



WORLD HEALTH ORGANIZATION

FIFTY-NINTH WORLD HEALTH ASSEMBLY
Provisional agenda item 11.6

A59/11
18 May 2006

Prevention and control of sexually transmitted infections: draft global strategy

Report by the Secretariat

1. In resolution WHA53.14 the Health Assembly requested the Director-General to develop a global health-sector strategy for responding to the epidemics of HIV/AIDS and sexually transmitted infections. In 2003, the Health Assembly adopted resolution WHA56.30, taking note of the global health-sector strategy for HIV/AIDS,¹ and the next year, in resolution WHA57.12, endorsed the strategy to accelerate progress towards the attainment of international development goals and targets related to reproductive health. The submission of the draft global strategy for the prevention and control of sexually transmitted infections 2006-2015² is the next step in the response to the request in resolution WHA53.14.

2. The draft strategy was developed through an inclusive and broad consultative process in all regions with representatives from health ministries, nongovernmental organizations, partners in the United Nations system, the private health sector and other key stakeholders. That process started in 2002 with an outline of key elements of a new strategy. In the second half of 2004, the first draft was discussed at consultations in each Region, followed by a global consultation to consider and compile all the inputs into a working draft. The resulting draft, which incorporated recommendations from all the consultations and from members of the WHO Gender Advisory Panel and the Expert Advisory Panel on Sexually Transmitted Infections including those due to Human Immunodeficiency Virus, was posted on the WHO web site in February 2006 for a discussion and submission of comments by Member States. The final draft has taken into account the comments received and complements the global health-sector strategy for HIV/AIDS. It recognizes that prevention and control of sexually transmitted infections are core aspects of sexual and reproductive health, as stated in the strategy to accelerate progress towards the attainment of international development goals and targets related to reproductive health.

3. Many of the more than 30 bacterial, viral and parasitic pathogens that are transmissible sexually, including HIV, are transmitted predominantly through sexual intercourse. Some are also transmitted through contaminated blood products, tissue transfer and from mother to child during pregnancy, childbirth and breastfeeding. WHO estimates that every year more than 340 million new cases of the common bacterial and protozoal sexually transmitted infections (i.e. syphilis, gonorrhoea, chlamydial genital infections and trichomoniasis) occur throughout the world in men and women aged 15-49 years.

¹ For an executive summary, see document WHA56/2003/REC/1, Annex 5.

² Document A59/11 Add.2.

4. Sexually transmitted infections may be present without symptoms or with symptoms that are mild and transient, but they may have severe long-term consequences such as infertility, ectopic pregnancy, chronic illness and premature death. In unborn and newborn children chlamydial infections, gonorrhoea and syphilis can produce serious and often life-threatening conditions including congenital disease, pneumonia and low birth weight. Infection with human papillomavirus increases the probability of developing carcinoma of the cervix, which is the second leading cause of cancer-related mortality in females worldwide, killing some 240 000 women per year.¹ Making a correct diagnosis of a sexually transmitted infection is essential for the provision of appropriate and effective treatment.

5. Four fundamental benefits derive from investment in control of sexually transmitted infections. First, their control reduces the enormous burden of morbidity and mortality due to sexually transmitted infections in both resource-constrained and developed countries, both directly, through its impact on quality of life, sexual and reproductive health and child health, and indirectly, through its impact on national and individual economies. Secondly, it is a cost-effective intervention to prevent HIV infection; other sexually transmitted infections enhance the sexual transmission of HIV: genital herpes specifically, and genital ulcers in general, increase the transmission of HIV 50-300-fold per episode of unprotected sexual intercourse. Thirdly, it helps to prevent serious complications such as tubal infertility, carcinoma of the cervix and maternal death. Finally, it will reduce adverse outcomes of pregnancy, such as stillbirth and perinatal death due to syphilis, and blindness caused by gonococcal and chlamydial infections.

6. Sexually transmitted infections can be brought under control provided that sufficient political will and resources are mobilized to initiate and maintain activities at a critical level. Some examples of success can be found in resource-limited settings as different as Thailand and Uganda, and in other countries such as Denmark, Sweden and the United Kingdom of Great Britain and Northern Ireland. New partners, resources, innovative technologies and enormous experience are now available to fight the HIV/AIDS epidemic. Prevention, including early and effective treatment of sexually transmitted infections, must be the mainstay of responses to HIV infection and AIDS, as stated in the resolution of the United Nations General Assembly in 2001 adopting the Declaration of Commitment on HIV/AIDS.² Vaccines are another arm of prevention. A safe and effective vaccine against hepatitis B exists and inclusion of its use in national immunization programmes would prevent sexual transmission of hepatitis B virus and reduce the incidence of subsequent liver disease. Candidate preventive vaccines against human papillomavirus infection show great promise, and consideration needs to be given to incorporating successful vaccines into national immunization programmes in order to ensure protection of adolescents before they become sexually active. Control of sexually transmitted infections must be included as a crucial element in national strategies for HIV prevention and care.

7. Four principal obstacles block control of sexually transmitted infections. First, ignorance and lack of information perpetuate misconceptions and associated stigmatization. The latter in turn leads to reluctance of patients to seek appropriate treatment, difficulty in notifying sexual partners, and preference for private-sector treatment, which is often inadequate. This problem is particularly relevant in resource-poor settings and for marginalized populations. Secondly, the asymptomatic nature of most sexually transmitted infections and the lack of screening programmes or rapid, inexpensive diagnostic tests mean that large numbers of people experience unrecognized chronic

¹ *The world health report 2004: Changing history*. Geneva, World Health Organization, 2004.

² United Nations General Assembly resolution S-26/2.

infections and the long-term consequences of untreated infections. Thirdly, at the policy level, stigmatization, prejudice and a lack of appreciation of the disease burden of sexually transmitted infections have resulted in inadequate financing for control measures. Finally, efforts to integrate care for sexually transmitted infections into reproductive health care, with involvement of the private sector, have proved to be more complex than expected.

8. The draft strategy provides a framework to guide an accelerated global response for the prevention and control of sexually transmitted infections through two crucial operational elements:

(a) a technical component, which outlines the core activities for control of sexually transmitted infections, covering aspects such as adolescent health, asymptomatic infection in women and outreach to populations at high risk of infection but with poor access to health services – this part of the strategy will need adaptation in each region or country;

(b) an advocacy component, which aims, through global and national campaigns to raise awareness of sexually transmitted infections and generate political commitment to deal with the problem.

9. Countries would select specific activities proposed in the draft strategy for implementation or expansion on the basis of their feasibility and measurable return on investment. These activities could include: extending access to diagnosis and effective treatment of sexually transmitted infections through syndromic management at primary point-of-care sites, with or without laboratory testing; training or retraining health-care personnel in a client-oriented approach; introducing country-specific interventions targeting populations with raised risk of infection; heightening awareness and skills in young people, through education and sexual health counselling, in order to prevent infection; extending testing for and treatment of syphilis in pregnant women at point-of-care sites; enhancing second-generation HIV surveillance, with biomedical and behavioural surveillance of sexually transmitted infections in order to monitor the epidemics of those infections and HIV/AIDS; and undertaking data collection and analysis together with service-delivery surveys to monitor the response and the disease burden.

10. The draft strategy relies on the existence of an enabling environment, namely the commitment of governments and national and international partners; the provision of adequate resources; delivery of effective programmes that are sensitive to culture, gender and the obstacles posed by stigmatization; and a coordinated response. Within this context some high-priority interventions, selected on the basis of evidence of impact and feasibility, have been listed for expansion, and time frames and targets have been proposed.

