INTRODUCTION

Sexually transmitted infections (STI) constitute a major burden of disease for women globally and include bacterial infections (syphilis, gonorrheal infection, chlamydial infection, and chancroid) and viral infections (herpes simplex virus (HSV), human papillomavirus (HPV), and hepatitis B virus (HBV)). Rates of STIs in developing countries, especially those in Sub-Saharan Africa, far exceed those found in industrialized countries and STIs have been recognized as a major contributor to the global burden of disease (Gerbase et al., 1998; Wasserheit, 1989; Brunham & Embree, 1992). In 1995 there were over 353 million cases of the four major curable STDs in adults between the ages of 15 and 49: 12 million cases of syphilis, 62 million cases of gonorrhea, 89 million cases of chlamydia, and 170 million cases of trichomoniasis, making STDs among the most common causes of illness in the world. Among industrialized countries, the United States has the highest rates of STI (Eng & Butler, 1997), including the easily curable infections like gonorrheal and chlamydial infections and syphilis. Women in all societies carry a greater burden of sexually transmitted infections, compared to men, for several reasons. First, STIs are more easily transmissible from men to women; second, greater proportions of women tend to be asymptomatic when infected with sexually transmitted pathogens, thus, women’s infections are more likely to go undiagnosed and therefore untreated; third, women suffer severe sequelae of STI including infertility, pelvic inflammatory disease (PID), ectopic pregnancy, cervical cancer, fetal wastage, low birth weight, infant blindness, neonatal pneumonia, and mental retardation (Wasserheit & Holmes, 1992); fourth, universally, compared to men, women suffer more from the stigma attached to STI and their sequelae such as infertility. In many societies women’s worth is defined in terms of her reproductive capacity and reproductive performance (Aral, 1992).

Perhaps the most important complication of STIs in general is the increased probability of acquisition and transmission of HIV in the presence of other STI (Fleming & Wasserheit, 1999). This becomes an even greater concern for women than men, because the best prevention methods (condoms and avoidance of risky sex) are those that require the cooperation, if not control of a man.
EPIDEMIOLOGY

This chapter focuses on the epidemiology of STIs in industrialized countries, where surveillance data are available. It is not possible to determine trends of STI over time in developing countries, because data have not been systematically collected and mostly come from sporadic studies of specific clinic or high-risk populations. In general, data on reported STIs from North America and many countries of Europe, as well as from Australia and New Zealand showed steady increases in the incidence of all STIs during the 1960s, with leveling off or decline of most of the bacterial STI but continual increases in viral STIs and genital chlamydial infections during the 1970s and 1980s. The incidence of gonorrhea and syphilis began to decline at different times, and declined at differing rates, in these industrialized countries. The sex ratio of males to females with bacterial STIs has declined for several decades. Gonorrhea and syphilis have continued to decline during the 1990s, and chlamydial infections have begun declining in Nordic countries, and in those areas of the United States and Canada and elsewhere where chlamydia control programs have been initiated. In the Southern Hemisphere, a few regions doing relatively well economically (e.g., Costa Rica, Thailand, and Harare, Zimbabwe) have experienced declining rates of bacterial STI during the 1990s. In contrast, some countries are experiencing explosive epidemics of bacterial STI [e.g., China (Michael et al., 1998), Mongolia, (Purevdawa et al., 1997), and Russia, and the Newly Independent States of the former USSR (Tichonova et al., 1997)]. Also, many countries in Eastern Europe, Southern Africa, and Asia continue to experience epidemic increases in HIV infection.

BACTERIAL STI

Gonorrhea

The major bacterial STIs include gonorrhea, chlamydial infection, syphilis, and in many developing countries, chancroid. The male:female sex ratio for gonorrhea declined throughout much of this century; but increased, accelerating in the 1960s and 1970s, with use of selective culture media for isolation of Neisseria gonorrhoeae and with partner notification, both of which led to increasing detection of infected women during the 1960s and 1970s. This occurred simultaneously with the "sexual liberation" of women coinciding with the advent of oral contraception in the 1960s; and with decreasing rates of STI in homosexual men during the AIDS era (Aral & Holmes, 1999).

In the United States, the incidence of reported gonorrhea increased during World War II, peaked in 1946, then decreased until 1957, and subsequently increased again for nearly two decades, peaking at 473 per 100,000 in 1975. A rapid decline then continued at an accelerating pace to 124 in 1996, the lowest ever since the beginning of WWII (Division of STD Prevention, 1997). While there has been a recent surprising increase in gonorrhea of 8.9% between 1997 and 1998 from 122.0 cases to 132.9 cases per 100,000 persons, there has been a 72% decrease in the overall rate of gonorrhea from 1975 to 1998 (Centers for Disease Control, Division of Sexually Transmitted Diseases, 2000). It is too soon to tell if the increase in gonorrhea in the last few years is due to an increase in the accuracy of reporting or due to an actual resurgence of infection.

Comparisons of trends in the incidence of gonorrhea in industrialized countries are shown in Figure 1. Gonorrhea incidence per 100,000 population had fallen to 31.5 by 1994 in the United Kingdom; and to 18.6 in Canada by 1995. In summary, rates of reported gonorrhea in the United States in 1995 were 22.4 times those in Sweden, 7.8 times those in Canada, and 4.6 times those of the United Kingdom. This underestimates the true differences in rates, because smaller proportions (perhaps only about half of the cases of gonorrhea occurring in the United States) are reported.

STIs are differentially reported and treated in the United States with large differences be-