

14. Strategies for Management of STDs

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Introduction

It is estimated that there are more than 250 million new sexually transmitted infections each year (Khanna, Van Look and Griffin 1992). In some developing country family planning clinics, between 1 and 2 out of every 10 clients have a sexually transmitted disease (Lande 1993). Not surprisingly, STDs play an increasingly prominent role in issues of international health and public policy. Although STDs have always existed, today there is new urgency to addressing them for several reasons.

In the developing world, persistently high birthrates and improved child survival have led to larger numbers of sexually active men and women. These are the individuals most at risk for STDs. In sub-Saharan Africa, for example, there were an estimated 36.9 million women 15 to 44 years of age in 1950; that number is projected to grow to 143.3 million by the turn of the century (WHO 1986).

The proportion of the developing world population (excluding China) living in cities increased by 60 percent between 1950 and 1980 and is projected to grow by another 25 percent by the year 2000 (World Bank 1985). This rapid urbanization has been accompanied by male migration to cities and alteration of traditional social structures and sexual behaviors (Brunham and Embree 1992).

War and revolution, genocide, famine, drought and other natural disasters are part of the daily news diet. Continuing poverty is fostered by social and economic upheaval, increased population density and inadequate educational opportunities. These various factors interact both to facilitate the spread of STDs and to make the problems they cause more visible (Brunham and Embree 1992).

The HIV pandemic and its "epidemiologic synergy" (Wasserheit 1992) with other STDs has perhaps focused attention most acutely. For a disease unknown 20 years ago and with a cure still beyond the horizon, its worldwide impact is staggering. The World Health Organization projects that by the year 2000, 3 million women will have died of AIDS, 10 million children will have been orphaned because of AIDS, and another 10 million children will have been perinatally infected with HIV (WHO 1992). Furthermore, 30 to 40 million people will be HIV-infected by the turn of the century; approximately half of them will be women (WHO 1992).

It is widely accepted that women are disproportionately affected by STDs. The power dynamic in most sexual relationships reflects the traditionally lower status of women in most societies and reduces the woman's ability to protect herself against STDs by negotiation with her partner about condom use or, more basically, about when, where and how sexual contact occurs. There is a virtual absence of safe, effective and inexpensive infection barrier methods that are totally woman-controlled and can be used secretively if necessary.

For anatomic, and possibly hormonal, reasons women appear to be more vulnerable than men to several sexually transmitted infections after exposure (Louv et al 1989, Sweet et al 1986). The human immunodeficiency virus is thought to be 17 times more likely to be transmitted male-to-female than female-to-male (Alexander 1990; European Study Group on Heterosexual Transmission of HIV 1992; Peterman 1990). Furthermore, women are more likely to be asymptomatic with many infections and less likely to seek care (Judson 1990; Washington, Johnson and Sanders 1987); the social stigma surrounding STDs in women also discourages appropriate and timely care. Most conventional STD programs are focused primarily on men or high-risk women, such as commercial sex workers (Germain et al 1992). Diagnosis of some infections is more difficult in women than in men, especially in settings without instruments, such as specula, for female genital tract examination.

Finally, the severity and probability of long-term complications and sequelae of STDs are greater in women (Belsey 1976; Muir and Belsey 1980; Schulz, Cates and O'Mara 1987) and are exacerbated and reinforced by delayed diagnosis and treatment.

Appropriate management of individuals with STDs is not limited to antimicrobial therapy for the client herself. Management also includes treatment of sexual partners, when this is indicated, and education and counseling of clients (and their partners, if possible) about STDs, their significance and sequelae, and their prevention.

Management Goals

The overall goals of STD management include symptom relief, prevention of complications/sequelae, prevention of transmission, prevention of HIV transmission and prevention of repeat infections.

