



The public health approach to STD control



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At a Glance

- There is a strong link between sexually transmitted diseases (STDs) and the sexual transmission of HIV infection. The presence of an untreated STD can enhance both the acquisition and transmission of HIV by a factor of up to 10. Thus STD treatment is an important HIV prevention strategy in a general population.
- STDs often exist without symptoms. In women, most gonococcal and chlamydial infections are asymptomatic. However, up to 90% of men with the same infections will have symptoms.
- In developing countries STDs and their complications, even excluding HIV infection, rank among the top five disease categories for which adults seek health care.
- The complications and long-term consequences of untreated STDs can be very serious, in women even more than in men. Newborn babies can also suffer from STDs acquired from infected mothers, with potentially serious consequences.
- The aim of STD prevention and care is to reduce the prevalence of STDs through primary prevention and effective case management.
- The magnitude of the problem of STDs, and the strong association with HIV transmission, highlight the need to explore new and innovative approaches to prevent and control their spread. One such approach is the adoption of the “public health package”. This package for STD control consists of the following components:
 - promoting safer sex behaviour
 - strengthening condom programming
 - promoting health-care-seeking behaviour
 - integrating STD control into primary health care and other health-care services
 - providing specific services for populations at increased risk
 - comprehensive case management
 - prevention and care of congenital syphilis and neonatal conjunctivitis
 - early detection of asymptomatic and symptomatic infections.
- The traditional method of diagnosing STDs is by laboratory tests. However, laboratory tests are often unavailable or too expensive. For this reason, syndromic diagnosis was developed. The syndromic approach consists of:
 - classification of the main causal pathogens by the syndromes they produce
 - use of flow charts to guide the management of a given syndrome
 - treatment of the syndrome, covering all the pathogens with potential to cause grave manifestations and consequences
 - promoting treatment of sex partners.

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2. Sexually Transmitted Diseases
3. Public Health

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Background

Around 340 million new cases of curable sexually transmitted diseases (STDs) are estimated by the World Health Organization (WHO) to have occurred throughout the world in 1995 in men and women aged 15-49 years. In developing countries, STDs and their complications rank in the top five disease categories for which adults seek health care. In women of childbearing age, STDs – even excluding HIV – are second only to maternal factors as causes of disease, death and healthy life lost. The scale of the STD problem is too great to be dealt with in specialized STD centres alone, and steps must be taken to expand and integrate STD management in primary health and other health centres (see Global prevalence and incidence of selected curable sexually transmitted diseases: overview and estimates, WHO, 1995, pp. 3-4).

Apart from being serious diseases in their own right, STDs fuel the sexual transmission of HIV infection. The presence of an untreated STD (either ulcerative or non-ulcerative) can enhance both the acquisition and transmission of HIV by a factor of up to 10. STD treatment is therefore an important HIV prevention strategy in a general population.

The predominant mode of transmission of HIV, as for other STDs, is sexual. Almost all the measures for preventing sexual transmission of HIV and STDs are the same, as are the target audiences for interventions. Clinical services offering STD care are an important access point for people at high risk for HIV as well, not only for diagnosis and treatment but also for information and education. For these and other reasons, the integration of HIV/AIDS

programmes with STD prevention and care programmes is strongly recommended. Their integration is also economically advantageous.

Main STD pathogens

There are more than 20 pathogens that are transmissible through sexual intercourse – oral, anal and vaginal. The main bacteria are: *Neisseria gonorrhoeae* (causing gonorrhoea), *Chlamydia trachomatis* (chlamydial infections), *Treponema pallidum* (syphilis), *Haemophilus ducreyi* (chancroid), and *Calymmatobacterium granulomatis* (granuloma inguinale, or donovanosis). The principal viruses are: human immunodeficiency virus (HIV), herpes simplex virus (herpes), human papillomavirus (genital warts), hepatitis B virus, and cytomegalovirus. *Trichomonas vaginalis* (trichomoni-

asis) is another important sexually transmitted agent which causes vaginitis and has also been shown to facilitate HIV transmission. *Candida albicans*, which can be sexually transmitted, is the cause of a common fungal infection responsible for vulvovaginitis in women and inflammation of the glans penis and foreskin in men.

The bacterial infections are curable, as is trichomoniasis. The viral infections are not curable, but some can be controlled.

