



## Journal of Epidemiology and Global Health

ISSN (Online): 2210-6014

ISSN (Print): 2210-6006

Journal Home Page: <https://www.atlantis-press.com/journals/jegh>

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**To cite this article:** Ziad El-Khatib, Joseph E. Tota, Andreas M. Kaufmann (2012) Progress on human papillomavirus (HPV) infection and cervical cancer prevention in sub-Saharan Africa: Highlights of the 27th International Papillomavirus Conference in Berlin, 17–22 September 2011, Journal of Epidemiology and Global Health 2:2, 99–102, DOI: <https://doi.org/10.1016/j.jegh.2012.04.001>

**To link to this article:** <https://doi.org/10.1016/j.jegh.2012.04.001>

Published online: 23 April 2019



# Progress on human papillomavirus (HPV) infection and cervical cancer prevention in sub-Saharan Africa: Highlights of the 27th International Papillomavirus Conference in Berlin, 17–22 September 2011

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Received 29 December 2011; received in revised form 9 March 2012; accepted 9 April 2012  
Available online 20 June 2012

## KEYWORDS

Cervical cancer; HPV;  
sub-Saharan Africa; HIV;  
Infectious diseases

**Abstract** Highlights of the International Papillomavirus Conference in Berlin, 17–22 September 2011.

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The International Papillomavirus Conference (IPVC) is the most important event in the field of cervical cancer prevention and control. It is held under the auspices of the International Papillomavirus Society. The 27th IPVC was held September 17–22, 2011 in Berlin, Germany. More than 2000 participants from 78 countries attended the conference. A total of 870 abstracts were presented in either oral or poster format. In light of the importance of cervical cancer as a major public health problem in sub-Saharan Africa (SSA), the 27th IPVC presentations that focused on this region are summarized below. Several presentations dealt

with issues related to human papillomavirus (HPV) vaccine acceptability and cost, as well as with burden of HPV infection prevalence, particularly among HIV-infected patients.

At the opening ceremony, one of the conference keynote speakers, Dr. Rose Anorlu, Lagos, Nigeria, discussed the current burden of HPV and cervical cancer in SSA [1,2]. Incidence and mortality rates for invasive cervical cancer rates in SSA are the highest in the world at 56 and 41 per 100,000 women annually, respectively [3]. However, this might be an underestimate, as only 8% of the SSA population is covered by cancer registries. Owing to fragile health care systems, lack of screening programmes, treatment facilities, and to the HIV

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epidemic, a 65% increase in incidence is expected by 2025.

The high coverage of Rwanda's national HPV vaccination programme [4] among school students aged 11–15 years was one of the highlights from this conference, and now serves as a useful model for limited-resource settings. In Tanzania, Remes et al. [5] and Watson-Jones et al. [6] examined knowledge, attitudes, and acceptability concerning HPV vaccination among teachers, parents, female students, female nurses, and religious leaders. They described a cluster-randomized trial of school-based HPV vaccine delivery strategies in the same country. Both approaches – class-based and age-based – were highly acceptable, but class-based delivery attained higher coverage than the age-based strategy. The study also identified potential predictors of coverage failure: school absenteeism and parental refusal being the most important. Nurses in Tanzania had a low level of knowledge regarding cervical cancer. The rest of the study participants had no knowledge of cervical cancer, HPV, or HPV vaccination [5].

In South Africa, Delany-Moretlwe et al. [7] interviewed key informants, parents, community members, and learners. They also conducted focus group discussions with learners, teachers and health-care providers. Using qualitative and pair-wise ranking methods, Delany-Moretlwe et al. [8] assessed the feasibility and acceptability of introducing the HPV vaccine at urban and rural settings in South Africa. In the urban setting, the first two priorities included: (i) referral for circumcision, and (ii) information, screening and referral for child abuse. Participants from the rural setting gave priority to: (i) information, screening and referral for tobacco and alcohol abuse, and (ii) screening for hearing or vision. Both settings identified similar third and fourth priorities: screening and referral for sexual and reproductive health, and screening and referral for anxiety and depression, respectively. In South Africa [7], all participants identified vaccine delivery strategies as an important gap and concern. However, some recommended addressing sexual health issues when presenting the vaccine, while others preferred using the approach of marketing the vaccine as a cervical cancer prevention tool.

In both countries there was a high rate of acceptance for the vaccine [5–7], especially in the absence of a cervical screening programme [7]. However, many respondents expressed some concern surrounding side-effects [5–7], including the risk of infertility following vaccination [5].

