Prevalence of Human Papillomavirus Infection in Adolescent Girls Before Reported Sexual Debut

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(See the major article by Houlihan et al on pages 837–45.)

Houlihan et al present data on the prevalence of human papillomavirus (HPV) infection among 474 adolescent girls aged 15–16 years in Tanzania who reported no previous sexual intercourse. Despite no reported history of sex, a non-negligible fraction of girls (8.4%) tested positive for HPV infection, using a highly sensitive polymerase chain reaction assay from nurse-assisted, self-administered cervicovaginal specimens. Global data on the prevalence of HPV infection among adolescents worldwide are extremely limited [1]. Therefore, these data from Tanzania are important because they are among the first to examine HPV infection prevalence among female adolescents and are from sub-Saharan Africa, which has one of the highest incidence rates of invasive cervical cancer in the world [2].

As cited by the authors, the laboratory-confirmed prevalence of HPV infection was relatively higher than that previously observed in studies from Europe, Australia, and the United States, which found extremely low or no HPV detection among female participants reporting no previous sexual intercourse. The 2010 Tanzania Demographic and Health Survey (TDHS) documented a self-reported median age at first intercourse of 17.4 years, with an estimated 15% of women having had sexual intercourse by 15 years of age [3]. This latter TDHS estimate of previous sexual intercourse is somewhat higher than that observed by Houlihan et al (19% among participants aged 15–16 years). Together, the data suggest that, in the study by Houlihan et al, the HPV infection prevalence of approximate 9% among female adolescents before reported sexual debut is partially attributable to the underreporting of previous sexual intercourse by study participants. This potential underreporting is likely due to social desirability and study consent procedures requiring parental consent, which may have created an environment in which daughters were relatively uncomfortable to disclose their previous sexual activity.

The cervicovaginal prevalence of HPV infection was the higher among participating Tanzanian female adolescents who reported a history of vaginal douching, with the highest risk of HPV infection observed with more-frequent vaginal cleansing. Although the weight of the evidence suggests a positive association between pelvic inflammatory disease and the practice of douching [4, 5], data have been relatively inconsistent for associations between vaginal douching and Chlamydia trachomatis infection [5], human immunodeficiency virus infection [6], HPV detection [7, 8], and cervical cancer [5]. This merits further investigation with more-detailed examination of douching practices and formulations. A highly plausible alternative explanation is that the reporting of vaginal douching among female adolescents in the study by Houlihan et al represented a proxy of unreported sexual activity rather than a causal risk factor for HPV infection per se.

These data from Houlihan et al have implications for the global implementation of prophylactic HPV immunization programs, particularly given that the Global Alliance for Vaccination and Immunization (GAVI) is now providing access to affordable HPV vaccination for GAVI-eligible, lower-income countries [9]. The recently released summary report of the US President’s Cancer Panel, Accelerating HPV Vaccination Uptake: An Urgency for Action to Prevent Cancer, recommended as part of its global focus to “continue its collaboration with and support of GAVI to facilitate HPV vaccine introduction and uptake in low-income countries” [10]. Several GAVI-eligible countries, including Tanzania, have initiated HPV vaccination demonstration projects aimed to prove the field-based capacity to successfully implement population-based HPV immunization programs for adolescents.

The primary target population for HPV immunization for public health programs should be non-sexually active, preadolescent females, given that current...
generation prophylactic HPV vaccines have not been shown to have a therapeutic effect on preexisting HPV infections [11]. In terms of implications for public health prevention programs, data from the present Tanzanian study highlight the need to work to optimize HPV vaccination coverage among sexually naive young women well before their reported age at sexual intercourse, rather than closer to the timing of their reported first sexual intercourse. The World Health Organization also recommends that the optimal time for provision of HPV vaccination to populations is before sexual intercourse [12]. Given that individual reporting of the age of first intercourse may be variable, field-based implementation of HPV vaccination is not based on reported ages of first intercourse, but rather on a chosen target age or age group for the recommended vaccination, which differ by country [13].

As countries such as Tanzania begin rolling out country-level immunization programs, clinical counseling should include clear recommendations to provide HPV vaccination well before first intercourse among sexually naive female adolescents, to effectively reduce their future acquisition of high-grade cervical lesions and cervical cancer. Messages from providers to parents should include information on the additional benefits of providing prophylactic HPV vaccination at earlier rather than relatively later ages of adolescence, including information from the clinical trials of both the bivalent and quadrivalent vaccines, which have shown that higher levels of neutralizing antibodies are generated among younger adolescents aged 10–14 years after vaccination, compared with those generated by relatively older female adolescents (ie, those aged 16–26 years) [14]. Data from the implementation of population-based vaccination programs in Finland, which examined genital warts as a clinical outcome, have recently provided further justification that the greatest benefit of prophylactic HPV vaccination will be among female adolescents who are more sexually naive [15, 16]. Thus, in countries challenged with the financial requirements of implementing comprehensive HPV immunization programs, targeting girls well before their reported age at first intercourse will likely be more cost-effective than investing in catch-up programs for relatively older young women.

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