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, gonorrhea, syphilis, genital herpes and trichomoniasis. Incidence detection of HPV genotypes, cervical cytology, sexual behaviour, demographic and other factors measured, such as age of sexual debut and frequency of sex in last 6 months, were included in the final models for confounding control. Parity, smoking status, and other factors measured, such as age of sexual debut and frequency of sex in last 6 months, did not satisfy these criteria in the data analyses and hence were not included in the final models.

Covariates that were found to be statistically significantly associated with the outcomes (p<0.05) and/or significantly influence the effect size of the primary association of interest (≥10%) were included in the final models for confounding control. Parity, smoking status, and other factors measured, such as age of sexual debut and frequency of sex in last 6 months, did not satisfy these criteria in the data analyses and hence were not included in the final models.

Results

During follow-up, 241 new cases of HPV, 110 incident cases of other STIs, 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, smear status and contraceptive use [adjusted OR (aOR): any HPV, 2.16 (95% CI: 1.08% to 4.34%)] (Abstract O1-S02.02 table 1). No significant association was found between diagnosis of other STIs and subsequent incident detection of HR-HPV [aOR: 2.01 (95% CI: 1.08% to 4.34%)] (Abstract O1-S02.02 table 1). Positive detection of any HPV or HR-HPV predicted nearly twofold increased odds of new other STIs with the estimates bordering on statistical significance [aORs: any HPV, 1.81 (95% CI: 0.94% to 3.49%); HR-HPV: 2.00 (95% CI: 0.82% to 4.83%)] (Abstract O1-S02.02 table 2).

Conclusions

We show that other STIs increase the risk of HPV incidence after controlling for sexual behaviour. The data quantitatively suggest mutual associations of HPV with other STIs. Further studies are warranted to evaluate if these reflect true biologic interactions between HPV and other sexually transmitted microbial agents, or mere confounding from unmeasured sexual risks.
tion. Although CIN3/AIS are detected during cervical cancer screening, these lesions are not routinely reported to US central cancer registries (CCRs). Compared to other precursor lesions, CIN3/AIS show the most consistent inter-pathologist agreement in histopathology interpretation making them the most suitable precursor lesion surveillance endpoints.

Methods The Centers for Disease Control and Prevention conducted a project in three statewide CCRs to assess the feasibility of collecting data on CIN3/AIS lesions using existing registry infrastructure, a standardized case definition, and well-defined coding rules. State-specific vintage 2009 bridged-race postcensal population estimates were used to calculate incidence rates.

Results Statewide age-adjusted incidence rates of CIN3/AIS in 2009, using the 2000 US Standard Population, were 76.8 (Kentucky), 57.5 (Michigan), and 54.7 (Louisiana) per 100,000 women. Highest rates were observed in those aged 20 to 29; rates among these women were 272.8 in Kentucky, 196.7 in Louisiana, and 192.6 in Michigan. Race was missing for 16% of records. Among records for which race was reported, incidence rates in Kentucky were highest for whites, while rates in Michigan were highest for blacks; in Louisiana rates did not differ significantly between whites and blacks. In each state, overall rates of CIN3/AIS were over sixfold higher than invasive cervical cancer rates. Only 3.8% of cervical lesions were AIS.

Conclusions These results are the first reports of statewide population based incidence of CIN3/AIS in the US, and demonstrate that routine collection of CIN3/AIS lesions by cancer registries is feasible and could provide an earlier endpoint than cervical cancer with which to evaluate the impact of HPV vaccination in the US. Sentinel registries should be established to collect ongoing data on CIN3/AIS to monitor the impact of HPV vaccine in the US.

Abstract O1-S02.04 Table 1 Per cent change between 2007 and 2009 in GW diagnoses by gender and age group

<table>
<thead>
<tr>
<th>Age group</th>
<th>Females % Change</th>
<th>P-value</th>
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</tr>
</thead>
<tbody>
<tr>
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**Background**

Human papillomavirus (HPV) vaccine has been recommended routinely to 11–12-year-old US girls for cervical cancer prevention since 2006, and evaluation of the population impact of HPV vaccine is a critical need. In addition to measuring the impact of HPV vaccines on cervical cancer incidence, surveillance should include endpoints more proximal in time to HPV infection such as cervical intraepithelial neoplasia grade 3 (CIN3) and adenoscarcinoma in situ (AIS). These immediate precursors to invasive cervical cancer manifest only 5–10 years after HPV infection. Although CIN3/AIS are detected during cervical cancer screening, these lesions are not routinely reported to US central cancer registries (CCRs). Compared to other precursor lesions, CIN3/AIS show the most consistent inter-pathologist agreement in histopathology interpretation making them the most suitable precursor lesion surveillance endpoints.

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**Abstract O1-S02.05**

**POPULATION BASED SURVEILLANCE FOR CERVICAL INTRAEPITHELIAL NEOPLASIA GRADE 3 AND ADENOCARCINOMA IN SITU IN THREE CENTRAL CANCER REGISTRIES, USA 2009**

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**Abstract O1-S02.06**

**DETECTION OF CERVICAL CANCER PRECURSORS AND ASSOCIATED HPV TYPES IN THE USA: HPV-IMPACT PRELIMINARY RESULTS**


**Background**

Cervical intraepithelial neoplasia (CIN) grade 2 or 3 and adenocarcinoma in situ (AIS) (CIN2+) can be used to monitor HPV vaccine impact. This spectrum of preinvasive cervical lesions is commonly associated with multiple HPV types and detected through screening. This abstract describes baseline CIN2+ data and associated HPV types among defined populations of US females.

**Methods** As part of a vaccine impact monitoring project (HPV-IMPACT), CIN2+ cases in females 18–59 years were reported from pathology laboratories in five catchment areas (CA, CT, NY, OR, TN). One diagnostic block was selected and un unstained serial sections were prepared for PCR. Extracts from samples with residual lesion on both H&Es were used in Roche Linear array to detect and type HPV. CIN2/3 diagnosis rates were determined in catchment areas (CA, CT and NY) with complete case reporting. HPV typing data were analysed from all five defined catchment areas.

**Results** In 2008, rates per 1000 population in 18–39-year-old females were 2.8 in CA, 5.5 in CT and 4.9 in NY. In all five sites, CIN2 was most common (49%), followed by CIN3 (51%) and AIS (2%). The proportion of lesions not distinguished by grade (CIN2/3) varied across sites (from 12 to 27%). Median diagnosis age was 31 years in CA, 29 in CT, 27 in NY, 29 in OR, 28 in TN. Among 6038 18–39-year-old females, 1413 (23%) specimens were tested; 96% were HPV DNA positive. HPV16 was most prevalent (47%), followed by HPV51 (11%), HPV52 (9%) and HPV53 (8%). HPV18 prevalence was 5.4%. HPV16 prevalence varied by diagnosis: 38% in CIN2, 51% in CIN2/3, and 59% in CIN3.