- **Symptom relief** There is significant variation in STD symptomatology between different infections, between different individuals with the same infection, and even within the same individual who has two different episodes of the same infection. Furthermore, there may also be a sociocultural influence, since symptoms (e.g., vaginal discharge) are subject to personal and cultural interpretation. Symptom relief or amelioration is an important goal in management of STDs worldwide because they have an impact on both quality of life and economic productivity.
- **Prevention of complications/sequelae** Sexually transmitted diseases are associated with several significant sequelae in women. Many of these can be prevented by timely diagnosis and appropriate treatment. Long-term complications of STDs include:
 - **Infertility.** One of the most common and devastating complications associated with STDs is infertility. This generally results from damage to the fallopian tubes from ascending infection by gonorrhea, chlamydia and other organisms causing PID. The proportion of infertility secondary to STDs is thought to range from 15–80 percent in developing regions (Cates, Farley and Rowe 1985; DeMuylder et al 1990; Wasserheit 1989; WHO 1987).
 - **Ectopic pregnancy** Ectopic pregnancy remains one of the primary causes of maternal mortality throughout the world and is linked in the majority of cases with tubal damage from prior PID. The risk of ectopic pregnancy is increased 7- to 10-fold after PID (Westrom and Mårdh 1990). Treatment of ectopic pregnancy also frequently results in permanent infertility.
 - **Lower genital tract neoplasia** Cervical cancer is the most common cancer in women in developing countries and in some regions may account for 3–5 percent of adult female deaths (WHO 1986). As many as 80 percent of diagnosed cases are at such advanced stages that treatment, even if available, is unsuccessful (Luthra et al 1988). A variety of lines of evidence point to human papillomavirus (HPV) infection as a causal factor in the development of lower genital tract neoplasia, including most commonly cervical, but also vaginal and vulvar, cancers (American College of Obstetricians and Gynecologists 1994; Schiffman 1992).
 - **Adverse pregnancy outcomes** Adverse pregnancy outcomes linked to STDs include miscarriage or stillbirth, intrauterine growth retardation, prematurity and transmission of infection to the fetus or newborn, associated with varying degrees of physical or mental compromise and increases in infant mortality (Brunham, Holmes and Embree 1990; Cotch 1990; Schulz, Schulte and Berman 1992; Wasserheit and Hitchcock 1992).
 - **Chronic pain** Chronic pelvic and abdominal pain is a complication of approximately one fifth of women who have had PID. It is associated with infertility and is thought to be related to intra-abdominal adhesive disease (Westrom 1975; Westrom and Mårdh 1990).
 - **Death.** In many urban areas in central Africa, AIDS has become the leading cause of death in young women of reproductive age (DeCock et al 1990; Mulder et al 1994; Nelson et al 1991). Deaths secondary to sepsis from untreated or inadequately treated acute PID still occur. Mortality from the long-term complications of STDs discussed above further magnifies the toll of these diseases.
 - **Economic costs.** The economic costs of STDs have not been well studied. In sub-Saharan Africa, however, it is estimated that syphilis results in the loss of 9 days of productive activity per capita per year; HIV results in 48 days lost per capita per year (Over and Piot 1991).

- **Prevention of transmission.** The success of STD control and management strategies depends upon limiting the spread of these infections to uninfected sexual partners or to the fetus or newborn. Up to 70 percent of infants born to mothers infected with gonorrhea, chlamydia or early syphilis will be perinatally infected (Schulz, Schulte and Berman 1992). Identification and treatment of partners who are already infected and may develop complications or transmit infections to others is of equal importance.
- **Prevention of HIV transmission** One of the most important goals of STD management is prevention of HIV infection. There is evidence from well-designed studies that both ulcerative and non-ulcerative STDs increase the risk of HIV transmission three to five fold (Wasserheit 1992). Furthermore, because HIV is sexually transmitted and is associated with risk behaviors similar to other STDs, identification of a sentinel sexually transmitted infection offers the opportunity to educate and promote a reduction in risk behaviors. This can decrease the chances of acquiring HIV for those not already infected.
- **Prevention of Repeat Infections** Up to one quarter of women who develop PID will subsequently have a repeat episode (Meheus 1992; Westrom and Mårdh 1990) and a diagnosis of one STD automatically places an individual at increased risk for others. The most likely explanation is that high-risk behaviors frequently continue without significant change. Inadequate treatment of the woman or her partner is an important cause of recurrence or persistence of the same infection. The problem of repeated STDs highlights the need to define management more broadly, place added emphasis on education to shape knowledge and attitudes and stress counseling to promote consistent and persistent behavior change.

Approaches to Management

There have been two basic approaches to STD diagnosis and treatment: etiologic and syndromic.

Etiologic Approach

- Etiologic management is based on complete assessment of the client who presents with a specific complaint, including history, physical examination and collection of specimens for microscopy, culture, serology or other tests in an effort to identify the specific organisms responsible for the infection. Treatment is prescribed according to the results of the entire evaluation.
- This approach has the advantage of specificity, by “ruling out” organisms which might cause the same clinical presentation.
- Etiologic diagnosis has several significant disadvantages: it is costly and time-consuming; it is resource-intensive; well-trained professionals are required to perform the evaluation; and it may result in false positives or negatives. In addition, HIV infection can alter the clinical presentation and natural history of several STDs (Hutchinson and Hook 1990; Maier, Bergman and Ross 1986; Quale, Teplitz and Augenbraun 1990; Siegal et al 1981; Wasserheit 1992) and may affect the accuracy of some standard diagnostic laboratory tests, thereby reducing the accuracy of etiologic diagnosis as well (Hutchinson and Hook 1990; Johnson et al 1991; Wasserheit 1992).