ACTION BY THE HEALTH ASSEMBLY

11. The Health Assembly is invited to consider adopting the following draft resolution.

The Fifty-ninth World Health Assembly,

Having considered the draft global strategy for the prevention and control of sexually transmitted infections;¹

Recalling resolution WHA46.37, which recognized the role of other sexually transmitted diseases in the spread of HIV; resolution WHA53.14, which requested the Director-General to develop a global health-sector strategy for responding to the epidemics of HIV/AIDS and sexually transmitted infections; resolution WHA56.30, which took note of the global health-sector strategy for HIV/AIDS; and resolution WHA57.12, which endorsed the strategy to accelerate progress towards the attainment of international development goals and targets related to reproductive health;

Recognizing and reaffirming that, at the 2005 World Summit (New York, 14-16 September 2005), world leaders committed themselves to achieving universal access to reproductive health by 2015 and integrating this goal in strategies to attain the internationally agreed development goals, including those contained in the Millennium Declaration, and that attainment of the Millennium Development Goals require investment in, and political commitment to, sexual and reproductive health, which includes prevention and control of sexually transmitted infections;²

1. ENDORSES the Global Strategy for the Prevention and Control of Sexually Transmitted Infections;
2. URGES Member States:
 - (1) to adopt and draw on the Strategy in order to ensure that national efforts to achieve the Millennium Development Goals includes plan and action, appropriate to the local epidemiological situation, for prevention and control of sexually transmitted infections, including mobilization of political will and financial resources for this purpose;
 - (2) to include prevention and control of sexually transmitted infections as an integral part of HIV prevention, and of sexual and reproductive health programmes;
 - (3) to monitor implementation of the national plans in order to ensure that populations at increased risk of sexually transmitted infections have access to prevention information and supplies, and to timely diagnosis and treatment;
3. REQUESTS the Director-General:
 - (1) to prepare an action plan, in collaboration with other organizations in the United Nations system, that sets out priorities, actions, a time frame, and performance indicators, for implementing the Strategy at global and regional

¹ Document A59/11, Annex.

² United Nations General Assembly resolution 60/1.

levels, and to provide support for country-level implementation and monitoring of national plans for control and prevention of sexually transmitted infections;

(2) to raise awareness, among Member States, of the importance of drawing up, promoting and funding supportive legislation, plans and strategies for prevention and control of sexually transmitted infections;

(3) to provide support to Member States, on request, for adapting and implementing the Strategy in ways that are appropriate to the local epidemiology of sexually transmitted infections, and for evaluating its impact and effectiveness;

(4) to report to the Health Assembly through the Executive Board, in 2009, 2012 and 2015 on progress in implementing the Strategy.

ANNEX

DRAFT GLOBAL STRATEGY FOR THE PREVENTION AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS, 2006-2015

CONTENTS

FOREWORD	9
AT A GLANCE	10
ABBREVIATIONS AND ACRONYMS	11
1. SEXUALLY TRANSMITTED INFECTIONS: A PUBLIC HEALTH PROBLEM	12
1.1 THE GLOBAL BURDEN	12
1.2 WHY INVEST IN STI PREVENTION AND CONTROL NOW?	15
1.2.1 To reduce STI-related morbidity and mortality	15
1.2.2 To prevent HIV infection.....	15
1.2.3 To prevent serious complications in women	16
1.2.4 To prevent adverse pregnancy outcome.....	16
1.3 OPPORTUNITIES FOR AN ACCELERATED RESPONSE	17
1.3.1 A cost-effective intervention for HIV prevention	17
1.3.2 New partnerships	17
1.3.3 New technologies for a strengthened response.....	17
1.3.4 A public health approach to STI prevention and control.....	19
1.3.5 Condom promotion to populations engaged in high-risk behaviours and to the general population	20
1.3.6 Obstacles to provision of services for STI control.....	20
2. AIMS AND SCOPE OF THE STRATEGY	22
2.1 PURPOSE AND OBJECTIVES	22
2.2 TARGET AUDIENCE	23
2.3 GUIDING PRINCIPLES	23
2.4 ESSENTIAL ELEMENTS OF THE RESPONSE	24
3. THE TECHNICAL STRATEGY: BUILDING ON SUCCESS IN STI PREVENTION AND CONTROL.....	25
3.1 STI TRANSMISSION DYNAMICS	25
3.2 STI PREVENTION AND CONTROL INTERVENTIONS	26
3.2.1 Promoting healthy sexual behaviour	28
3.2.2 Providing condoms and other barrier methods	29
3.2.3 Delivering STI prevention and care.....	29
3.2.4 Access to medicines and appropriate technology.....	33
3.2.5 Scaling up	34
3.3 IMPROVING INFORMATION FOR POLICY AND PROGRAMME DEVELOPMENT.....	35
3.3.1 Surveillance	35
3.3.2 Monitoring and evaluation	37
3.4 INTERFACE WITH OTHER PROGRAMMES AND PARTNERS	37
3.4.1 Public sector health programmes	37
3.4.2 The private sector	43
3.4.3 Community involvement.....	43
3.4.4 Other partners	44

3.5	STRENGTHENING THE CAPACITY OF HEALTH SYSTEMS FOR EFFECTIVE SERVICE DELIVERY	44
3.5.1	Access to STI services	45
3.5.2	Quality assurance	46
3.5.3	Financing services	48
3.5.4	Human resources development	48
3.5.5	Laboratory support for programme management.....	49
3.5.6	Procurement and logistics management	51
3.6	PRIORITY COMPONENTS FOR IMMEDIATE ACTION.....	52
3.6.1	Good quality STI case management.....	52
3.6.2	Access to essential commodities and medicines.....	53
3.6.3	Interventions for high-risk and vulnerable populations.....	53
3.6.4	Surveillance and data collection.....	57
3.6.5	An integrated approach to implementation: shared responsibilities	57
4.	THE ADVOCACY STRATEGY: MOBILIZING POLITICAL AND SOCIAL LEADERSHIP AND FINANCIAL RESOURCES	59
4.1	ADVOCACY.....	59
4.2	WORKING WITH THE MEDIA	59
4.3	BUILDING EFFECTIVE PARTNERSHIPS	60
4.4	MOBILIZING FINANCIAL RESOURCES	60
	REFERENCES	61

FOREWORD

Nearly a million people acquire a sexually transmitted infection (STI), including the human immunodeficiency virus (HIV), every day. The results of infection include acute symptoms, chronic infection, and serious delayed consequences such as infertility, ectopic pregnancy, cervical cancer, and the untimely deaths of infants and adults. The presence in a person of other STIs such as syphilis, chancroid ulcers or genital herpes simplex virus infection greatly increases the risk of acquiring or transmitting HIV. New research suggests an especially potent interaction between very early HIV infection and other STIs. This interaction could account for 40% or more of HIV transmissions. Despite this evidence, efforts to control the spread of STIs have lost momentum in the past five years as the focus has shifted to HIV therapies.

Prevention and control of STIs should be an integral part of comprehensive sexual and reproductive health services in order to contribute towards the attainment of the Millennium Development Goals and respond to the call for improved sexual and reproductive health as defined in the programme of action of the United Nations International Conference on Population and Development (Cairo, 1994).

The draft global strategy for the prevention and control of sexually transmitted infections 2006-2015 has two components: technical and advocacy. The technical content of the strategy deals with methods to promote healthy sexual behaviour, protective barrier methods, effective and accessible care for STIs, and the upgrading of monitoring and evaluation of STI control programmes. The steps needed to develop health systems capacity to deliver the programme are explained. Emphasis is placed on a public health approach based on sound scientific evidence and cost-effectiveness.

The draft strategy makes a strong case for expanding the provision of good quality STI care more widely into primary health care, sexual and reproductive health services and services that provide HIV care. It emphasizes opportunities to increase coverage by working collaboratively with other government sectors, and with community-based organizations and private providers.

STIs occur with the highest frequency among marginalized populations who have particular problems in accessing health-care services. Securing the level of support to provide effective interventions to these groups is especially challenging, though the public health benefits are substantial.

A section on advocacy offers advice to programme managers on approaches to mobilizing the high-level political commitment that forms the essential foundation for an accelerated response.

Globally, the predominant mode of transmission of HIV is sexual, which makes it a sexually transmitted infection, even though there are other modes through which the virus can be transmitted. Over the years, numerous epidemiological and biological studies have provided evidence that other STIs, if present in a person, acted as cofactors for HIV acquisition or transmission, which led to the common statement “STIs facilitate the transmission of HIV”. This can give the impression that HIV is itself not an STI.

In this document, whenever this common phrase is used, namely, “STIs facilitate HIV transmission”, it should be understood that these are STIs other than HIV. Where more clarity is needed, the phrases “other STIs” or “STIs other than HIV” are used. In general, strategies and interventions which prevent the transmission of HIV work equally as well for the other STIs.

