two cases in the placebo vaccine cohort, and 21 cases in the unvaccinated reference cohort suggesting that the vaccine efficacy translates into efficacy against cervical cancer. The passive follow-up continues and new cases emerging in future will be monitored by redoing linkage with the population-based cancer register at specific time intervals in the future, which will effectively add up person years to our follow-up study. In conclusion, valid comparisons between the vaccine and placebo recipients (excluding cross-vaccinated placebo vaccine recipients) and the reference cohort not exposed to intervention are feasible, and will be critical to define more definitively the long-term protection provided by HPV vaccination against the hard endpoints.

**O3-S2.03** THE SPECTRUM OF GENITAL HPV INFECTION AMONG MEN ATTENDING A SWEDISH STI CLINIC: HPV TYPING AND CLINICAL PRESENTATION
doi:10.1136/sextrans-2011-050109.111

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**Background** Some Swedish studies on HPV typing in men exist. Most earlier studies have used less sensitive HPV typing techniques. The purpose of this study is to see if the HPV types in genital HPV associated lesions have changed since the 80ies, and to describe the lesions in detail.

**Methods** Between 2004 and 2007, male patients attending the STI clinic of Karolinska Hospital with genital HPV induced lesions planned for surgery, were asked to participate in the study. All men exhibited multiple lesions men with solitary lesions were excluded. Two clinically identical lesions on the same genital site, were collected by punch biopsy or by scissor excision. One sample was put in formalin for histopathological routine preparation, and the other sample was frozen in −70°C for PCR analysis using a highly sensitive nested PCR technique, detecting 24 different HPV types. The macroscopic morphology of the lesions was classified in acuminated, papular, macular and seborrhoeic keratoses like. The colour of the lesions and the location were recorded. Data on previous therapy and how long time the patients had been afflicted were collected. The remaining 256 men had benign lesions and are described here. Acuminated lesions dominated, occurring in 106 (41%) of the men, followed by papular lesions found in 88 (34%) men. The penile shaft, the pubic area and the foreskin were the most common locations for the HPV induced lesions, afflicted in 36%, 29% and 25% of the men, respectively. Pink and brown were the dominating colours of the lesions. HPV was detected in 233 (91%) lesions. Low risk HPV types were detected in 242 (99%) lesions. Among the 11 remaining (4%) lesions, a-3 types (defined as 6, 11, 16, 18, 33, 39, 45, 51, 52, 58, 59, 81, 82, 83, 84, 89). As expected, most of the benign lesions were acuminated, but the morphology as well as the genital location varied.

**Conclusion** Using a highly sensitive PCR technique, a high HPV detection rate of 91% was found. As in earlier studies, HPV 6 was most common, but also other HPV types including high-risk types were detected. As expected, most of the benign lesions were acuminated, but the morphology as well as the genital location varied.

**O3-S2.04** CERVICAL ECTOPY IS NOT ASSOCIATED WITH ACQUISITION OF HPV INFECTION
doi:10.1136/sextrans-2011-050109.112

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**Background** HPV infection and cervical cancer are often found at the cervical transformation zone. High rates of HPV in adolescents have been attributed to their greater extent of “ectocervix”, defined as areas of columnar and metaplastic epithelium visible on the ectocervix. The study aim was to examine associations between the extent of cervical ectopy and incident HPV infection in healthy adolescents.

**Methods** Sexually active young women were enrolled as part of a prospective HPV Natural History Study. Women were eligible if they were 13–21 years old, sexually active (5 years maximum), and had no history of cervical intraepithelial neoplasia, cervical procedures, or immunosuppression. At 4-month interval visits, we performed colpophotography to document the epithelium, HPV testing for 57 types by Roche Reverse Line Blot assay, and interviews to assess behaviours. This study selected women (N=147) who had negative HPV results at the first two consecutive visits. Epithelial areas of interest were measured in the digitised colpophotographs by using computerised planimetry to produce pixel counts. The extent of ectopy was measured as a percentage of the total cervical face. Cox proportional hazards models examined ectopy as a predictor for incident HPV, defined as the first positive HPV result following the initial two negative results, adjusted for the number of new sexual partners. Outcomes included incidence of any HPV type; α-9 HPV types (defined as 16, 31, 33, 35, 45, 52, 58, 67); and α-3/15 HPV types (defined as 61, 71, 72, 81, 83, 84, 89).

