported syphilis among women and men aged 16 to 25 years who use the public health system in Brazil.

**Methods** This is a cross-sectional, nationwide, multicenter study with 8,581 sexually active young adults recruited from 119 primary care units in all 26 Brazilian capitals and the Federal District. Data on sociodemographic and sexual behavior characteristics were obtained by face-to-face interviews. To evaluate syphilis, we asked the participants if they had ever had syphilis during their lives (current or in the past). We weighted the measures by population size in each capital and by sex.

**Results** Of all participants (49.17% women), 8,076 provided information about syphilis, and 224 (2.86%, 95%CI 2.29%–3.43%) reported having the disease. The prevalence was similar between genders ( $p=0.240$ ), with frequencies of 3.20% for men and 2.54% for women. The participants who self-reported syphilis were older [22.35 years (22.01–22.70)] than those without the disease [21.38 years (21.32–21.44);  $p<0.001$ ] and had earlier sexual intercourse [14.81 years (14.53–15.09) vs. 15.22 years (15.17–15.27);  $p=0.006$ ]. Syphilis was not associated with income and skin color/race, but it was significantly associated with educational level. Illiterate and elementary students had higher prevalence than other

groups (4.88% among elementary, 2.16% secondary and 2.49% graduate students,  $p < 0.001$ ).

**Conclusion** Our results showed a high prevalence of self-reported syphilis in young adults of Brazil with significant difference between education level. Income and skin color/race were not associated with syphilis showing a disseminate outbreak. These data reinforce the importance of implementing strategies to combat this disease in young adults, especially among those with low educational level.

**Disclosure** No significant relationships.

**P733** **EVALUATING THE USE OF RAPID SYPHILIS TESTING AMONG PATIENTS IN A SEXUALLY TRANSMITTED INFECTIONS CLINIC IN LILONGWE, MALAWI**

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**Background** Limited-resource countries, such as Malawi, rely largely on the syndromic diagnosis of genital ulcer disease (GUD) to detect and treat syphilis. However, rapid treponemal tests are available for point-of-care testing and offer inexpensive syphilis serology assessments, though they cannot differentiate between untreated and previously treated syphilis as a stand-alone test. We assessed syphilis seroprevalence in the sexually transmitted infections (STI) clinic at Bwaila District Hospital in Lilongwe, Malawi, in August 2017.

**Methods** Rapid syphilis testing (RST), with the Alere Determine™ Syphilis TP test or SD Bioline 3.0 Syphilis test, was offered in conjunction with standard opt-out HIV rapid testing. Anyone who tested RST positive was treated with three weekly doses of benzathine penicillin 2.4 MU IM, per Malawian standard of care. Per routine protocol, all patients also underwent a genital examination where GUD was diagnosed as the presence of one or more genital ulcers. We calculated syphilis seroprevalence, and used exact statistics to test for differences in proportions ( $\alpha = 0.05$ ).

**Results** 848 patients had an RST, HIV test, and a genital exam, with 73 (9%) testing positive by RST. Among the 82 patients (10%) diagnosed with GUD, 26% (95% CI: 17%–36%) had a positive RST, compared to 7% (95% CI: 5%–9%) of patients without GUD ( $p < 0.0001$ ). Of the 89 patients (10%) who tested newly positive for HIV, 19% (95% CI: 12%–29%) had a positive RST, compared to 7% (95% CI: 6%–9%) among those who were HIV negative ( $p = 0.0009$ ). Of the 73 patients who screened positive by RST, 71% (95% CI: 59%–81%) did not have GUD.

**Conclusion** Syphilis serology was more prevalent among patients who had GUD and who were HIV-infected. Syndromic diagnosis of GUD may not be sufficient to identify patients who require syphilis treatment. However, accurate staging is critical for appropriate treatment, and concerns surrounding over treating previously treated cases should be addressed.

**Disclosure** No significant relationships.

**P734** **WHAT DO GUYS KNOW ABOUT SYPHILIS ANYWAYS?**

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**Background** Syphilis rates among gay, bisexual, and other men who have sex with men (gbMSM) have increased in Toronto, Canada, since the early 2000s. Half of syphilis cases are co-infected with HIV. Enhanced sexual health resources in the downtown neighbourhoods with elevated syphilis rates (core area) have not brought syphilis transmission under control. Our objective was to explore gbMSM attitudes, beliefs and knowledge of syphilis to inform syphilis intervention strategies.

**Methods** In-depth interviews were conducted with 31 gbMSM who lived, worked, or socialized in Toronto, Canada, in June and July of 2016. Interviews ran 60 to 90 minutes and had three sections. This analysis uses data from the third section, which explored what participants knew about syphilis and the syphilis epidemic in Toronto. Theoretical saturation for this analysis was reached before interviews were completed. Thematic analysis was used to analyze interviews. Transcripts were read and re-read, then coded. Codes were compared across participants then grouped into categories; categories were grouped into themes.

**Results** Participants knew little about syphilis and did not realize syphilis was epidemic in Toronto. Syphilis was perceived as a curable inconvenience and dismissed, while HIV was perceived as life-changing. Participants did know something about HIV and some STIs other than syphilis. Participants who lived through the 80's and 90's identified anal sex as a high-risk sexual activity and perceived sex as potentially lethal; consequently, sex was loaded with stigma, burden and shame. In backlash, some participants described a new social expectation that gay men should have a lot of good sex, where good sex is sex without a condom, and having good sex is a greater concern than acquiring an STI that can be cured or lived with.

**Conclusion** Dismissive attitudes towards syphilis could explain why syphilis epidemics persist. Interventions shifting gbMSM relationship with sex and STI testing should be explored.

**Disclosure** No significant relationships.

**P735** **KNOWLEDGE AND ATTITUDES AROUND SYPHILIS AND SYPHILIS PRE-EXPOSURE PROPHYLAXIS AMONG MEN WHO HAVE SEX WITH MEN IN VANCOUVER**

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**Background** In British Columbia, Canada, syphilis is at record-high rates, with over 80% of cases in 2017 seen in gay, bisexual, and other men who have sex with men (GBM). The epidemic is of particular concern for those living with HIV, since