AT A GLANCE

More than 340 million new cases of sexually transmitted bacterial and protozoal infections occur throughout the world every year.

Untreated gonococcal and chlamydial infections in women will result in pelvic inflammatory disease in up to 40% of cases. One in four of these will result in infertility.

In pregnancy, untreated early syphilis will result in a stillbirth rate of 25% and be responsible for 14% of neonatal deaths – an overall perinatal mortality of about 40%. Syphilis prevalence in pregnant women in Africa, for example, ranges from 4% to 15%.

New vaccines against human papillomavirus infection could stop the untimely death of approximately 240 000 women from cervical cancer every year in resource-poor settings.

Worldwide, up to 4000 newborn babies become blind every year because of eye infections attributable to untreated maternal gonococcal and chlamydial infections.

ABBREVIATIONS AND ACRONYMS

AIDS	acquired immunodeficiency syndrome
DALY	disability-adjusted life year
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GUD	genital ulcer disease
HBV	hepatitis B virus
HIV	human immunodeficiency virus
HPV	human papillomavirus
HSV	herpes simplex virus
MDG	Millennium Development Goal
MSM	men who have sex with men
MTCT	mother-to-child transmission
PDAS	plan, do, assess and scale up
PID	pelvic inflammatory disease
RTI	reproductive tract infection
STI	sexually transmitted infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

1. SEXUALLY TRANSMITTED INFECTIONS: A PUBLIC HEALTH PROBLEM

1.1 THE GLOBAL BURDEN

More than 30 bacterial, viral and parasitic pathogens are transmissible sexually (1). While sexually transmitted infections (STIs) are mostly transmitted through sexual intercourse, transmission can occur also from mother to child during pregnancy and childbirth, and through blood products or tissue transfer, as well as occasionally through other non-sexual means. STIs, which include human immunodeficiency virus (HIV) infection that leads to acquired immunodeficiency syndrome (AIDS), have been recognized as a major public health problem for many years. Some of the commonest sexually transmitted pathogens and the diseases they cause are shown in Table 1.

It is estimated that over 340 million new cases of curable STIs, namely those due to *Treponema pallidum* (syphilis), *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Trichomonas vaginalis*, occur every year throughout the world in men and women aged 15–49 years, with the largest proportion in the region of south and south-east Asia, followed by sub-Saharan Africa, and Latin American and the Caribbean (2). Millions of viral STIs also occur annually, attributable mainly to HIV, human herpesviruses, human papillomaviruses and hepatitis B virus. Globally, STIs constitute a huge health and economic burden, especially for developing countries where they account for 17% of economic losses caused by ill-health (3).

- Herpes simplex virus type 2 (HSV-2) infection is the leading cause of genital ulcer disease (GUD) in developing countries. Data from sub-Saharan Africa show that 30%–80% of women and 10%–50% of men are infected. Among women in central and south America, HSV-2 prevalence ranges from 20% to 40%. In the developing Asian countries, HSV-2 prevalence in the general population ranges from 10% to 30%. In the United States of America, the prevalence of HSV-2 among 14–49-year-olds is 19% (4). Throughout the world, HSV-2 seropositivity is uniformly higher in women than in men and increases with age (5). HSV-2 plays an important role in the transmission of HIV infection. A study in Mwanza, the United Republic of Tanzania, showed that 74% of HIV infections in men and 22% in women could be attributable to HSV-2 (6).
- Human papillomavirus (HPV) is another important sexually transmitted viral pathogen. It causes about 500 000 cases of cervical cancer annually with 240 000 deaths, mainly in resource-poor countries (7–9).
- Hepatitis B virus (HBV), which may be transmitted sexually and through needle sharing, blood transfusion and from mother to child, results in an estimated 350 million cases of chronic hepatitis and at least one million deaths each year from liver cirrhosis and liver cancer (10). A vaccine to prevent hepatitis B infection, and thereby reduce the incidence of liver cancer, exists (11, 12).

Given social, demographic and migratory trends, the population at risk for STIs will continue to grow dramatically. The burden from STIs is greatest in the developing world, but industrialized nations can also be expected to experience an increased burden of disease because of the prevalence of non-curable viral STIs, trends in sexual behaviour and increased travel. The socioeconomic costs of STIs and their complications are substantial, ranking among the top 10 reasons for health-care visits in most developing countries, and substantially drain both national health budgets and household income. Care for the sequelae of STIs accounts for a large proportion of tertiary health-care costs in terms of screening and treatment of cervical cancer, management of liver disease, investigation for infertility,

care for perinatal morbidity, childhood blindness, pulmonary disease in children and chronic pelvic pain in women. The social costs of STIs include conflict between sexual partners and domestic violence. The costs escalate further when the cofactor effect of other STIs on HIV transmission is taken into consideration.

Table 1. Main STI pathogens and the diseases they cause

Pathogen	Clinical manifestations and other associated diseases
Bacterial infections	
<i>Neisseria gonorrhoeae</i>	GONORRHOEA Men: urethral discharge (urethritis), epididymitis, orchitis, infertility Women: cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, perihepatitis Both sexes: proctitis, pharyngitis, disseminated gonococcal infection Neonates: conjunctivitis, corneal scarring and blindness
<i>Chlamydia trachomatis</i>	CHLAMYDIAL INFECTION Men: urethral discharge (urethritis), epididymitis, orchitis, infertility Women: cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, perihepatitis; commonly asymptomatic Both sexes: proctitis, pharyngitis, Reiter's syndrome Neonates: conjunctivitis, pneumonia
<i>Chlamydia trachomatis</i> (strains L1-L3)	LYMPHOGRANULOMA VENEREUM Both sexes: ulcer, inguinal swelling (bubo), proctitis
<i>Treponema pallidum</i>	SYPHILIS Both sexes: primary ulcer (chancre) with local adenopathy, skin rashes, condylomata lata; bone, cardiovascular and neurological damage Women: pregnancy wastage (abortion, stillbirth), premature delivery Neonates: stillbirth, congenital syphilis
<i>Haemophilus ducreyi</i>	CHANCROID Both sexes: painful genital ulcers; may be accompanied by bubo
<i>Klebsiella (Calymmatobacterium) granulomatis</i>	GRANULOMA INGUINALE (DONOVANOSIS) Both sexes: nodular swellings and ulcerative lesions of the inguinal and anogenital areas
<i>Mycoplasma genitalium</i>	Men: urethral discharge (non-gonococcal urethritis) Women: bacterial vaginosis, probably pelvic inflammatory disease
<i>Ureaplasma urealyticum</i>	Men: urethral discharge (non-gonococcal urethritis) Women: bacterial vaginosis, probably pelvic inflammatory disease
Viral infections	
Human immunodeficiency virus (HIV)	ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) Both sexes: HIV-related disease, AIDS
Herpes simplex virus (HSV) type 2	GENITAL HERPES
Herpes simplex virus type 1 (less commonly)	Both sexes: anogenital vesicular lesions and ulcerations Neonates: neonatal herpes (often fatal)
Human papillomavirus (HPV)	GENITAL WARTS Men: penile and anal warts; carcinoma of the penis Women: vulval, anal and cervical warts, cervical carcinoma, vulval carcinoma, anal carcinoma Neonates: laryngeal papilloma
Hepatitis B virus (HBV)	VIRAL HEPATITIS Both sexes: acute hepatitis, liver cirrhosis, liver cancer
Cytomegalovirus	CYTOMEGALOVIRUS INFECTION Both sexes: subclinical or nonspecific fever, diffuse lymph node swelling, liver disease, etc.
Molluscum contagiosum virus	MOLLUSCUM CONTAGIOSUM Both sexes: genital or generalized umbilicated, firm skin nodules
Kaposi sarcoma associated herpes virus (KSHV or human herpes virus type 8)	KAPOSI SARCOMA Both sexes: aggressive type of cancer in immunosuppressed persons
Protozoal infections	
<i>Trichomonas vaginalis</i>	TRICHOMONIASIS Men: urethral discharge (non-gonococcal urethritis); often asymptomatic Women: vaginosis with profuse, frothy vaginal discharge; preterm birth, low birth weight babies Neonates: low birth weight
Fungal infections	
<i>Candida albicans</i>	CANDIDIASIS Men: superficial infection of the glans penis Women: vulvo-vaginitis with thick curd-like vaginal discharge, vulval itching or burning
Parasitic infestations	
<i>Phthirus pubis</i>	PUBIC LICE INFESTATION
<i>Sarcoptes scabiei</i>	SCABIES

1.2 WHY INVEST IN STI PREVENTION AND CONTROL NOW?

1.2.1 To reduce STI-related morbidity and mortality

STIs, other than HIV, impose an enormous burden of morbidity and mortality in both resource-constrained and developed countries, both directly, through their impact on quality of life, reproductive health and child health, and indirectly, through their role in facilitating the sexual transmission of HIV and their impact on national and individual economies.

