EDITORIAL COMMENTARY

A Key Role for Adolescents in the Epidemiology of Cytomegalovirus and Genital Herpes Infections

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(See the article by Stanberry et al. on pages 1433–8)

Adolescence is an important period for acquisition of human herpesvirus infections in the United States. Primary infection with Epstein-Barr virus often manifests as mononucleosis in teenagers and young adults but not in young children. There is concern that varicella immunization at 12–18 months of age will shift the burden of varicella disease to the teenage years, and varicella immunization of susceptible teenagers is recommended [1]. Rates of congenital cytomegalovirus (CMV) infection are higher among infants born to mothers <20 years of age [2], and in this issue of Clinical Infectious Diseases, Stanberry et al. [3] report a high incidence of CMV, herpes simplex virus (HSV) type 1 (HSV-1), and HSV type 2 (HSV-2) infections among young women in their early teens. Although there is no shortage of seroepidemiological studies of herpesvirus infections in the literature, the vast majority are cross-sectional studies with prevalence data for specific age ranges [4].

The longitudinal cohort design of the study by Stanberry et al. [3] provides incidence data and the opportunity to examine exposures associated with initial acquisition of virus. The observed incidence of HSV-2 infection among 12–15-year-old sexually active girls—4.4%—is surprisingly high. Although this rate is somewhat lower than that observed by Stanberry et al. [5] among women in a HSV-2 vaccine trial involving discordant couples, it is very similar to the incidence of HSV-2 infection observed in a previous vaccine trial involving adults recruited from couples discordant for genital herpes and from sexually transmitted diseases clinics [6]. The CMV infection rate reported by Stanberry et al. [3] is also high and is comparable to rates observed among day care workers and in sexually transmitted diseases clinics [7]. Thus, it seems reasonable to suggest that control of disease associated with genital herpes and CMV may ultimately depend on our ability to interrupt transmission in adolescents.

Although most of these infections appear to be clinically silent [3], their public health significance includes the potential for transmission of the infecting virus to others, including vertical transmission. The risk for neonatal HSV infection is dramatically increased when primary maternal genital infection occurs near the time of delivery [8]. The risk for congenital CMV infection is increased when primary maternal infection occurs months (perhaps years) prior to pregnancy [9]. It has been suggested that prevention of adolescent pregnancy would decrease morbidity due to congenital CMV infection in the United States by ~50% [2]. Increased risk for neonatal herpes and for congenital CMV infection clearly deserve mention as reasons (in addition to many others) for prevention of pregnancy among teenagers.

Prevention of primary HSV-2 and CMV infections in women of childbearing age will probably be best accomplished by immunization of young adolescent or preadolescent women, which are the target population recommended by the Institute of Medicine for a CMV vaccine aimed at prevention of congenital CMV infection [10]. Evaluation of candidate vaccines in this age group makes sense, not only because of the high incidence of infection among adolescents, but because young adolescents will benefit from a successful vaccine program that can prevent horizontal and vertical transmission of CMV.

Cohort studies and clinical trials involving adolescents present special challenges for obtaining consent from minors and assuring compliance with the demands of study protocols. Teenagers are notoriously disinterested in the possibility that they could be affected by an infection or illness. However, as Stanberry et al. [3] demonstrate, studies involving this segment of our population can be successful, and for both biologic and public health reasons, more studies of herpesvirus nat-
ural history and prevention that involve adolescents are clearly needed.

Acknowledgment

Potential conflicts of interest. R.F.P. has received recent research funding from the National Institute of Allergy and Infectious Diseases and has served as a consultant for GlaxoSmithKline.

References