Optimizing the Clinical Value of HPV Test

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Infection with high-risk human papillomavirus (HPV) is associated with the development of several human cancers including cervical, vaginal, vulvar, penile, anal and oropharyngeal cancer. Among these HPV-associated cancers, cervical cancer remains the most important one in terms of health burden. Despite the availability of prophylactic vaccines for HPV, cervical cancer remains the fourth most common cancer in women worldwide, with estimated 528,000 new cases in 2012. Most of the cervical cancer cases were from countries without organized cervical screening program. The fact that virtually all cervical cancers are due to HPV infection, HPV could be an early as well as sensitive marker for cervical screening. At present, a wide range of commercially available high throughput HPV tests are available. These tests have been applied in primary screening as well as for triage of women with previous abnormal cytology results. The interpretation of HPV test results is complicated and dependent both on the testing methodology and the population being tested. Owing to the fact that HPV infection is common in the sexually active population, HPV test often suffers from having low positive predictive for high-grade cervical neoplastic lesions. In recent years, type-specific tests have been used, and follow-up actions are mainly confined to those infected with the "super" high-risk types, such as HPV16 and HPV18. The definition of "super" high-risk types may vary geographically. For instance the risk associated with HPV52 or HPV58 in East Asia is different from elsewhere. In addition to simply detecting HPV DNA, recent assays have focused on E6/7 mRNA and protein expression. Furthermore, newer approaches such as methylation and integration analysis are under development. In the coming era, the clinical value of HPV test could be much improved by newer techniques that can characterize the phenotype of HPV infection found in an individual.