The spectrum of health consequences ranges from mild acute illness to painful disfiguring lesions and psychological morbidity. For example, infection with *N. gonorrhoeae* causes painful micturition in men, and acute or chronic lower abdominal pain in women. Without treatment, though painless in the early stages, syphilis infection can result in neurological, cardiovascular and bone diseases later in life, and fetal loss in pregnant woman with acute infection. Chancroid causes disabling painful ulcers which can result in extensive tissue destruction if treatment is delayed beyond a few days, particularly in immunocompromised persons. Genital herpes infection causes substantial psychosexual suffering because of its recurrent and painful nature, especially in young people.

In addition, there is a large economic burden and loss of productivity to individuals and nations as a whole. The costs associated with STIs include direct costs, both medical and nonmedical, for care and materials, and indirect costs of time spent sick, when an individual is unable to engage in productive activities (travelling to obtain cure, waiting in the health facility for care, and undergoing a procedure such as specimen collection). The magnitude of the global burden of STIs other than HIV is such that they should be controlled in their own right as a public health problem.

1.2.2 To prevent HIV infection

Preventing and treating other STIs reduce the risk of sexual transmission of HIV, especially among populations who are most likely to have a high number of sex partners, such as sex workers and their clients. The presence of an untreated inflammatory or ulcerative STI increases the risk of transmission of HIV during unprotected sex between an infected and an uninfected partner (13). The cofactor effect of other STIs on HIV transmission seems to be higher with the ulcerative STIs: recent evidence indicates that genital herpes may be responsible for fuelling a large proportion of new HIV infections, and suppressive treatment of HSV-2 reduces genital shedding of HIV in women (14–16). Genital ulcer diseases have been estimated to increase the risk of transmission of HIV 50–300-fold per episode of unprotected sexual intercourse (17).

Services providing care for STIs are one of the key entry points for HIV prevention. Patients seeking care for STIs are a key target population for prevention counselling and voluntary and confidential testing for HIV, and may be in need of care for HIV and AIDS. Patients attending health clinics for STI care may have primary HIV infection at the same time, and they usually have high HIV viral load. HIV shedding in semen increased six-fold in men with gonococcal urethritis in Malawi. Following treatment for the urethritis, the seminal viral load was reduced to levels similar to those of HIV-infected men without urethritis (18). A recent study in the United States of America in 52 HIV-infected men with primary or secondary syphilis, 58% of whom were receiving antiretroviral therapy, showed that syphilis is associated with significant increases in HIV viral load and significant decreases in the CD4⁺ cell count. Syphilis treatment restored immunity and genital HIV concentrations to pre-infection levels, which underscores the importance of preventing and promptly treating syphilis in HIV-infected individuals both as a prevention strategy and to improve quality of care for persons

living with HIV (19). Effective prevention messages, treatment for any other STIs, and promotion of condoms in such a population could have a substantial impact on HIV transmission.

The Millennium Development Goal (MDG) 6, target 7 calls on nations to have halted and begun to reverse the spread of HIV/AIDS. In the United Republic of Tanzania, scientifically rigorous methods demonstrated that treatment for STIs could reduce the sexual transmission of HIV in a highly cost-effective manner, when improved syndromic management of STIs reduced HIV incidence by 38% in a community intervention trial in Mwanza. Results of the Mwanza trial can probably be generalized to other populations where the HIV epidemic is concentrated, most HIV infections are acquired from casual partners, and the prevalence of treatable STIs is high. The treatment of STIs is, therefore, one of the interventions that are feasible and cost-effective to contribute towards the attainment of MDG 6, target 7.

1.2.3 To prevent serious complications in women

STIs are the main preventable cause of infertility. Between 10% and 40% of women with untreated chlamydial infection develop symptomatic pelvic inflammatory disease (PID) (20). Post-infection tubal damage is responsible for 30%–40% of cases of female infertility. Furthermore, women who have had pelvic inflammatory disease are 6–10 times more likely to develop an ectopic (tubal) pregnancy than those who have not, and 40%–50% of ectopic pregnancies can be attributed to previous pelvic inflammatory disease (21).

Human papillomavirus infection results in approximately 500 000 cases of cervical cancer annually. It is the second most common cancer in women after breast cancer, causing about 240 000 deaths annually, mostly in resource-poor settings (7–9).

The MDG 5, target 6 seeks to reduce maternal mortality by three quarters by 2015. Prevention of pelvic inflammatory disease will contribute to this goal by preventing the death toll related to ectopic pregnancy. Prevention of human papillomavirus infection will reduce the number of women who die from cervical cancer.

1.2.4 To prevent adverse pregnancy outcome

Untreated STIs are associated with congenital and perinatal infections in the newborn, particularly in the areas where STIs have not been controlled.

In pregnant women with untreated early syphilis, 25% of pregnancies result in stillbirth and 14% in neonatal death – an overall perinatal mortality of about 40%. Syphilis prevalence in pregnant women in Africa, for example, ranges from 4% to 15% (22). Up to 35% of pregnancies among women with untreated gonococcal infection result in spontaneous abortions and premature deliveries, and up to 10% in perinatal deaths (23). In the absence of prophylaxis, 30%–50% of infants born to mothers with untreated gonorrhoea and up to 30% of infants born to mothers with untreated chlamydial infection will develop ophthalmia neonatorum, which can lead to blindness (24, 25). Worldwide, 1000–4000 newborn babies become blind every year because of this condition (26).

Universal institution of an effective intervention to prevent congenital syphilis should prevent an estimated 492 000 stillbirths and perinatal deaths per year in Africa alone (27). In terms of cost-effectiveness, in Mwanza, the United Republic of Tanzania, with a prevalence of active syphilis of 8% in pregnant women, the cost of the intervention is estimated to be US\$ 1.44 per woman screened,

US\$ 20 per woman treated, and US\$ 10.56 per disability-adjusted life year (DALY) saved. The cost per DALY saved from all syphilis-screening studies ranges from US\$ 4 to US\$ 19 (28).

1.3 OPPORTUNITIES FOR AN ACCELERATED RESPONSE

1.3.1 A cost-effective intervention for HIV prevention

Improved case management of STIs is one of the interventions scientifically proven to reduce the incidence of HIV infection in the general population (29–31). If the interventions are targeted to a particular population group with a high likelihood of transmission, the cost–effectiveness becomes even more pronounced (32).

1.3.2 New partnerships

There is a renewed global resolve to fight the AIDS epidemic that includes a commitment to control STIs as a primary prevention strategy. The United Nations Declaration of Commitment on HIV/AIDS (June 2001) states that, while care, support and treatment are fundamental elements of an effective response, prevention must be the mainstay of responses to the AIDS pandemic, including early and effective treatment of STIs. New partners and sources of funding have emerged on the international development scene. These include powerful advocates, influential networks, communities, partners in non-health sectors, the commercial sector and philanthropic organizations. Funds can be mobilized through these new sources of funding, as well as through existing ones, to ensure an intensified response to STIs, including HIV.¹

A diverse range of interventions and the successful results from resource-limited settings as different as Thailand and Uganda, and from other countries such as Denmark, Sweden and the United Kingdom of Great Britain and Northern Ireland, indicate that STIs can be brought under control provided sufficient political will and resources are mobilized to achieve and maintain activities on a critical scale. Collaboration between countries, and partnerships with interested agencies, facilitate the sharing of information and scaling up of successful lessons.