Complications and consequences of STDs

STDs often exist without symptoms. In women with gonococcal and/or chlamydial infections there may be no symptoms in up to 70% of cases. Both symptomatic and asymptomatic

Results of the Mwanza trial, Tanzania

In Mwanza, Tanzania, a randomized trial examined the impact of improved STD case management at primary health-care level. A randomized sample of 12,000 adults was followed over two years, with HIV incidence and the prevalence of selected STDs recorded. HIV prevalence at baseline was about 4% in both the intervention and comparison groups. The incidence of HIV infections over two years was 1.2% in the intervention communities, compared with 1.9% in the comparison communities, showing a reduction of 42% from the intervention. The reductions were seen in all age and sex groups.

A detailed economic evaluation showed that the annual cost of the Mwanza intervention programme for a population of 150,000 was about US\$ 68,000 – or about 45 cents per capita. The cost per case of HIV infection prevented was about US\$ 250, or US\$ 11 for each year of healthy life saved. This compares favourably with child immunization programmes and other highly cost-effective interventions (see Lancet, 1995; 346 :530-536).

The data from Mwanza strongly suggest that improved STD treatment services are both effective and cost-effective and should therefore be promoted as an essential component of HIV/AIDS prevention and care activities. The large-scale implementation of STD treatment services could have a major impact on the HIV pandemic worldwide.

Background

infections can lead to the development of serious complications.

The most serious complications and sequelae (long-term consequences) of untreated STDs tend to be in women and newborn babies. These can include cervical cancer, pelvic inflammatory disease (salpingitis), chronic pelvic pain, fetal wastage, ectopic pregnancy and related maternal mortality.

Chlamydial infections and gonorrhoea are important causes of infertility, particularly in women, with far-reaching social consequences. Chlamydial infection is an important cause of pneumonia in infants. Neonatal gonococcal infections of the eyes can lead to blindness.

Congenital syphilis is an important and significant cause of infant morbidity and mortality. In adults, syphilis can cause serious cardiac, neurological and other consequences, which can ultimately be fatal.

Some types of genital warts lead to genito-anal cancers. Cervical cancer is one of the commonest causes of death in women in developing countries.

Prevention and care of STDs

The objectives of STD prevention and care are to reduce the prevalence of STDs by interrupting their transmission, reducing the duration of infection and preventing the development of complications in those infected.

Primary prevention, which is concerned with the entire community, curbs the acquisition of infection and resulting illness. It can be promoted through health education, and involves practices such as safer sex behaviour, including the use of condoms, and abstinence from sex.

Primary prevention messages apply equally to HIV and other STDs.

Secondary prevention involves treating infected people. Except for HIV and the viral STDs, treatment cures the disease and interrupts the chain of transmission by rendering the patient non-infectious.

The prevention of STDs is a cost-effective option for countries to invest in. With a common currency for measuring cost and a unit for measuring health effects, different interventions can be compared by what it costs to achieve one additional year of healthy life. Outcomes are measured in the same unit of disability-adjusted life years (DALYs) that is used to estimate the burden of disease. The ratio of cost to effect, or the unit cost of a DALY, is called the cost-effectiveness of the intervention; the lower that number, the greater the value for money offered by the intervention.

Treatment of STDs is often highly cost-effective in its own right. It becomes even more cost-effective when the benefits of reduced HIV transmission are added. Curing each case of gonorrhoea among people who are more likely to acquire and transmit the infection, such as sex workers and their clients, saves 120 DALYs, at a cost of well below US\$ 1.00 per DALY gained when the benefits of fewer secondary cases and the reduced risk of HIV transmission are included.

Syndromic case management of STDs

The traditional method of diagnosing STDs is by laboratory tests. However, such tests are very often unavailable or too expensive. For this reason, syndromic management of STDs has been recommended by WHO since 1990 for use in patients presenting

with symptoms of STD. Its main features are:

- classification of the main causative pathogens by the clinical syndromes they produce
- use of flow charts derived from this classification to manage a particular syndrome
- treatment for *all* important causes of the syndrome
- notification and treatment of sex partners
- no expensive laboratory procedures required.

For example, a man presenting with urethral discharge would be treated for both gonorrhoea and chlamydial infection. In a person with a genital ulcer, the treatment would most likely be for syphilis and chancroid.

The syndromic approach permits STD treatment without costly laboratory tests. It offers accessibility and immediate treatment, and is effective and efficient.

Studies have shown that syndromic case management of STDs using flowcharts is more cost-effective than diagnosis based on either clinical examination or laboratory tests. Despite its shortcomings in women with vaginal discharge, this approach currently provides the best alternative guide to STD management, especially where resources for laboratory tests are limited. It performs well in the management of men with symptomatic urethral discharge and in the management of men and women with genital ulcer disease. (See Adler *et al.* 1996, and Dallabetta *et al.* 1996, Ch. 8.)

