INTRODUCTION

Unknown until the second half of the 20th century, human papillomavirus (HPV) is now recognized as being one of the most common sexually transmitted infections (STI) in the United States, accounting for more than one-third of the new cases of STIs each year (1). HPV is a group of more than 120 viruses, at least 30 types of which can infect the anogenital areas. Most HPV infections cause no symptoms, other types can cause genital warts, and still others cause invasive squamous cell anogenital carcinoma. The total health care costs for HPV-related disease in 1998 were estimated to be $3.4 billion, two-thirds of which were spent on prevention and screening (2). This chapter provides an overview of HPV infection—its transmissibility and epidemiology. It focuses on genital warts in its discussion of the clinical consequences of HPV infection. The contribution HPV infection makes to various genital cancers is mentioned, but the screening, diagnosis, and treatments of these conditions are outside the scope of this book.

FAST FACTS

- HPV is one of the most common STI in United States.
- About 70% of sexually active people acquire the infection at sometime during one’s lives.
- Most people infected with HPV clear the infection spontaneously within 3 years.
- HPV can infect the genital skin and epithelium of the vagina, cervix, rectum, and urethra. Nongenital infections are also possible.
- Genital warts can result from initial, recurrent, or persistent HPV infection.
- Virtually all squamous cell cancer of the cervix results from persistent HPV infection, with high-risk HPV types.
PREVALENCE/INCIDENCE

Precise estimates of the incidence of HPV infection are not available for several reasons. First, HPV is not a reportable disease. Additionally, most infections are subclinical. Of the patients who develop findings with HPV infection, most have only indirect indication of infections, such as abnormal cervical cytology. In patients who have more obvious manifestations of infection, such as external genital warts, no formal testing is done to document the presence of HPV. Finally, HPV also causes recurrent outbreaks of lesions. Because most first infections are asymptomatic, it may be difficult to recognize new cases from recurrent infections, which must be done to calculate incidence.

Prevalence of HPV infection is also difficult to estimate. The usual technique used to estimate the number of people infected with HPV is to measure serum antibodies. However, most people who acquire the viral infection, clear that infection within 1–2 years; others may harbor the infection for years without outbreaks; others will have obvious recurrences. Some people in these groups will have positive antibody titers, so that antibodies may overstate the number of people who are currently infected (prevalence) (3). Confusing the situation even further is the fact that only 50% of individuals infected with HPV will develop detectable antibody titers to the virus, which could underestimate prevalence.

Despite these limitations, several studies performed over the past 20 years have demonstrated a steady rise in the number of new cases of genital HPV. The number of office visits for genital HPV disease has increased over the last 30 years. It has been estimated that about 15% (20–24 million) of adults in the United States are currently infected with this virus; 9.2 million of them are between the ages of 15–24 years (3–6). The prevalence of HPV infection among sexually active college women over a 3-year period has been reported to be over 40%; the greatest prevalence is among women with 3 or more lifetime partners or partners with 2 or more lifetime sexual partners (7–9). Approximately 80% of all women will have acquired this infection with at least one subtype of HPV by age 50 (5,10).

Studies that have used sensitive polymerase chain reaction (PCR) to detect latent HPV DNA in healthy men have found that penile HPV infection rates in sexually active men are at least as high as cervical HPV infection rates are in women (11). Among men seen in one sexually transmitted disease (STD) clinic, the prevalence of HPV rates was 28.2%; oncogenic HPV was found in 12%. Interestingly, HPV positivity was not associated with age, as it is in women (11). In a second study, HPV DNA was found on the cotton swab of only 1.3% of healthy male volunteers but was found in of 18.5% of men who had urethritis but no penile lesions (12).