Interventions to prevent mother-to-child transmission (MTCT) of HIV can be linked with efforts to prevent congenital syphilis in order to avert the tragedy of babies who avoid HIV but die of syphilis, as was the case in Haiti (33). In addition, this linkage further enhances the cost–effectiveness of the interventions.

1.3.3 New technologies for a strengthened response

Technological advances in STI diagnostics, treatment, and vaccines and barrier methods give opportunities for new insights, tools and solutions for the prevention, care and surveillance of STIs and reproductive tract infections (RTIs).

¹ Some of the resources available at national level include the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), strategies and initiatives for expanding access to antiretrovirals, The President's Emergency Plan for AIDS Relief (PEPFAR), providing US\$ 15 000 million (including US\$ 9000 million in new funding) to fight the HIV/AIDS pandemic over five years, with a focus on 15 of the hardest hit countries, and the World Bank multisectoral STI/HIV/AIDS prevention projects.

Rapid diagnostic tests

- New point-of-care rapid treponemal tests enable screening for syphilis to be performed at the peripheral health post and treatment provided without delay.
- Nucleic acid amplification tests can be used to monitor STI trends and guide the adaptation of treatment protocols. Some of the tests can be used on easy-to-collect specimens, such as urine and self-administered vaginal swabs.
- A new generation of cheap, rapid diagnostic tests for chlamydial infection are under development.

Therapeutics

- Some medicines for the treatment of STIs are becoming more affordable, e.g. ciprofloxacin (where effective) and acyclovir. Others, such as azithromycin and cefixime, which have the added advantage of single-dose administration, will become cheaper as their patents expire and procurement strategies for bulk purchasing are put in place. Penicillins have remained effective for the treatment of early syphilis and can be given as single-dose treatments, albeit by injection.

Vaccines

- Preventive vaccines against oncogenic types of human papillomavirus show great promise and will soon be available. The international community should work together with countries to plan and develop strategies for implementing and promoting their use in national immunization programmes to guarantee high coverage, especially in adolescents, so that people can be protected before they become sexually active (34, 35).
- An effective vaccine against HSV-2 is not yet available. One vaccine, however, has shown promise in women with no prior exposure to HSV-1 or HSV-2 (36). More field trials are needed in different settings to evaluate its utility in a variety of epidemiological settings. Given the high prevalence of HSV-2 infection and its importance in enhancing HIV transmission, a vaccine to prevent the spread HSV-2 at an early age offers the most compelling hope. The international community, scientists, funding agencies and governments should join forces to plan and rapidly advance progress towards the development of effective vaccines against HSV-2 infection.
- A preventive vaccine against hepatitis B virus has been available since 1982. Countries should put in place plans for the prevention of hepatitis B and scale up the inclusion of the existing vaccine in immunization programmes in order to ensure that all children in all countries are immunized, and that all sexually active adults at high risk of hepatitis B infection have access to the vaccine.

1.3.4 A public health approach to STI prevention and control

Effective prevention and care of STIs can be achieved using a combination of responses. Services for STI prevention and care should be expanded and should embrace a public health package that includes the following elements:

- Promotion of safer sexual behaviour.
- Promotion of early health-care-seeking behaviour.
- A horizontal implementation of STI prevention and care across all primary health-care programmes, including sexual and reproductive health and HIV programmes. Successful and cost-effective integrated programmes for STI, HIV and tuberculosis control have been documented in a number of countries. The care is usually given by the same health-care providers at the primary health centre level. Such an approach is both attractive and cost-saving for client and health system alike.
- A comprehensive approach to STI case management that encompasses:
 - identification of the STI syndrome;
 - appropriate antimicrobial treatment for the syndrome;
 - education and counselling on ways to avoid or reduce risk for STIs, including HIV;
 - promotion of the correct and consistent use of condoms;
 - partner notification (see section 3.2.3 for more details).

To the extent possible, interventions and strategies should be evidence-based. By implementing and carefully evaluating innovative interventions, however, new evidence can be gathered to inform policies, programmes and scaling up. It is, therefore, important to apply the “PDAS” concept: plan, do, assess and then (if successful) scale up. Some innovative approaches that can be embarked upon in such a process are the following:

- Periodic presumptive treatment. This is a short-term strategy which has been shown to control certain STIs when targeted at specific population groups in appropriate settings.
- Social marketing of commodities for STI control. Social marketing of pre-packed medicines or condoms (along with training in their correct and consistent use) for STI treatment and prevention has improved access to STI care in some places.
- User-friendly services for adolescents. Experience has shown how to make services more responsive and acceptable to adolescents. Countries should use this knowledge and experience to scale up appropriately adapted interventions to suit each country or setting, and to reach as many adolescents as are in need.
- Male involvement, male motivation and services for men. Pilot projects targeting men have been successful; the experience gained should be adapted to local conditions and activities should be scaled up.

- Second-generation HIV surveillance to include behavioural and STI surveillance. Such a strategy will provide programmes with information on appropriate interventions to control both HIV infection and the other STIs.

1.3.5 Condom promotion to populations engaged in high-risk behaviours and to the general population

There has been sufficient evidence to show that condoms, when used correctly and consistently, are effective in protecting against the transmission of HIV to women and men and in reducing the risk of men becoming infected with gonorrhoea. Correct and consistent condom use is associated not only with reduced transmission of HIV and with reduced acquisition of urethral infection among men, but also with the reduced acquisition of the following (37):

- genital HSV-2 infection by men and women;
- syphilis by men and women;
- chlamydial infection by men and women;
- gonorrhoea by women;
- possibly trichomoniasis infection by women.

Condom use has also resulted in accelerated regression of cervical and penile human papillomavirus-associated lesions and accelerated clearance of genital human papillomavirus infection by women.

Given this evidence, it is important to assess the magnitude of HIV and other STIs in the general population and in high-risk populations. In countries where HIV and other STI rates are high in both the general population and high-risk populations, safer sex strategies must be delivered as a package to both population groups. Such strategies include: the promotion of the correct use of male and female condoms, and their distribution, and sexual abstinence, delaying sexual debut and reducing the number of sexual partners. In settings where HIV and other STIs are concentrated in high-risk populations, targeted interventions should be a priority, but not to the exclusion of education and other prevention and care services for the general population.

1.3.6 Obstacles to provision of services for STI control

Over the past five years, interest and resources for the prevention and control of STIs other than HIV have declined despite the importance of STIs as cofactors in the transmission of HIV and as direct agents of significant morbidity and mortality in the world. HIV/AIDS advocates have shifted their focus and support to antiretroviral therapy and testing and counselling policies for HIV.

In spite of the discussions and programme of action of the United Nations International Conference on Population and Development, held in Cairo in 1994, and the Fourth World Conference on Women, held in Beijing in 1995, advocates for sexual and reproductive health have not been particularly enthusiastic about integrating prevention and care activities for STIs (including HIV) into their work (38, 39). The integration of STI prevention and care into sexual and reproductive health programmes in order to improve coverage has proved to be more complex than expected. Experience

with integration has been mixed; not enough is known about how integrated interventions can best be configured and what effect they have on prevention of infections and unwanted pregnancy (40).

In addition, syndromic management of women who present with vaginal discharge has proven problematic as a tool for the detection and management of cervical infections, particularly in areas of low STI prevalence. This has necessitated the requirement for affordable, rapid STI diagnostic tests. Such tests have been slow to be developed and, where available, they are still too expensive for governments to incorporate into national programmes of STI care.

A number of other difficulties have been encountered in attempts to promote prevention interventions for STIs. The determinants of STI epidemiology are multifaceted (including gender inequities, poverty and other socioeconomic disparities), and intervention efforts to prevent STIs have failed to take into consideration the full range of the underlying determinants. At the care level, it is crucial to ensure consistent supplies of STI medicines and condoms, a challenge that has not been successfully tackled by health systems. Counselling on risk reduction is also usually lacking. In the control of STIs, a broader participation of partners from different sectors, disciplines and communities (including from nongovernmental and faith-based organizations) is necessary, but this broader involvement remains a challenge, especially in the area of community participation.

