Epidemiology oral session 2: Human papillomavirus

**EPIDEMIOLOGY OF, AND BEHAVIOURAL RISK FACTORS FOR, SEXUALLY TRANSMITTED HUMAN PAPILLOMA VIRUS INFECTION IN A SAMPLE OF THE BRITISH POPULATION**

doi:10.1136/sextrans-2011-050109.7

**Background** Persistent infection with high-risk sexually transmitted human papilloma viruses (HR-HPV) can lead to development of cervical and other cancers while low-risk types (LR-HPV) may cause genital warts, the most commonly-diagnosed viral STI in the UK. An HPV immunisation programme, using the bivalent vaccine protecting against types 16 and 18, was introduced in the UK in 2008. The frequency of HPV types is important baseline information against which to monitor the direct and indirect effects of vaccination. Here we examine the proportion of the population with detectable infection with HPV in urine collected in 1999 for the National Survey of Sexual Attitudes and Lifestyles (Natsal-2) and the relationship with demographic and behavioural variables.

**Methods** Natsal-2 was a probability sample survey of men and women aged 16–44 resident in Britain involving computer-assisted personal interviewing. Half of all sexualliy-experienced respondents aged 18–44 were invited to provide a urine sample. 3436 samples were tested using an in-house Luminex-based HPV genotyping system.

**Results** HPV DNA was detected in 29.0% (95% CI 26.7% to 31.3%) of samples from women and 17.4% (95% CI 15.1% to 19.8%) from men. Any of 13 HR-HPV types was detected in 15.9% (95% CI 14.1% to 17.7%) of women’s samples and 9.6% (95% CI 8.0% to 11.6%) of men’s. Vaccine preventable types 16 and/or 18 were found in 5.5% (95% CI 4.5% to 6.8%) of women and 5.0% (95% CI 2.1% to 4.3%) of men; and types 6 and/or 11 in 4.7% (95% CI 1.8% to 3.3%) of women and 2.2% (95% CI 1.5% to 3.1%) of men. 4.1% (95% CI 3.1% to 5.2%) of women had HPV 16 and/or 18 without any other HR-HPV. In multivariate analysis, HR-HPV was associated with number of new partners, in women with younger age, single status, and partner concurrency, and in men with number of unprotected partnerships and age at first intercourse.

**Conclusion** This is the first population-based probability sample study of the distribution of sexually transmissible HPV types in Britain. It is also the first to undertake a detailed analysis of relationships with demographic and behavioural variables and to include men. HPV DNA was detectable in urine of a high proportion of the sexually active British population; the lower prevalence in males reflected lower detection sensitivity for HPV in urine from males. In both genders HPV was strongly associated with sexual risk behaviour.
Methods
Women aged 20–38 years were followed semi-annually for 18 months in Thailand (n=1200). Assessment was made on cervical HPV genotypes, cervical cytology, sexual behaviour, demographic factors and diagnoses of other STIs including chlamydia, gonorrhoea, syphilis, genital herpes and trichomoniasis. Incidence detection was defined as any type-specific HPV or other STI which was detected at current visit but not at previous visit. Associations were measured by ORs with 95% CIs estimated in generalised estimating equation models.

Results
During follow-up, 241 new cases of HPV, 110 incident cases of high risk (HR)-HPV and 46 new cases of other STIs were observed. Diagnosis of other STIs at previous visit was statistically significantly associated with twofold increased odds of any new HPV detection after controlling for sexual behaviour, age, pap smear status and contraceptive use [adjusted OR (aOR): any HPV: 2.16 (95% CI: 1.08% to 4.34%)]. No significant association was found between diagnosis of other STIs and subsequent incident detection of HR-HPV [aOR: 2.01 (95% CI: 0.74% to 5.46%)].