A disadvantage of the syndromic approach is over-treatment in some patients. This is especially so in the case of vaginal discharge where cervicitis (due to gonorrhoea and/or chlamydial infection) is not the predominant cause of the discharge.

Challenges

There are several reasons why STDs continue to spread, and why their complications and long-term health effects continue to be a burden on individuals and communities. The following are some of the factors hindering the effective prevention and care of STDs.

Many cases are asymptomatic

As already stated, many cases of STDs are asymptomatic, especially in women. Asymptomatic individuals will not know that they have an STD and hence will not seek care. They will continue to be infected and infectious to others.

Reluctance to seek health care

Even with symptoms, some people may be reluctant to seek STD care. This can be out of ignorance, embarrassment or guilt. They may also be deterred by an unfriendly attitude by staff, a lack of privacy or confidentiality, or an intimidating setting of the service.

In 1993 a study in men in Harare, Zimbabwe, found that of those who sought STD care at the primary health-care clinics only 27% did so within 4 days of first noticing symptoms, 37% between 4 and 7 days, 15% between 8 and 14 days and 21% took longer than two weeks. As this was a clinic-based population it was not possible to determine what fraction this represented of the population with a symptomatic STD.

Difficulty of notifying spouse or sex partner(s)

Partner notification is important for interrupting the transmission of STDs and preventing possible eventual reinfection, but in practice there are obstacles. Patients may not inform their sex partners out of fear, embarrassment, or unawareness of the importance of doing so. In resource-poor settings, it is usually impractical for notification to be done by the health sector.

Unavailability or unsuitability of STD services

STD services often do not exist in a particular locality. Even where they exist, they may be difficult to access, especially for women and young people – or they may lack privacy or confidentiality. Alternatively, clients may be deterred from attending by the stigma attached to dedicated STD clinics. A final problem, for men who have sex with men, is that the health-care provider may not look for or be able to recognize a rectal STD.

Ignorance of STDs, their causes, symptoms, cures and possible consequences

Ignorance or misinformation are always powerful obstacles to resolving problems, and this is particularly true where STDs and HIV/AIDS are concerned. While ignorance of STDs and AIDS can exist in all types of people and all age groups, it is likely to be more widespread among adolescents and young people – in fact, the very people who are likely to be more

A condom-promotion programme targeted at lower-income sex workers in Nairobi reduced the mean annual incidence of gonorrhoea from 2.8 episodes per woman in 1986 to 0.7 episodes in 1989. The programme averted an estimated 6000–10,000 new HIV infections a year, at an approximate cost of US\$ 0.50 per DALY gained.

In Zimbabwe, a community intervention estimated to cost US\$85,000 successfully reached more than 1 million persons, distributing more than 5.7 million condoms, and reducing STDs in the general population by between 6% and 50%, according to the area. Behavioural change was noticed among sex workers, who increased condom use with their clients from 18% to 72%. (Investing in Health, World Development Report, Washington DC: World Bank, 1993).

sexually active than others, unlikely to be in stable sexual relationships, and who have poor access to STD care services.

The prescribed treatment is substandard

Although treatment for STDs such as syphilis, gonorrhoea, chlamydial infection, chancroid and trichomoniasis is effective when the correct drugs are given, government health departments sometimes opt for cheaper but substandard treatments in an effort to save money. This practice perpetuates infection and may encourage the rapid emergence of resistant organisms.

Responses

The effective prevention and care of STDs can be achieved using a combination of responses, including the “public health package”. STD service delivery should be expanded to embrace the public health package. Some of the components of the public health package are discussed in more detail below.

Promote safer sex behaviour

Governmental bodies and nongovernmental organizations (NGOs) should develop and disseminate messages promoting safer sex and educating people about risk reduction. They should provide barrier contraceptives which protect against pregnancy and infection, educating people about condoms and encouraging their use. Schools and community-based programmes should provide appropriate sex education to adolescents before sexual activity starts. Some studies have shown that such education tends to delay the onset or frequency of sexual intercourse, rather than increase promiscuity (see UNAIDS, *Learning and Teaching about AIDS at School*, Technical Update, Geneva: UNAIDS, 1997).

Promote health-care-seeking behaviour

Health authorities should develop and deliver messages through a variety of channels to encourage people who either have STD symptoms, or suspect they may have contracted an STD, to seek health care early.