Cost of HPV vaccination was an important concern in the SSA. In a vaccination campaign involving 13-year-old girls attending schools in the Mwanza region in Tanzania, Quentin et al. [9] estimated a cost of US\$ 35 for delivering one dose of the vaccine, including the US\$ 5 vaccine cost. Most of the cost is related to administrative, training and supervision (50%) and vaccination costs (30%). Levin et al. [10] examined delivery costs for HPV vaccination in an outreach-based programme in Uganda, a school in Vietnam, and campaigns in Peru and India. In these settings, the delivery cost (per dose) was estimated at US\$ 1.4, 4.7 and 2.7, respectively.

HPV vaccination campaigns might vary depending on country and context. The Global Alliance for Vaccines and Immunization (GAVI) will share the cost of HPV vaccination for 56 listed countries [11] that have a Gross National Income (GNI) per capita below or equal to US\$ 1500. In November 2011, GAVI alliance members met in Dhaka, Senegal, and made the commitment to vaccinate up to 2 million girls and women in SSA by the year 2015. Effective roll-out of vaccination in this region will certainly benefit from the opinions and expertise of those working in the field, or conducting research in SSA, and is essential for ensuring high uptake. Professor Harald zur Hausen, Nobel Prize Laureate for Medicine in 2008 for discovering the link between HPV and cervical cancer, has been a champion in the fight against cervical cancer in SSA and has stated [12]:

“...I am delighted to see the HPV vaccine on its way to protect many lives. In developing countries girls and women often have only very limited access to screenings and medical treatment, so the vaccine will play a crucial role in the fight against cervical cancer...”

Regarding the burden of HPV infection by genotypes, HPV 16 was the predominant HPV type identified in four studies conducted in Eastern and Southern Africa (Kenya [13] 18%; Uganda [14] 6%; Zimbabwe [15] 27% and South Africa [16] 18%). However, there was some discordance among the regions. For example, HPV 56 was the dominant type in Kenya (19%), whereas HPV 58 was the dominant type (tied with HPV 16) in Zimbabwe (27%).

Prevalence of HPV is often much higher among HIV patients. Maranga et al. [13] reported types 56, 52 and 58 as the most prevalent (19%, 17% and 15%, respectively) followed by type 16 (12%) in a group of HIV-positive subjects from Kenya. Wang et al. [16] reported types 16 and 35 as the

most prevalent (18% and 17%, respectively) among HIV-positive women in Cape Town, South Africa. In comparison with other prevalent types, infection with these two types was associated with a twofold elevated risk of developing high-grade cervical lesions.

To investigate the rate of HPV acquisition and clearance, Mbulawa et al. [17] enrolled HIV-positive and HIV-negative women and men in Cape Town, South Africa, and followed them for two years. At study enrolment [18], genital HPV prevalence was 75% and 35% among HIV positive and negative women, respectively. For men, HPV prevalence was 80% and 50% among HIV positive and negative individuals, respectively. For both sexes, the differences in HPV prevalence were statistically significant. HIV-positive individuals (both women and men) were less likely to clear their HPV infection relative to their HIV-negative peers [16]. Additionally, women with abnormal cervical cytology were less likely to clear their HPV infection relative to those with normal pap smears. Being HIV positive with a high HIV viral load was a risk factor for HPV infection, acquisition, and persistence in both genders. However, HIV-positive men had a significantly higher risk of acquiring both high-oncogenic-risk or low-oncogenic-risk HPV types than the HIV-negative men.

Weiderpass et al. [14] assessed HPV prevalence among women who were screened positive at visual inspection and were invited for a colposcopy. Approximately 40% and 16% tested positive for HPV and HIV respectively. In comparison to HPV+/HIV– women, investigators found that co-infected women were at higher risk for developing new high-oncogenic-risk HPV infections [14,16]. Finally, Tracy et al. [19] compared HPV prevalence between rural and urban women living in Mali and found a significant difference (23% versus 12%, respectively). Rural women self-reported having >1 sexual partner before reaching age 20, and also tended to be more open to polygamous relationships.

The 28th IPVC will take place in Puerto Rico in 2012 ([www.hpv2012pr.org](http://www.hpv2012pr.org)). The organizers are encouraging investigators from SSA to submit their work, especially studies describing the introduction of HPV vaccinations in different settings and contexts.

### Additional learning material on cervical cancer prevention

An online oncology course, developed by the Catalan Institute for Oncology; the course is accessible for free (<http://www.e-oncologia.org/en/curso>).

All educational presentations of the Clinical and Public Health Workshops can be accessed and viewed as a webcast for free at the congress website (<http://www.hpv2011.org/webcast/inhalt.asp>) in addition to comprehensive summaries for all presentations [20–22].

### Conflict of interest and acknowledgments

None of the authors received funding from industry for attending the conference or for preparing this meeting report. Like most biomedical congresses, the 27th IPVC received financial sponsorship from commercial sources (<http://www.hpv2011.org/index1.asp?siteid=1&pageid=1>). However, none of the industry sponsors had any influence on the content of the presentations summarized in this report.

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