Syndromic Approach

- Diagnosis and treatment are determined based on groups of symptoms representing different syndromes. Underlying this approach is an understanding of the different organisms which result in these syndromes, but specific diagnosis is not the aim. Syndromic management plans in the form of flow diagrams have been developed for clients presenting with vaginal discharge, urethral discharge, genital ulcers, other genital skin conditions, buboes and lower abdominal pain.
- It has several important advantages: it can be used by various levels of health care personnel with different levels of training and clinical experience; it is low in cost and requires few extra resources; it allows diagnosis and treatment of symptomatic clients in one visit and in one setting; it avoids the limitations of clinical diagnosis when coinfections are present.

- Its major limitation is its lack of specificity in an effort to “cover all the bases.” For example, a woman with vaginal discharge might be treated for bacterial vaginosis, candidiasis, trichomoniasis, gonorrhea and chlamydia, even though it would be most unusual for her to have all five infections. This approach would waste drugs, a valuable and often scarce and expensive resource in developing countries, and would increase the likelihood of medication side effects and noncompliance.

Improved diagnostic accuracy can be attained by adapting the syndromic approach to the resources and personnel available at a given site:

- At the primary care level, the most basic supplies, such as gloves, may not be available. Assessment depends almost entirely upon a basic history and limited observation.
- In family planning clinics the prerequisites for a complete pelvic exam—private space, table, lighting, speculum and gloves—are generally present, although resources and time may be limited. This allows more thorough assessment by both history and complete physical examination. In a client who presents complaining of vaginal discharge, for example, this setting would enable distinction between discharge coming from the vagina and cervical discharge. Furthermore, additional findings may be noted which could alter diagnosis and treatment.
- In settings with other basic supplies (swabs, pH paper, slides and cover slips, saline, microscope, etc.) additional simple tests may be performed to further refine the diagnosis and more accurately target treatment.

One of the major limitations with both the etiologic and syndromic approaches is their failure to address the asymptomatic woman, who may represent more than 50 percent of clients with certain infections, such as bacterial vaginosis or chlamydia (Eschenbach et al 1988; Harrison et al 1985). This woman is unlikely to show up at a STD clinic but is more likely to be seen at a family planning or prenatal clinic. Although it would be ideal to perform a thorough genital tract examination on all clients in these settings, this may not be possible. In this situation, STD assessment of the asymptomatic woman should be targeted to those with one or more factors identified which place her at increased risk for STDs. A number of rapid, inexpensive and simple diagnostic tests are currently under development for use in the developing world and will further improve diagnostic accuracy.

Prerequisites for Development of Management Strategies

- **Country prevalence data** on different STDs are important in order to know what infections are likely to be present in the population to be served, as well as patterns of infection (i.e., which STDs go together). This information will have an impact on development of diagnostic and treatment paradigms with both the etiologic and syndromic approaches to management and is important for cost-effective use of resources. For example, in a population in which chancroid is rare, a woman with a genital ulcer would most likely be infected with syphilis or herpes and would be treated syndromically only for syphilis. Prevalence data are also helpful when educating or counseling clients.

Despite the limitations of available prevalence data in developing countries, it has been consistently shown that STDs are common, even among asymptomatic populations and low-risk individuals, such as family planning clinic clients (Brunham and Embree 1992). Furthermore, although the median STD prevalence is higher in “high-risk” as compared to “low-risk” groups, the range of prevalences found in different studies is quite similar and broad for both (Wasserheit and Holmes 1992).

- **HIV prevalence data** are also important for educational and counseling purposes. In addition, diagnostic and treatment strategies for other STDs may need to be reconsidered in the setting of high HIV prevalence.
- **Drug resistance data** are important because antibiotic resistance varies dramatically in different geographic regions. Knowledge of this information is critical for development of effective treatment strategies.
- **Development of diagnostic strategies** must occur before a STD management program can be undertaken. These strategies should take into consideration local resources and availability of

specific tests. If syndromic diagnosis is used, knowledge of local STD prevalence can be used to adapt existing flow diagrams for different syndromes.

- **Drug availability** must be assured, and the antimicrobial drugs to treat the infections identified must be effective, available in sufficient quantity and at reasonable prices, and distributed efficiently.

Conclusions

Over the past decade there has been increasing recognition of the threat that sexually transmitted diseases pose to international health and development. The emergence and evolution of the HIV pandemic and its interrelationships with other STDs have accelerated the urgency of these issues and have prompted interdisciplinary cooperation to develop new strategies for addressing them.

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