**Results** The 147 women attended a total of 545 visits. The mean age at baseline was 17.2 years, mean age of menarche was 12.8 years, and mean age of first sex was 15.4 years. Self-reported race/ethnicity was 55 (24%) Asian, 14 (10%) African-American, 45 (29%) Caucasian, 52 (35%) Latina, and 3 (2%) Other. The median ectopy measurement from the 545 visits was 14% (interquartile range 6–32%) of the total cervical face. Incident HPV of any type was found in 42 (29%) women. The extent of ectopy was not significantly associated with incidence of any HPV type (HR 1.004, p=0.63); α-9 HPV types (HR 0.99, p=0.43); or α-3/15 HPV types (HR 1.02, p=0.18). Results were unchanged when adjusted for new sexual partners in the past 8 months (HR 1.9, p<0.01).

**Conclusions** When measured quantitatively, the extent of cervical ectopy is not a risk factor for the acquisition of HPV infection in healthy adolescent women.

**O3-S2.05** PREVALENCE OF TRICHOMONAS VAGINALIS AND CO-INFECTION WITH CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEA IN THE USA AS DETERMINED BY THE APTIMA TRICHOMONAS VAGINALIS NUCLEIC ACID AMPLIFICATION ASSAY
doi:10.1136/sextrans-2011-050109.113

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**Background** Trichomonas vaginalis (TV) is the most common curable sexually transmitted infection worldwide. True prevalence of TV infection is not well characterised as previous studies mainly used
methods with relatively poor sensitivity compared to nucleic acid amplification methods. Our aim was to determine TV prevalence using the APTIMA TV Assay (ATV, Gen-Probe Incorporated) and the frequency of co-infections with Chlamydia trachomatis (CT) and Neisseria gonorrhoea (NG) in the USA among women being screened.

**Methods** Samples from 7593 women aged 18–89 years undergoing routine CT and NG screening at obstetrics/gynaecology, emergency room, hospital in-patient, family practice, family planning, internal medicine, jail, and STD clinic populations in 21 states were collected. Consecutive samples previously tested for CT and NG by the APTIMA COMBO 2 Assay (Gen-Probe Incorporated) were retrospectively tested with the ATV assay. Endocervical, urine, vaginal swab and PreservCyt liquid Pap samples (Hologic Inc.) diluted into APTIMA specimen transport buffer were tested.

**Results** Overall prevalences of TV, CT and NG in surveyed women were 8.7%, 6.7%, and 1.7%, respectively. TV prevalence ranged from 7.5 to 8.6% in women age 18 to 39 yr, and increased to 9.3% in women age 40–44 yr. Highest observed TV prevalences were in women ages 45–49 yr (13.4%) and over 50 yr (13.0%). CT and NG prevalences were less than 2% in the 40+ age group and highest in women less than 30 years of age ranging from 5.2% to 14.3% for CT and 1.3%–3.5% for NG. TV was the more prevalent STD than either CT or NG in all age groups, except the 18-19 yr group (CT: 14.5%; TV: 15.9%). TV prevalence differed by race/ethnicity (20.2% blacks; 5.7% whites; 5.0% Hispanics; 3.8% Asians). TV prevalence was 14.4% in the Southeast, 9.5% in the Southwest and Midwest, and 4.3% in the Northeast and ranged from 5.4% in Family Planning clinics to 22.3% in jails. Co-infections in most age groups were <1%, and were highest in the 18–19 yr group (TV/CT: 2.1%, TV/NG: 0.88%).

**Conclusions** TV prevalence was highest in women over 40 years of age, in contrast to CT and NG prevalences which were highest in women under 30 years of age. Co-infection of TV with CT or NG was relatively low. The high TV prevalence in all age groups suggests that all women being screened for CT/NG should also be screened for TV. Routine TV screening should also be considered for at-risk sexually active women of any age.

Abstract O3-S2.06 Figure 1. T. vaginalis Prevalence by Nugent Score.

**Conclusions** Though published research shows that the incidence of TV is highest in women with BV, our data along with those from a previous study in pregnant women clearly establish that TV prevalence is highest in women with intermediate NS. These data in conjunction with our pyrosequencing results suggest that following infection TV modifies the vaginal microbiome by suppressing some of the BV associated organisms and enhancing the abundance of mycoplasmas.