018 – PILLS OF WHITE MERCURY: SYPHILIS PREVALENCE, SCREENING AND PREVENTION

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1:45 PM – 3:15 PM

018.1 PREVALENCE OF ACTIVE SYPHILIS AMONG TRANSWOMEN IN SÃO PAULO, BRAZIL

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Background Studies document that transwomen bear one of the most severe burdens of HIV worldwide, yet little information is available on the prevalence of other sexually transmitted infections (STI). Of particular concern in Brazil is the lack of data on the prevalence of syphilis specifically for transwomen in a background of increasing syphilis diagnoses among other populations. The aim of the present analysis was to estimate the prevalence of active syphilis infection among transwomen in a large, community-based sample from São Paulo, Brazil.

Methods We analyzed baseline data from the Trans*National Study, a cohort being assembled to longitudinally track health issues among transwomen in São Paulo, Brazil. Participants were recruited using respondent-driven sampling (RDS), a long-chain peer-referral methodology to obtain population-based data from hard-to-reach communities. Participants completed a structured questionnaire, HIV testing, antibody tests for *Treponema pallidum*, and, if positive, Venereal Disease Research Laboratory (VDRL) test titers. Active syphilis was defined as a positive treponemal-specific antibody test plus a VDRL titer greater than 1:8, consistent with national treatment guidelines.

Results Of 729 transwomen interviewed, 32.1% were 24 years of age or younger and 75.6% earned under the city's minimum wage. A majority (453/729, 62.1%) tested antibody-positive for syphilis. Among those, the VDRL titer was greater than 1:8 for 37.5% (170/453), suggesting a point prevalence of active syphilis of 23.3% (95% CI 20.3–26.6) in the population. Of those with evidence of active syphilis, only 35.3% (60/170) reported ever having a syphilis test. HIV prevalence was 28.7% in the sample; 70 transwomen were living with HIV and had evidence of active syphilis (overall co-infection 9.6%).

Conclusion Our community-based sample in São Paulo, Brazil suggests one-fifth to one-fourth of transwomen have active syphilis, with possibly most going untreated. This study highlights the urgent need for screening and prevention strategies for STI infection, especially syphilis, for transwomen.

Disclosure No significant relationships.

018.2 ESTIMATING DISEASE BURDEN OF MATERNAL SYPHILIS AND ASSOCIATED ADVERSE PREGNANCY OUTCOMES IN CHINA

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Background Syphilis can be transmitted from mother to infant during pregnancy or delivery, causing a variety of adverse pregnancy outcomes including early fetal loss, stillbirth, neonatal death, prematurity, low birth weight and clinical evidence of congenital syphilis. In 2012, WHO estimated that 0.93 million maternal syphilis infections caused 0.35 million adverse pregnancy outcomes. However, there has been no report on the burden of maternal syphilis infections and associated adverse outcomes in China. This study aimed to estimate maternal syphilis infections and its associated adverse pregnancy outcomes in China.

Methods A WHO estimation model was used to estimate the number of maternal syphilis and adverse pregnant outcomes due to mother-to-child transmission. Data on the number of pregnant women, syphilis testing rate, syphilis seroprevalence rate and treatment rate were collected at county level in China in 2015.

Results Data were collected from 2,675 counties of 337 cities in 30 provinces (data were not reported in Tibet Autonomous Region) of mainland China in 2015 35,247 pregnant women were estimated to be infected with syphilis and the prevalence rate was 0.23%. It was estimated that a total of 5232 adverse pregnancy outcomes were caused by maternal syphilis infections, including 2,406 early fetal losses and stillbirths, 928 neonatal deaths, 788 preterm or low weight births, and 1,110 infected infants. The overall incidence rate of syphilis associated adverse pregnant outcomes was 34.1 per 100,000 pregnant women in China, which ranged from 5.8 to 218.0 per 100,000 pregnant women among different provinces.

Conclusion Maternal syphilis and associated adverse outcomes remain an important public health issue in China, and disease burden was relatively high in some areas. Improved syphilis screening, timely diagnosis and treatment are important for eliminating mother-to-child transmission of syphilis.

Disclosure No significant relationships.

018.3 DEVELOPMENT OF A SYPHILIS SERUM REPOSITORY FOR RESEARCH AND EVALUATION OF SYPHILIS DIAGNOSTICS TESTS IN THE UNITED STATES

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Background Ongoing collaboration between the Centers for Disease Control and Prevention's (CDC) Division of STD Prevention and the Association of Public Health Laboratories (APHL) is facilitating the development of a syphilis serum repository for research and evaluation of Food and Drug

Administration (FDA)-cleared syphilis diagnostic tests or new investigational assays in the United States (US). Described here is a repository of residual syphilis serum specimens (N=464) that were tested and submitted by US state and local public health laboratories (PHL), with further evaluation performed at the CDC.