In addition to these shortcomings, the following underlying factors have also contributed to failure to control STIs:

- Ignorance and lack of information on STIs perpetuate wrong conceptions of these diseases and associated stigmatization.
- Many STIs tend to be asymptomatic or otherwise unrecognized until complications and sequelae develop, especially in women.
- The stigmatization associated with STIs (and clinics that provide STI services) constitutes an ongoing and powerful barrier to the implementation of STI prevention and care interventions.

At the individual and community levels, stigmatization results in:

- reluctance of patients to seek early treatment;
- preference to seek treatment in the private sector, whether provided by medically qualified personnel, pharmacists, traditional practitioners or other types of providers, who are perceived to offer greater accessibility, confidentiality, and to be less stigmatizing than public-sector facilities;
- difficulty in notifying and treating STIs in sexual partners.

At the policy and decision-making levels, the following factors operate.

- Policy-makers and planners give low priority to STI control. This situation is potentially aggravated by the stigmatization and prejudice associated with STIs and ignorance of the importance of the impact of STIs on health and economic development.
- Donors are increasingly using sector-wide approaches to allocate aid to the whole health sector rather than to specific projects, such as STI control. While this allows health ministries

to determine national priorities, it also means that countries which have traditionally accorded little importance to STIs in their health budgets because of stigma can continue to do so.

- There is a failure to provide suitable education and services to populations identified as being particularly vulnerable to STIs, such as young people and adolescents, sex workers (both male and female) and their clients, men who have sex with men (MSM), transgendered people, substance users, prisoners, mobile populations (for work or recreation), children and young people on the street, and people affected by conflict and civil unrest.

2. AIMS AND SCOPE OF THE STRATEGY

2.1 PURPOSE AND OBJECTIVES

The purpose of the global strategy is to provide a framework to guide an accelerated global response for the prevention and control of STIs, towards the attainment of international development goals. In particular, the strategy will focus on achievement of the following objectives:

- to increase the commitment of national governments and national and international development partners for STI prevention and control;
- to promote mobilization of funds and reallocation of resources, taking into account national prioritized results-oriented interventions that ensure aid effectiveness, ownership, harmonization, results and accountability;¹
- to ensure that policies, laws and initiatives related to provision of STI care are non-stigmatizing and gender-sensitive within the prevailing sociocultural context;
- to harness the strengths and capacities of all partners and institutions in order to scale up and sustain interventions for STI prevention and control.

The global response to STIs will be guided by two strategic components.

Technical component: a global STI technical strategy adaptable at the country and regional levels, including ways to package and deliver the key programmatic elements of STI prevention and control in a sustainable manner. The strategy will draw on lessons learnt and on clearly successful actions that need to be scaled up. It will identify shortcomings in such key areas as:

- availability or suitability of health-care services for priority target populations (e.g. adolescents and sex workers);
- diagnosis and treatment of asymptomatic infections;
- the syndromic approach for the management of abnormal vaginal discharge;

¹ Paris Declaration on Aid Effectiveness: Ownership, Harmonisation, Alignment, Results and Mutual Accountability. Paris, March 2005.

- management of STIs in sexual partners;
- attitudes of health-care providers;
- availability and reliability of data for planning purposes.

It will also identify appropriate opportunities for interfacing and integrating with HIV/AIDS and sexual and reproductive health programmes, and for involvement of the private sector.

Advocacy component: a global STI advocacy campaign to raise awareness and mobilize resources worldwide. This campaign will run alongside other initiatives such as campaigns for the elimination of congenital syphilis, the control and eradication of curable genital ulcer diseases, and the control of genital herpes and genital human papillomavirus infections.

2.2 TARGET AUDIENCE

The strategy outlines the essential elements of an effective response to the burden of STIs and provides information on the key issues related to them. It does not attempt to provide guidelines on how to develop activities or to implement them.

The target audiences for the strategy are the following: managers of national HIV/AIDS/STI and sexual and reproductive health programmes; health sector stakeholders including public-sector and private-sector health-care providers; health ministers, policy-makers and other decision-makers in the health sector; international agencies and nongovernmental partners; other governmental departments and agencies; and donors.

2.3 GUIDING PRINCIPLES

The strategy is underpinned by internationally agreed frameworks of ethics and human rights, which recognize the right of all persons to the highest attainable standards of health, including sexual and reproductive health. It conforms with the legal framework governing the reproductive health needs of children and adolescents, in particular the right to be free of coercion or abuse, including sexual abuse.

The strategy is also based on the following guiding principles:

1. Gender inequalities must be addressed through interventions that influence political will as well as societal norms and attitudes concerning sexual behaviour and the status of women. Active promotion of male responsibility and the empowerment of women in the prevention and control of STIs are crucial elements of an effective gender-sensitive response.
2. There should be a seamless continuum between prevention interventions and care of STIs. The balance and variety of activities will depend on the local determinants of STI epidemiology, patterns of infections and resources available. In each setting, the availability of and access to condoms and STI medicines will constitute elements of a fully effective response.
3. STI interventions should form an integral part of a range of comprehensive sexual and reproductive health services. Close cooperation with sexual and reproductive health programmes, within the framework of WHO's strategy to accelerate progress towards the attainment of international

development goals and targets related to reproductive health, is crucial for the implementation of strategies both on STIs and on reproductive health.

4. Cooperation between STI and HIV prevention and care programmes is vital for the response, as not only are the risk behaviours that lead to both HIV infection and other STIs the same, but also STI prevention and care remain key elements of the primary prevention of HIV, especially in settings and populations with low HIV prevalence. Combining the strengths of the two programmes creates synergies for the fight against both HIV infection and other STIs. WHO's global health-sector strategy for HIV/AIDS 2003–2007 and the WHO/UNAIDS strategies for coming as close as possible to the goal of universal access to prevention, care and treatment will be instrumental frameworks for this collaboration.

5. Building partnerships is critical for improved prevention and care of STIs. The multisectoral approach should include the ministries of health, education, sports, tourism and transport, and the military and other uniformed forces, as well as the private and informal sectors.

6. Engagement of communities (including nongovernmental and faith-based organizations) and vulnerable populations as partners in the design, implementation and evaluation of interventions and services enriches the process, ensures ownership and culture-sensitiveness of the process and output, and mobilizes commitment for implementation.

7. Reducing stigmatization and discrimination at both individual and societal levels is a key component to improve health-care seeking behaviour and provision of health-care services in relation to STI prevention and control.

2.4 ESSENTIAL ELEMENTS OF THE RESPONSE

The key strategic elements of an STI control programme at the national and regional levels are well-established and include the following:

- reviewing policies, laws and regulations regarding STI control to ensure that they are non-punitive and non-coercive and contribute towards the aims of STI prevention and control programmes and services;
- promoting healthy behaviours: safer sexual and health-seeking behaviours, compliance with therapy, and responsible notification and management of STIs in sexual partners;
- delivering STI care including antenatal case-finding programmes for syphilis and other STIs, ophthalmic prophylaxis at birth for neonates, and immunization against hepatitis B;
- ensuring a reliable supply of safe, effective, high-quality and affordable medicines and commodities for STI prevention and control, including male and female condoms and other effective barrier methods;
- strengthening support components, including the adaptation of normative guidelines, training, information networks, commodities logistics, laboratory support, surveillance and research.

Innovative ways must be explored to package and deliver these core elements of STI prevention and care. The challenge is to determine how best to accomplish the following:

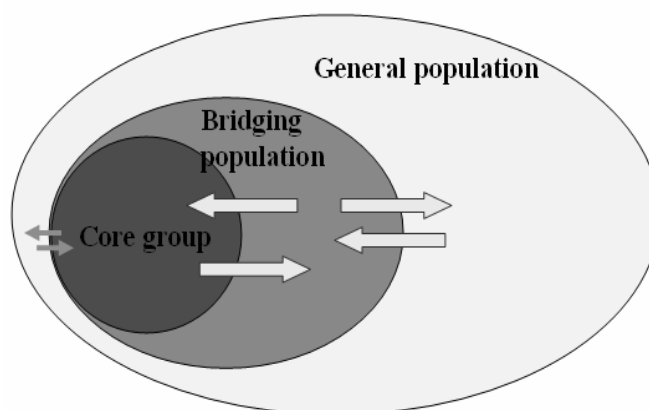
- use existing and new tools and technologies in such a way that they benefit the people who need them most;
- improve clinic environments to make them more accessible, user-friendly and client-centred so that they respond to clients' needs;
- communicate clear health messages in local languages so they are more memorable and effective;
- develop strong media relations and recruit spokespeople who can champion the STI cause across social networks that are difficult to penetrate;
- promote a multisectoral response that works in sectors other than health, such as the legal and education sectors, the tourism industry and the private sector;
- develop public–private partnerships for the prevention and control of STIs;
- rally international agencies, national governments, private philanthropic organizations and commercial interests around a set of priority STI interventions and initiatives;
- move beyond the search for “magic bullets” to multifaceted interventions that work in concert across multiple components and levels, and are sustainable on the local level.

