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# EPIDEMIOLOGY OF HPV INFECTION

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## Summary

Geographical widespread data on human papillomavirus (HPV) type-distribution, in addition to that of cervical cancer incidence, are essential for estimating the impact of type-specific HPV vaccines on cervical cancer and cervical screening programmes.

**Key words:** human papillomavirus, epidemiology, cervical cancer

IARC has coordinated population-based surveys of HPV prevalence in more than 20 regions across Africa, Asia, South America and Europe, using a standardised HPV testing protocol (GP5+/6+ PCR-based EIA at Vrije University, Amsterdam). In a pooled analysis of 15,613 women aged 15–74 years without cytological abnormalities, the most common types were HPV-16, -42, -58, -31, -18, -56, -81, -35, -33, -45 and -52, with evidence that the relative importance of HPV types varied by region (1). Most markedly, HPV-positive women in sub-Saharan Africa were significantly less likely to be infected with HPV-16 and more likely to be infected with other high-risk (e.g. HPV-35) and low-risk HPV types.

However, meta-analyses of HPV type-distribution among cervical precancers and cancers have shown that the relative importance of HPV-16 and -18 increases, and geographical dif-

ferences decrease, with increasing severity of cervical lesions. HPV-16/18 is estimated to account for 16–32% of low-grade squamous intraepithelial lesion (LSIL), 41–67% of high-grade squamous intraepithelial lesion (HSIL), but 70% of all cervical cancers worldwide (2). The estimated fraction of cervical cancer caused by HPV16 and 18 is slightly only higher in more developed (72–77%) than in less developed (65–72%) regions. After HPV-16/18, the six most common HPV types are the same in all world regions, namely 31, 33, 35, 45, 52 and 58; accounting for an additional 20% of cervical cancers (3).

## REFERENCES

1. Clifford GM, Gallus S, Herrero R, Muñoz N, Snijders PJ, Vaccarella S, et al; IARC HPV Prevalence Surveys Study Group. Worldwide distribution of human papillomavirus types in cytologically normal women in the International Agency for Research on Cancer HPV prevalence surveys: a pooled analysis. *Lancet*. 2005 Sep 17-23;366(9490):991-8.
2. Clifford G, Franceschi S, Diaz M, Muñoz N, Villa LL. Chapter 3: HPV type-distribution in women with and without cervical neoplastic diseases. *Vaccine*. 2006 Aug 21;24 Suppl 3:S26-34.
3. Smith JS, Lindsay L, Hoots B, Keys J, Franceschi S, Winer R, et al. Human papillomavirus type distribution in invasive cervical cancer and high-grade cervical lesions: a meta-analysis update. *Int J Cancer*. 2007 Aug 1;121(3):621-32.