Methods Specimen submission criteria include de-identification of patient information, collection date, volume, storage conditions, freeze-thaw cycles, prior serology results, reported clinically diagnosed syphilis stage, treatment status, and demographics as available. Upon CDC receipt and assessment, 283/464 sera met the minimum 2 ml volume requirement for assay evaluation. Sex and age information were provided for all specimens, with some clinical data provided for reported (n=152) and unknown (n=131) syphilis stage. Previous test results were blinded and sera were tested using five FDA-cleared syphilis serological tests; nontreponemal Rapid Plasma Reagin (RPR), treponemal *Treponema pallidum* Particle Agglutination (TP-PA), Trep-Sure Enzyme Immunoassay (EIA), LIA-SON treponema screen (Chemiluminescence Immunoassay, CIA), and Syphilis Health Check (SHC). The investigational INNO-LIA Syphilis Score (Line Immunoassay, LIA) was also tested.

Results Of the five treponemal tests evaluated, overall sensitivity ranged from 76.3–100%, with EIA and SHC showing the highest and lowest sensitivity, respectively. The nontreponemal RPR demonstrated overall sensitivity between 63.2–100%. Concordance was high (84.2%) among the standard laboratory assays, RPR, EIA, CIA, and TP-PA. There was negligible variation in sensitivity based on reported syphilis stage for this panel.

Conclusion Laboratory generated data and limited reported clinical information associated with tested residual specimen panels may be of value for research and development of syphilis diagnostic tests. Repository growth is ongoing with active serum submissions from PHL.

Disclosure No significant relationships.

018.4 EVALUATION OF ROUTINIZED SYPHILIS SCREENING WITH HIV VIRAL LOADS AMONG MEN LIVING WITH HIV

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Background Frequent syphilis screening allows for early detection and treatment and decreased transmission. We conducted a clinic-based intervention incorporating opt-out syphilis testing into routine HIV viral loads. The primary objective was to determine the degree to which the intervention increased the detection rate of early syphilis.

Methods The Enhanced Syphilis Screening in HIV-positive Men (ESSAHM) Trial was a stepped wedge cluster-randomized controlled trial in 4 urban HIV clinics in Ontario, Canada from 01/02/2015 to 31/07/2017 (ClinicalTrials.gov: NCT02019043). Population: adult males. Intervention (I):

standing orders for syphilis serological testing with HIV viral loads. Control (C): maintenance of current, provider-initiated syphilis testing practice. Outcome: new diagnoses of early infectious syphilis. We obtained syphilis serologies via linkage with the centralized provincial laboratory and defined early syphilis cases using a standardized clinical worksheet and medical chart review. The trial was powered ($\geq 80\%$) to detect a $\geq 75\%$ increase in case detection rate, assuming 3 tests per patient per year. We employed a generalized linear mixed-effect model to estimate time- and age-adjusted rate ratios (aRR) comparing intervention to control periods.

Results 3,893 men were followed over 7,468 person-years (PY), and had a mean of 2 viral load tests per year. The mean number of syphilis tests per person per year increased from 0.65 in control to 1.44 in intervention periods. There were 217 new diagnoses of syphilis in total (C: 81; I: 136), for which 147 were cases of early syphilis (C:61; I:86). The detection rate increased from 1.51 per 100PY in control to 2.50 per 100PY in intervention periods, with a corresponding aRR = 1.28 (95%CI 0.73, 2.24; p = 0.40).

Conclusion The implementation of standing orders for syphilis serological testing with HIV viral loads resulted in a modest but statistically non-significant increase in detection of new cases of early infectious syphilis.

Disclosure No significant relationships.

018.6 PRENATAL CARE ENTRY AMONG PREGNANT WOMEN WITH SYPHILIS WHO USE METHAMPHETAMINES: A KEY TO CONGENITAL SYPHILIS PREVENTION

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Background In California, congenital syphilis (CS) increased for the fifth consecutive year in 2017, and contributed one third of CS cases in the United States. In response, state and local STD programs implemented CS prevention strategies. A CS Prevention Cascade monitors impact, assesses prenatal care (PNC) gaps, and estimates CS cases averted.

Methods This analysis used 2017 California Project Area surveillance data for women diagnosed with syphilis during pregnancy or at delivery. Cases were assessed for the following, each met ≥ 30 days prior to delivery: documented PNC, syphilis screening, treatment initiation, and treatment adequacy by stage. Data for each cascade bar included women counted in the preceding bar(s). The final bar represented the CS Prevention Ratio (CSPR) – the proportion of pregnant syphilis cases who did not deliver a CS infant. This cascade was then stratified by MU, defined as having either self-reported use upon interview or positive urine toxicology in pregnancy or at delivery. Three groups were identified: Non-MU (NMU); Positive-MU (PMU); Not interviewed (NI). A post-hoc stratified cascade included only pregnant syphilis cases with documented PNC, to explore how MU might impact CS case aversion once PNC is initiated.

Results 616 women were included; 239/118/259 were NMU/PMU/NI respectively. Within these groups 95%/86%/71% met PNC criteria, 89%/81%/66% received syphilis screening, 84%/75%/63% initiated treatment, 82%/73%/61% met treatment adequacy, and CSPR were 79%/69%/59% (p<0.001).