3. THE TECHNICAL STRATEGY: BUILDING ON SUCCESS IN STI PREVENTION AND CONTROL

3.1 STI TRANSMISSION DYNAMICS

In the past 20 years, knowledge about the transmission dynamics of STIs has grown, as a consequence of the global epidemic of HIV and increased efforts to control the other STIs. Mathematical modelling and research have shown the importance of sexual networks in determining the spread of STIs. This improved understanding of the transmission dynamics of STIs has implications for the design of strategic prevention and control interventions.

Within a given population the distribution of STIs is not static. Over time, STI epidemics evolve through different phases characterized by changing patterns in the distribution and transmission of the sexually transmitted pathogens within and between subpopulations (41). Generally, early in an epidemic or in some geographical settings, STI pathogens are likely to be transmitted within and from high-risk persons with high rates of infection and frequent sexual-partner change (*core groups*). As the epidemic progresses, the pathogens spread into lower-risk populations (*bridging populations*) who may be an important sexual link between the core groups and the general population. Social or economic conditions of certain population groups can increase their vulnerabilities for acquiring or transmitting STIs and bring them into this bridging category. Sexual networks vary from setting to setting but, in general, sexual partners of individuals with high rates of infection (i.e. bridging populations), in turn, infect other sexual partners, such as their spouses or other regular sexual partners within the general population. Figure 1 is a simplified representation of the population transmission dynamics for STIs.

Figure 1. STI transmission dynamics at the population level

The situation is further complicated by the different interaction dynamics between host and pathogen which are governed by a threshold parameter, R_0 , the basic reproductive number. R_0 represents the expected number of secondary cases produced by a single index case in a population of susceptible persons. R_0 is a product of three variables, represented as $R_0 = \beta \times D \times C$, where β is the transmission efficiency of the pathogen per single sexual contact (infectiousness), D is the duration of infectiousness and C is the rate of change of sexual partners (42). Some pathogens (e.g. *Haemophilus ducreyi*) are highly infectious but of short duration, while others such as HIV and HSV-2 are of relatively low infectiousness but of long duration. *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Treponema pallidum*, on the other hand, are of intermediate infectiousness and duration (43, 44). Thus, the pattern by which an STI epidemic will evolve will differ for different types of population–pathogen interactions. All these factors need to be taken into consideration, where possible, when planning an effective programme for the prevention and control of STIs.

Risk factors for STIs, including HIV infection, vary by sex, and women and their infants are disproportionately affected. Differences in vulnerability and sequelae are attributable to biological susceptibility and to gender differentials such as power inequalities, and behavioural factors including sexual practices, health-care seeking behaviour, and in some settings, poor access to care and low levels of education.

3.2 STI PREVENTION AND CONTROL INTERVENTIONS

Given the transmission dynamics summarized above, strategies for STI prevention and control need to be appropriate in order to maximize the impact and gains. Programmes need to have an understanding of the following:

- which populations are at greatest risk;
- what behaviours or circumstances put these populations at risk;
- what are the best approaches and interventions to break the chain of transmission;
- how to prioritize, scale up and sustain the interventions.

In some geographical settings and countries STI rates in the general population are high, while in others high STI rates are confined to specific population groups. Exercises that map STI levels, sexual behaviours (e.g. number of sexual partners and rates of partner change), preventive behaviours (e.g. correct and consistent condom use), and health-related behaviours (e.g. treatment-seeking behaviours) in population groups with high rates of infection and in vulnerable groups, as well as in the general population, provide valuable information on STI transmission dynamics and help determine which interventions would be most successful in producing a control impact. Targeted interventions should be prioritized according to the needs, feasibility and availability of resources.

The populations whose behaviours and vulnerabilities need to be analysed for possible targeted interventions vary from one region to another and from one country to another. Among those frequently observed to be in need of targeted interventions include:

- sex workers (female, male and transgendered) and their clients who also might or might not have sex with their regular partners;
- mobile populations such as long-distance truck drivers, fishermen, seafarers and migrant workers, who are at increased risk of infection primarily because of their mobility and high-risk sexual contacts;
- men who have sex with men who have multiple sexual partners and engage in unprotected anal intercourse;
- men who have sex with men and who also have sex with women (i.e. bisexual men);
- substance users, especially those who also sell or exchange sex to support their habit or who have sex with non-users;
- incarcerated persons, especially juveniles;
- external and internal refugees and displaced persons;
- uniformed services, including military and police;
- tourists, especially recreational sex tourists;
- women or men who experience sexual and gender-based violence;
- children and young people on the street, and those who are abused or are orphans.

Adolescents are at special risk for STIs, including HIV, because they might not have the information, skills, health care and support they need while going through sexual development. Their sexual relations tend to be unplanned and sporadic, and in many cases result from pressure or force or take place in exchange for acceptance or financial gain. Adolescent women in particular are more vulnerable to STIs than men for biological, social and economic reasons. In some cultures where adolescents, especially girls, marry at a young age, national programmes need to recognize that the young girls may be at increased risk for STIs because the social and biological factors referred to above still apply to them even though they will be regarded as adults by virtue of being married. The prevention and care of STIs, including HIV, among young people will require a range of age-appropriate interventions from a variety of different sectors. The health sector itself will be responsible

for a number of such interventions, through a range of health-system partners. Some of these areas of activity for adolescents are discussed in section 3.4.1.

All targeted interventions, however, must be provided in the context of effective services for STIs and other health needs for the general populations as well as the populations being targeted.

3.2.1 Promoting healthy sexual behaviour

An effective response to STIs starts with prevention by providing accurate and explicit information on safer sex, including correct and consistent use of male and female condoms, as well as abstinence, delay in onset of sexual activity, keeping to one sexual partner or reducing the number of sexual partners. In addition to prevention interventions, health-care services must be available to provide early and effective treatment for STIs.

Communication about sexual behavioural change is part of an integrated, multilevel, interactive process with communities, aimed at developing tailored messages and approaches using a variety of channels. It should be an integral component of STI prevention efforts and incorporated into care and support activities. It can increase knowledge; stimulate dialogue within the community; promote essential changes in attitude; reduce stigmatization and discrimination; create demand for information and health-care services; advocate for appropriate policies and laws; promote interventions for prevention, care and support; and improve skills and self-esteem (45).

When choosing the communication channels for sexual behavioural-change messages it is important to know which ones can most effectively reach the target population. One successful channel for targeted interventions is through peer educators and opinion leaders. Health talks through institutional or interpersonal networks, group discussions or other one-to-one approaches have also proved effective. Age-appropriate schools-based programmes help in reaching young people who are attending school, but for the out-of-school population other channels, such as peer education, are necessary.

Whatever channel of communication is selected, it is important to use language that is well understood locally. Care should be taken that the messages are sensitive to gender and culture and that they do not reinforce any existing norms that could be driving the spread of STIs. Prevention activities should be designed for the particular population for whom they are intended, by taking into consideration people's situations, vulnerabilities and specific needs.

Innovative strategies for raising demand for high quality STI services should be used, for example market-oriented methods for raising consumer awareness on what is the correct, high-quality treatment that they should expect from the care providers. This approach relies on the premise that increasing demand affects supply of health-care services. Creating high expectations that are not met can be detrimental to success.

