Introduction

Human papillomavirus (HPV) infection and resulting diseases, such as cervical cancer, cause a silent epidemic worldwide. In the past 3 decades, more than 150 HPV genotypes were characterized, and infection with the most important and carcinogenic HPV types became preventable by vaccination. As with other diseases, which are associated with socioeconomic status disparities can be seen between high- and low-income countries.

In this issue, 5 articles summarize the current status of our knowledge in epidemiology, prevention, and treatment in 5 different geographic regions, and discuss trends and measures necessary to improve the particular situation. These data were presented during the 2011 conference of the International Papillomavirus Society (www.HPV2011.org) in Berlin, Germany.

The perspectives in the industrialized world (North America and Europe) are presented by Pierce Campbell and colleagues (1) and Kesci and colleagues (2), respectively. Following introduction of screening for and treatment of cervical precancer, that is, secondary prevention of cervical cancer, incidence has dropped by up to 80% in many regions. However, disparities are seen in ethnic minorities and in rural areas in the United States as well as in certain regions of Europe where health care is not available or organized programs have not been established. A tight correlation can be seen between socioeconomic status, geographic or racial background, use of screening services, and the risk to develop invasive cervical cancer. Unfortunately, also the uptake of vaccination is only around 32% in the United States showing that this preventive measure will not unfold its full potential. In Europe, there is a big difference between Western and Central/Eastern countries. Again, there is a close correlation between the availability and intensity of screening programs, their organization, quality, and time since initiation. Therefore, the incidence rates vary between 4 of 100,000 (Switzerland, Finland) to around 23 of 100,000 (Romania, FYR Macedonia) and are on average 4 to 5 times higher in Eastern compared with Western or Nordic countries. An obstacle for the introduction of population-based, systematically organized screening programs is the lack of epidemiologic data and of resources and infrastructure. Although HPV vaccination has been approved in almost all European countries, only few have implemented routine vaccination free of charge. Those are the countries with rather low cervical cancer incidence, where screening already exists, and not those with the highest need.

A similar picture is drawn by Villa (3) in her contribution on Latin America and the Caribbean. Only in few countries, a slight decrease in cervical cancer incidence and mortality has been observed despite decades of Pap-testing, and incidence is still one of the highest in the world with 20 to 80 per 100,000 women. Cervical cancer affects particularly younger women and still is the leading cause of cancer death in several Latin American countries. Again, similar to Europe, large social and economical differences exist in Latin America. Fortunately, several countries in this region are engaged in evaluating new preventive strategies. Like in Eastern Europe, distribution of prophylactic HPV vaccines is still inadequate in Latin America.

About 50% of patients with cervical cancer worldwide are seen in the Asia Oceania region. This is due to the large population and the lack of comprehensive preventive programs. Garland and colleagues (4) report on the successful introduction of cytologic screening and HPV vaccination in Australia. This is the first population-based program that shows a rapid effect on HPV-associated diseases in contrast with other parts of the region where local initiatives have been started only recently. Many are supported by organizations such as the Australian Cervical Cancer Foundation, The United Nations Children’s Fund (UNICEF), World Health Organization (WHO), Global Alliance for Vaccines and Immunization (GAVI), or Program for Appropriate Technology in Health (PATH) and on efforts in organization, research, and communication strategies.

The last report by Denny and Anorlu (5) describes a dramatic situation for African countries. They illustrate insufficient health care systems and lack of treatment facilities or medication and palliative care for women with cervical cancer. Simple, inexpensive screening strategies such as “Visual Inspection with Acetic Acid” and “see-and-treat” interventions are feasible to achieve disease reduction. To date, HPV vaccines are too expensive and few countries have established platforms to distribute vaccines and to reach adolescent girls. Adequate methods for molecular detection of cervical cancer precursors must
become available to overcome the deficiencies of the current strategies.

Secondary prevention of cervical cancer in high resource settings using cytologic screening and adequate treatment in organized programs reduces incidence by more than 80%. These strategies, however, are not suitable to solve the problem worldwide and they have to be adapted to the particular local situation. New molecular screening technologies and a multitude of HPV tests have been developed that are momentarily being introduced in organized screening programs. Again, this happens predominantly in settings with sufficient resources where cervical cancer incidence is relatively low due to cytologic screening. The same is true for the successful introduction of HPV vaccination withholding its benefit from those who are in highest need. Combining vaccination of adolescent girls and (probably also boys) with HPV-based screening in women above the age of 30 years combined with effective treatment will have the highest and quickest impact with lasting benefit for future generations.

Because the highest burden of disease is in low-resource countries, efforts should be made to bring effective and affordable screening devices like point-of-care-test and subsidized vaccines to these regions. Also, information initiatives are important to overcome social and religious barriers.

Support should be given by organizations on every level to establish preventive programs. For example WHO, GAVI, or UNICEF have started such initiatives to outreach to underserved women in the low-resource world. The main support, however, has to come from political forces and authorities, who formulate the explicit will to change the situation for women in their region and countries. This means a call to action for all stakeholders to improve the situation for all women worldwide.

**Disclosure of Potential Conflicts of Interest**
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**References**