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**Background** We conducted a systematic review and meta-analysis of published data to examine the association between hormonal contraception (HC) and bacterial vaginosis (BV).

**Methods** Three databases (Medline, Web of Science and Embase) were searched until the end of January 2013 and duplicate references removed. Inclusion criteria were (1) > 20 BV cases; (2) data available to derive the association between HC and BV; (3) > 10% of participants used HC; (4) accepted BV diagnostic method. Data extracted included: type of HC, BV diagnostic method, and BV outcome (prevalent, incident, recurrent). Meta-analyses were conducted to calculate overall and pooled odds/risk ratios (OR/RR), stratified by HC-type and BV outcome. This systematic review is registered with PROSPERO (CRD42013003699).

**Results** Of 1710 unique references identified, 328 were assessed for eligibility and 48 studies met inclusion criteria. Overall, 36 reported BV-prevalence, 12 BV-incidence and 3 BV-recurrence. Twenty three studies reported data for combined-HC, 9 for progesterone-only HC and 23 did not specify HC-type. Diagnostic methods included: Nugent's (n = 31), Amsel's (n = 15), Spiegel's (n = 1) and Ison-Hay (n = 1). Pooled BV prevalence was 30.7% (95% CI: 26.7–34.7%) and ranged from 4.7%–66.7%, with > 99% of the observed variance of prevalent BV explained by heterogeneity (I<sup>2</sup> = 99.6%). The pooled effect of any HC-use on the composite-BV outcome (prevalent/incident/recurrent) was OR = 0.67 (95% CI: 0.62–0.71). When stratified by BV outcome, any HC-use was associated with decreased risk of prevalent (OR = 0.63; 0.58–0.68), incident (RR = 0.78; 0.68–0.87) and recurrent (RR = 0.61; 0.49–0.73) BV. When prevalent BV was stratified by HC-type, combined-HC (OR = 0.68; 0.62–0.74), unspecified HC-type (OR = 0.60; 0.53–0.67), and progesterone-only methods (OR = 0.67; 0.46–0.88) were all associated with decreased risk of prevalent BV.

**Conclusion** HC-use is associated with a significant and consistent decreased risk of all BV outcomes, with a greater reduction in risk for prevalent than incident BV. Surprisingly, both combined and progesterone-only contraceptive methods were associated with reduced risk of prevalent BV.

**004.3 CORRELATES OF INCIDENT TRICHOMONAS VAGINALIS INFECTIONS AMONG AFRICAN-AMERICAN ADOLESCENT FEMALES**

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**Background** *Trichomonas vaginalis* is associated with adverse reproductive health outcomes, including HIV. Despite marked racial disparities, few studies have reported factors related to incident *T. vaginalis* infection exclusively among young African-American women. The objective was to identify correlates of incident *T. vaginalis* infections among African-American adolescent females.

**Methods** Data were collected via audio computer self-interviews at baseline and every 6 months for 18 months from 701 African-American females (14–20 years) enrolled in an HIV prevention trial. Vaginal swabs were self-collected at each assessment and assayed for *T. vaginalis*, *Chlamydia trachomatis* and *Neisseria gonorrhoeae* using DNA amplification. Generalized estimating equations assessed

associations between incident *T. vaginalis* infection, defined as a positive test result subsequent to a negative result or documented treatment, and sociodemographic characteristics, partner-level factors, HIV/STI-associated behaviours and STIs. Factors significant at p < 0.1 in bivariate analyses were entered into a multivariable model, adjusting for age and trial condition. The final model was obtained using backward selection procedures.

**Results** Of 606 (86.4%) participants who completed ≥ 1 follow-up assessment, an incident *T. vaginalis* infection was detected among 20.0% (n = 121). Trial condition was not independently associated with incident infection (p = 0.21). Significant correlates included: receipt of an increasing number of forms of government assistance (AOR: 1.20, 95% CI: 1.01, 1.42), cigarette smoking (AOR: 1.70, 95% CI: 1.08, 2.67), smoking marijuana an increasing number of days in the past 3 months (AOR: 1.02, 95% CI: 1.00, 1.04), concurrent *C. trachomatis* (AOR: 2.28, 95% CI: 1.43, 3.66) and *N. gonorrhoeae* (AOR: 5.99, 95% CI: 3.10, 11.57) infection and testing positive for *T. vaginalis* at the previous assessment (AOR: 4.56, 95% CI: 2.99, 6.96).

**Conclusions** Incident *T. vaginalis* infections were common. Strategies to reduce infection rates among this population may include improving partner notification and treatment services and addressing the role of substance use on sexual risk.

**004.4 SEROPREVALENCE OF HERPES SIMPLEX VIRUS TYPES 1 AND 2 UNITED STATES, 1999–2010**

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**Background** Herpes simplex virus types 1 and 2 (HSV-1 and HSV-2) are common infections with serious sequelae. HSV-1 is an increasingly important cause of genital herpes in industrialised countries, potentially due to less acquisition of HSV-1 during childhood or to changes in sexual behaviour.

**Methods** Using nationally representative data from the National Health and Nutrition Examination Surveys (NHANES), we examined change in seroprevalence of HSV-1 and HSV-2 among 14–49 year olds in the United States. We compared seroprevalence in 1999–2004 with 2005–2010, and examined seroprevalence among 14–19 and 20–29 year-olds stratified by socio-demographic characteristics and sexual behaviours. We also reviewed HSV-1 and HSV-2 seroprevalence from 1976–1980 to 2005–2010.

**Results** In 2005–2010, the seroprevalence of HSV-1 was 53.9%, and the seroprevalence of HSV-2 was 15.7%. From 1999–2004 to 2005–2010, HSV-1 seroprevalence declined by nearly 7% (P < 0.01), but HSV-2 seroprevalence did not change significantly. The largest decline in HSV-1 seroprevalence from 1999–2004 to 2005–2010 was observed among 14–19 year olds, among whom seroprevalence declined by nearly 23%, from 39.0% to 30.1% (P < 0.01). In this age group, HSV-1 seroprevalence declined among young men and women, non-Hispanic blacks and whites, and those living above and below the federal poverty level. Overall, HSV-1 seroprevalence declined more than 10% from 60.1% in 1976–1980 to 53.9% in 2005–2010 (P < 0.01). Among 14–19 year olds, HSV-1 seroprevalence declined more than 29%, from 42.6% to 30.1% (P < 0.01). Overall, HSV-2 seroprevalence increased slightly from 13.4% in 1976–1980 to 15.7% in 2005–2010 (P = 0.02).

**Conclusions** An increasing number of adolescents lack HSV-1 antibodies at sexual debut and are susceptible to genital HSV-1 infection. In the absence of declines in HSV-2 infections, the prevalence of genital herpes may increase.