

**Human Papillomavirus (HPV) – genotype evaluation in a Canadian Subarctic Population and impact on vaccine policy**

G. Zahariadis<sup>1</sup>, K. Pabbaraju<sup>2</sup>, A. Wong<sup>2</sup>, S. Wong<sup>2</sup>, L. McDougall<sup>2</sup>, R. Waghray<sup>2</sup>, P. Tilley<sup>3</sup>

<sup>1</sup>University of Alberta, Edmonton, Alberta, Canada, <sup>2</sup>University of Calgary, Calgary, Alberta, Canada,

<sup>3</sup>University of British Columbia, Vancouver, BC, Canada

**Objective:** HPV is the most common STI, and causes cervical cancer. Vaccines targeting HPV 16/18 are used for primary prevention. There is limited data demonstrating that these genotypes cause cervical cancer in subarctic populations. This study was designed to generate data on the distribution of HPV genotypes among women living in Alberta, Canada.

**Method:** A total of 2316 liquid-based cytology samples collected from women > 15 years were included in the study. All samples were tested by the Hybrid Capture 2 (hc2, Qiagen) for detection of high risk (HR) and low risk (LR) HPV types. All hC2 positive samples were genotyped by the Linear Array HPV Genotyping Test (LA, Roche).

**Results:** Total number of positives detected was 430 (18.57%; 95% CI: 14.9 - 22.24), of these 301 (13.0%; 95% CI: 9.2 - 16.8) harboured HR types, 60 (2.59%; 95%CI: -1.43 - 6.61) had LR types and 69 (2.98%; 95%CI: -1.03 - 6.99) had both HR and LR types. The highest percentage of HPV was detected in the age group 20-24 years at 40.51%, followed by 15-19 years at 27.30% and 25-29 years at 20.37%. In all other age groups the positive rate was < 20%. In all age groups, the proportion of HR HPV was greater compared to that of LR HPV. The most commonly occurring HR HPV genotypes were 16, followed by 52 and 31. A pre-cursor and surrogate estimate for cervical cancer is HSIL and 24 such specimens were indentified. In these, HPV 16 was detected in 16 and HPV 18 in 1 (HPV 16/18 combined prevalence 71%). The positive rate for HPV was highest in the HSIL category at 96%, followed by the LSIL category at 91%, ASCUS at 73% and NIL 11%. Irrespective of cytology result, the proportion of HR HPV was greater compared to LR HPV.

**Conclusion:** This study defines the prevalence of HPV types in cervical specimens from a subarctic population of women. It confirms that at least one of the HPV types in the vaccine is in fact the likely cause of most cases of cervical cancer. Unlike other jurisdictions, HPV 18 was not found to be a significant HR HPV type. These data also offer a baseline to facilitate comparison of HPV types following the introduction of school based HPV 16/18 vaccination programs. This will allow monitoring strain replacement as well as inform vaccine development to target future specific HPV HR types.