To reduce the obstacles faced by people seeking care, health authorities should integrate STD care activities into other health-care facilities. Patients seeking STD care should be received in a friendly setting where they can be interviewed and treated in privacy. Efforts should be made to improve the attitudes of health-care workers who are sometimes hostile or judgemental towards patients with STDs. Young people, and men who have sex with other men, are among those in need of friendly and confidential services.

Integrate STD prevention and care into primary health care

Integrating STD prevention and care into primary health care facilities,

maternal and child health centres, family planning clinics and private clinics – one of the key elements in the public health package – makes STD services available and accessible to far more people than are currently being served, and especially to sexually active adolescent females. It also has the great advantage that people seeking care can avoid the potential stigma of going to a dedicated STD clinic.

Comprehensive case management of STDs

Comprehensive case management of STDs – another key element of the public health package – comprises the following.

Identification of the syndrome

This can be done through syndromic diagnosis or laboratory tests. The syndromic case management approach, using flow charts, is well suited to settings in which resources for laboratory facilities are limited or unavailable. A diagnosis can be made within a short time without expensive and complex laboratory tests.

The public health package for STD prevention and care: the essential components

- promotion of safer sex behaviour
- condom programming – encompassing a full range of activities from condom promotion to the planning and management of supplies and distribution
- promotion of health-care-seeking behaviour
- integration of STD control into primary health care, reproductive health-care facilities, private clinics and others
- specific services for populations with often high-risk behaviours – such as female and male sex workers, adolescents, long-distance truck drivers, military personnel, and prisoners
- comprehensive case management of STDs
- prevention and care of congenital syphilis and neonatal conjunctivitis
- early detection of symptomatic and asymptomatic infections.

Responses

Antibiotic treatment for the syndrome

Whichever means are used for diagnosis – flow charts or laboratory tests – the availability and use of effective antibiotics is an absolute requirement. The drugs must be available at the first point of contact with a patient with an STD. Effective treatment must also be available and used in the private sector. The use of ineffective or partially effective drugs actually results in an escalation of costs, as patients repeatedly seek treatment for the same condition or its complications. Partially effective treatments may also be responsible for the rapid appearance of resistant strains of organisms.

Educating the patient

The importance of taking the full course of medication must be stressed to all patients undergoing courses of drug treatment that are longer than a single dose. Patients should also understand that during treatment they are still infectious to others; for this reason, and because intercourse could prolong their own symptoms, they should be advised to abstain from sex during the course of treatment.

Condom supply

With people being encouraged to use condoms, health authorities should ensure that there is an adequate supply of good-quality condoms at health facilities and at various other distribution points in the community. Social marketing of condoms is another way of increasing access to condoms.

Counselling

Counselling should be made available for cases where it is needed – for example, in chronic cases of genital herpes or warts – either for individuals or for couples in a sexual

relationship. (The UNAIDS Technical Update on *Counselling and HIV/AIDS* deals with counselling in more detail.)

Information on partner notification and treatment

Contacting sex partners of clients with STDs, persuading them to present themselves to a site offering STD services, and treating them – promptly and effectively – are essential elements of any STD control programme. These actions, however, should be carried out with sensitivity, with social and cultural factors taken into account. This will avoid ethical problems, as well as practical problems such as rejection and violence, particularly against women.

In communities where STDs are particularly prevalent, health workers, social workers and the media should educate people about the reasons for partner notification. This will alert people to the possibility that in the future they themselves may be notified by their sex partner that they may have been infected, and that treatment is important. Syndromic case-management flow charts specify that partners of STD patients must be treated. This is particularly important in gonorrhoea and chlamydial infections, which are asymptomatic in most women.

Control congenital syphilis and neonatal conjunctivitis

Congenital syphilis occurs in about a third of newborn babies of women with untreated syphilis. Syphilis prevalence rates of up to 19% have been reported from some developing countries. Prenatal screening and treatment of pregnant women for syphilis is cost-effective, even in areas of prevalence as low as 0.1%.

Women should be educated and motivated to attend antenatal clinics, early in pregnancy, where they will be routinely tested and, where necessary, treated for syphilis promptly and appropriately (see Dallabetta *et al.* 1996, pp. 173-177).

Because of the high prevalence in developing countries of gonorrhoea and chlamydial infections, and the consequent risk of newborn children developing gonococcal or chlamydial ophthalmia, routine prophylactic treatment for such ophthalmia at birth is strongly recommended.