Conclusions
These data suggest that lowering the number of sex partners may reduce infection with multiple HPV types at the anal canal among MSM and MSW. Additionally, using condoms during anal sex among MSM, even among men with multiple partners, may reduce multiple anal HPV infections at the anal canal. Questions: alan.nyitray@moffitt.org

Abstract O1-S02.03 Table 2

<table>
<thead>
<tr>
<th></th>
<th>New cases of other STIs, n=46 (1.4%)</th>
<th>New detection of other STIs across consecutive visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any HPV</td>
<td>31 (1.2)</td>
<td>1.0</td>
</tr>
<tr>
<td>Yes</td>
<td>15 (2.4)</td>
<td>1.94 (1.05 to 3.58)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.81 (0.94 to 3.49)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>New cases of other STIs, n=46 (1.4%)</th>
<th>New detection of other STIs across consecutive visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any HR-HPV</td>
<td>38 (1.3)</td>
<td>1.0</td>
</tr>
<tr>
<td>Yes</td>
<td>8 (2.7)</td>
<td>2.14 (1.00 to 4.61)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.00 (0.82 to 4.83)</td>
</tr>
</tbody>
</table>

Cancer Center and Research Institute, Tampa, USA; 2 Ludwig Institute for Cancer Research, São Paulo, Brazil; 3 Centro de Referência e Treinamento em DST/AIDS, São Paulo, Brazil; 4 Instituto Nacional de Saúde Pública, Cuernavaca, Mexico

Background
Human Papillomavirus (HPV) infection is the primary cause of anal cancer. While multiple HPV infections in the anal canal may accelerate disease progression, there are no reports of behavioural factors associated with multiple anal HPV infections among men having sex with men (MSM) and men having sex with women (MSW). We hypothesised that infection with multiple HPV types in the anal canal among MSM was associated with multiple sex partners and lack of condom use for recent anal sex. For comparison, we also assessed the role of multiple partners and condom use among MSW.

Methods
Genotyping for 37 HPV types was conducted on anal canal exfoliated cell specimens from men, ages 18–70, from São Paulo, Brazil; Cuernavaca, Mexico; and Tampa, Florida, USA. Specimens from the pre-enrolment visit of a 4-year prospective study were analysed. Eligibility included no history of genital warts and no current STD diagnosis including HPV. Exfoliated cell samples between the anal verge and the dentate line of the anal canal were obtained with a saline-wetted swab. A total of 193 MSM and 1407 MSW provided evaluable specimens. For multivariable analyses we used Poisson regression with a robust sandwich estimator. Associations estimated were adjusted for potential confounders.

Results
Multiple HPV infections were present in the anal canal of 34.7% of MSM and 4.0% of MSW. Prevalence of multiple HPV infections was stable by age group among MSW (p trend=0.65) but declined among MSM (p trend=0.009). After adjustment for potential confounders, ≥2 male anal sex partners in the past 3 months (OR 2.47, 95% CI 1.43% to 4.27% vs 0–1 men) and lack of condom use at last anal sex (OR 1.51, 95% CI 1.07% to 2.12% vs condom use) were associated with detection of multiple anal HPV infections among MSM. Among MSW, ≥2 female sex partners in the past 6 months (OR 1.81, 95% CI 1.02% to 3.21% vs 0–1 women) was associated with detection of multiple anal HPV infections while condom use at last vaginal sex was not associated with infection (no condom use: OR 0.90, 95% CI 0.51% to 1.61% vs condom use).

Conclusions
These data suggest that lowering the number of sex partners may reduce infection with multiple HPV types at the anal canal among MSM and MSW. Additionally, using condoms during anal sex among MSW, even among men with multiple partners, may reduce multiple anal HPV infections at the anal canal. Questions: alan.nyitray@moffitt.org

Abstract O1-S02.04

EVIDENCE OF HPV VACCINE EFFECTIVENESS IN REDUCING GENITAL WARTS: AN ANALYSIS OF CALIFORNIA PUBLIC FAMILY PLANNING ADMINISTRATIVE CLAIMS DATA, 2007 – 2009

doi:10.1136/sextrans-2011-050109.10