Monitor drug sensitivity

It is essential that health authorities regularly monitor and detect the emergence of resistance to STD drugs. This will enable programmes to adapt their treatment protocols accordingly.

Carry out further research and evaluation

By definition, the syndromic management of STDs cannot help individuals with no symptoms of STDs. Also, the vaginal discharge algorithm has less than optimum sensitivity and specificity for cervical gonococcal and chlamydial infections. Risk factors that are used to increase the validity of the vaginal discharge flow chart need to be modified in order to make them applicable to the site. This is an area for local research. It is especially important that overall research should be speeded up, so that affordable, simple, and non-invasive diagnostic tests for the early detection of STDs in both symptomatic and asymptomatic women and men can be developed.

Key Materials

Sexually transmitted diseases: policies and principles for prevention and care. Geneva: UNAIDS, 1997, UNAIDS/97.6. A concise outline of policies and principles for prevention and care of STDs to assist Ministry of Health officials and others with responsibility for developing and implementing STD programmes. It discusses prevention, effective STD care and programme management. The issue of STD care in children and adolescents is also explored.

Global prevalence and incidence of selected curable sexually transmitted diseases: overview and estimates. Geneva: WHO/GPA, 1995. WHO/GPA/STD/95.1 Rev.1. Contains mid-1995 WHO estimates of prevalence and incidence of some curable STDs based on information from world scientific literature and WHO archives. An annex describes the methods used to calculate estimates. This is the first WHO attempt to estimate STD incidence based on epidemiological modelling.

Management of sexually transmitted diseases. Geneva: WHO/GPA, 1997. WHO/GPA/TEM/94.1 Rev.1. Revised WHO recommendations for comprehensive management of patients with STDs within broader context of control, prevention and care programmes for STD and HIV infection; it also provides information on notification and management of sexual partners, and STDs in children.

Sexually transmitted diseases amongst adolescents in the developing world. Geneva: WHO, 1993. WHO/ADH/93.1. The document reviews developing countries' data on STDs and adolescents. It also examines strengths

and weaknesses of data available and indicates ways in which data on STDs in adolescence can be used for promotion of adolescent health.

Adler M, Foster S, Richens J, Slavin H. *Sexual health and care: sexually transmitted infections – guidelines for prevention and treatment.* (Occasional Paper). London: ODA, 1996. This paper raises critical questions in STD management. It examines advantages and disadvantages of various treatment options, including syndromic approach and mass treatment, in different population groups, and assists programme managers to select worthwhile projects for support. It outlines range of options for comprehensive STD programmes.

Dallabetta G, Laga M, Lamptey P (eds). *Control of sexually transmitted diseases: a handbook for the design and management of programs.* Arlington, VA: AIDSCAP/FHI, 1996. This comprehensive account of STD management and prevention addresses the full spectrum of issues that STD managers at national/local levels must consider in designing and implementing STD programmes. It is not clinical, but contains relevant technical material.

Holmes KK, Mardh P, Sparling PF, and Wiesner PJ. *Sexually transmitted diseases*, 2nd edition, New York: McGraw-Hill, 1990. This textbook with inputs from experts in different fields of STD prevention and care explores STDs from historical, social, clinical and microbiological perspectives. HIV/AIDS is covered. It also includes up-to-date information on research findings.

Paxman JM, Zuckerman RJ. *Laws and policies affecting adolescent health.* Geneva: WHO, 1987. This document covers aspects of life affecting the 10-24-year age group, examining how legislation affects health-care delivery to young people. Topics include sexual and reproductive health care, treatment of drug abuse, mental health care, and care for disabled. The simplified presentation enables administrators and policy-makers without legal background easily to understand concepts.

Reese RE, Betts RF (eds). *A practical approach to infectious diseases: an MSD handbook*, 3rd edition, Boston: Little, Brown, 1991. This concise textbook with inputs from different authors present medical information on infectious diseases in practical way for health-care providers with sufficient material on each topic for thoughtful diagnostic and therapeutic decisions. Of interest are chapters on genitourinary tract infections, STDs, gynaecological and obstetric infections, and antibiotic use. It should be especially useful for health-care students and general practitioners, gynaecologists and other specialists.

Robertson DHH, McMillan A, and Young H. *Clinical practice in sexually transmissible diseases*, 2nd edition, Edinburgh: Churchill Livingstone, 1989. This book, primarily for STD specialists, brings together information from standard literature. It also presents clinical and laboratory aspects of various subjects. Although primarily for medical readers, those involved in nursing, counselling, or tracing partners, or in health education can find some of the factual information they may require.

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