Health education about STIs, and counselling of both infected and uninfected people, including voluntary counselling and confidential testing for HIV, should be an integral part of any health service for STIs, as the counselling process creates motivation to change sexual behaviour in both infected and uninfected individuals. Education and counselling messages should also highlight the need for sexual partners to be informed and managed properly for any STIs in order to avoid repeated infections.

3.2.2 Providing condoms and other barrier methods

The male latex condom is the single, most efficient, available technology to reduce the sexual transmission of HIV and other STIs. Although the female condom is effective and safe, it has not achieved its full potential in national programmes because of its relatively high cost. The male condom, along with the female condom, are a key component of comprehensive prevention strategies, and both should be made readily and consistently available to all those who need them in order to reduce risks of sexual exposure to STIs including HIV (46).

Tests are currently under way to assess the effectiveness of diaphragms to protect the cervix from HIV and other STIs. Together, microbicides and the diaphragm offer the best promise of prevention tools that women can control. Currently, there are a number of new microbicides undergoing field trials (13). Should any of these new methods of prevention against STIs prove effective, strategies will need to be developed to facilitate their introduction in different geographical and population settings.

Planning is essential to ensure that national needs are met on a consistent basis. Once procured, condoms should be promoted and distributed through both the public and private sectors, in clinical and non-clinical settings. Maternal and child health and family planning clinics are good additional outlets for condoms, making them accessible to women who could be at risk for STIs. Social marketing programmes have been shown to be particularly effective in ensuring that high-quality, affordable condoms are available where and when they are needed, in both traditional and non-traditional outlets. Condom distribution can also be supplemented by community-based distribution and outreach services to target populations.

3.2.3 Delivering STI prevention and care

The aim of delivering STI care services is to prevent the development of long-term complications and sequelae of STIs in people already infected and to prevent the spread of infection to uninfected sexual partners, the fetus or the newborn.

Strategic options for STI prevention and care

In any particular population there will be individuals infected and those not infected with STIs. A proportion from each of these groups will seek care either for symptoms perceived to be STI-related, whether or not they are infected, or for ailments other than STIs. At the same time, within the community there will be a number of symptomatic people with STIs who do not seek care for one reason or another, and others who will be asymptomatic but infected. Strategies need to be identified and put in place to cope with this variety of presentations both at the community and health-centre levels.

Figure 2 is a diagrammatic representation of such a scenario. The left side represents people with an established infection and the right side represents those without an infection. The top half of the table represents symptomatic persons (with or without an STI) and the bottom half represents the asymptomatic group. The upper-left quadrant, therefore, represents persons with true symptomatic infections, while the lower left quadrant is those without symptoms of infection. The challenge is how to detect the infection in these people who are infected but without symptoms. The upper right quadrant represents people who are not infected but presenting with symptoms suggestive of infection. This group does not require treatment for STIs, but needs information and reassurance, along with treatment for the ailment that could be responsible for the symptoms. In this group, the challenge is

how to exclude infection. The lower right quadrant depicts people without infection and free of any symptoms. This is a healthy population that needs information and knowledge to remain free of infection. Such information can be provided either within the community or as these people come into contact with a health centre. Options and commodities necessary to provide a comprehensive STI prevention and care programme are discussed below, in terms of the transmission dynamics and the different categories of persons presenting at health-care facilities.

STI programmes should promote accessible, acceptable and effective interventions that offer comprehensive case management of persons with an STI to prevent further infections and their many complications and long-term sequelae. The components of such management (47, 48) are the following:

- correct diagnosis by syndrome or laboratory diagnosis;
- provision of effective treatment;
- reduction in or prevention of further risk-taking behaviour through age-appropriate education and counselling;
- promotion and provision of condoms, with clear messages for correct and consistent use;
- notification and treatment of STIs in sexual partners, where applicable.

Figure 2. Diagrammatic representation of STI/RTI clinical presentations and service needs

General population					
Clinical presentation	SYMPTOMATIC	People with STI (infected)		People without STI (uninfected)	
		INFECTED AND SYMPTOMATIC		UNINFECTED BUT SYMPTOMATIC	
		Do not seek treatment	Seek treatment	Do not seek treatment	
		Treatment necessary		Avoid unnecessary treatment	
	Interventions	Standardized case management Health education and counselling BCC to raise awareness of symptoms of STIs/RTIs and improve health-care seeking behaviour		BCC to raise awareness and education on reproductive health and personal hygiene	
		Prevention messages against STIs, including HIV		Prevention messages against STIs, including HIV	
	ASYMPTOMATIC	INFECTED BUT ASYMPTOMATIC		UNINFECTED AND ASYMPTOMATIC	
		Do not seek care	Attend health facility for reasons other than STIs or RTIs	Do not seek care	
		Treatment necessary		No treatment needed	
		Case-finding and screening Incorporation of rapid STI diagnostics Periodic presumptive treatment Awareness campaigns		BCC to raise awareness and education on reproductive health and personal hygiene	
	Interventions	Prevention messages against STIs, including HIV		Prevention messages against STIs, including HIV	

BCC, behaviour change communication; RTIs, reproductive tract infections; STIs, sexually transmitted infections.

Whenever an infection is diagnosed or suspected, effective treatment for STIs should be provided promptly to avoid complications and to break the chain of transmission. The client should receive education and counselling on: adherence to treatment; notification and treatment of STIs in sexual partners; risk reduction; and correct and consistent condom use. Referral for existing complications or sequelae should be provided, whenever needed.

Syndromic management of STIs

Traditionally, a presumed STI has been diagnosed either by clinical appearance alone (which is often inaccurate) or by a laboratory-based test, which can be complicated and expensive and commonly delays treatment while test results are awaited. Even if desirable, laboratory-based diagnosis is often limited, especially in resource-constrained settings, owing to the cost of maintaining a laboratory and a consistent supply of test kits as well as ensuring quality control. For these reasons WHO recommends the syndromic management of STIs in patients presenting with consistently

recognized signs and symptoms shown in simple flowcharts that can be used at the primary health-clinic level.¹

Syndromic management is based on the identification of a group of symptoms and easily recognized signs associated with infection with well-defined pathogens. Treatment for each syndrome is directed against the main organisms within that geographical setting responsible for the syndrome. The syndromic approach has been shown to be highly effective for the management of urethritis and epididymitis in men and genital ulcers in both men and women, and works well in the management of infants with ophthalmia neonatorum. It should be noted that the syndrome of vaginal discharge is neither specific nor sensitive for predicting gonococcal, chlamydial or other cervical infections; however, if the primary objective is to treat vaginitis – attributable, for example, to bacterial vaginosis or *Trichomonas vaginalis* – the approach is of benefit and becomes cost effective in all settings (49, 50).

STIs often exist without symptoms, particularly in women. Different strategies are required for the detection and management of these asymptomatic infections. Some of the strategies are case-finding or screening, with enhanced interventions for reaching sexual partners for STI case management, and increasing knowledge and awareness of individual risk. Case-finding refers to testing in individuals who seek health care for reasons other than an STI. A very important application of case-finding is the provision of STI care in antenatal clinics and in maternal and child-health and family planning clinics. A common example of case-finding is the routine testing of pregnant women for syphilis at antenatal clinics.

Screening refers to testing of individuals who are not directly seeking any health care. For example, testing of blood donors for syphilis, HIV infection and markers of hepatitis B virus infection is an important application of screening. Community-based screening, when feasible and acceptable and done with due regard to confidentiality and human rights, can be an effective means of detecting and treating people with asymptomatic STIs. Targeting screening to those at higher risk of infection will improve the cost-effectiveness of screening programmes.

Strategies for case-finding and screening require more than the development of rapid STI diagnostics but will be more feasible when such diagnostic tests for STIs become available. In all cases, careful attention should be paid to patient confidentiality, counselling and treatment (51).

Strategies for notification of sexual partners

Partner notification, which is an integral part of STI case management, is a process whereby the sexual partners of patients diagnosed with STIs are informed of their exposure to infection so that they may seek screening and treatment. Partner notification aims to prevent reinfection of the index patient and reduce the spread of STIs. Three main approaches have been followed:

- use of third parties (usually health-care personnel) to notify sexual partners;
- index patients notify their sexual partners, or the patients are supplied with medications to deliver to their sexual partners (52);

¹ WHO has developed protocols for seven syndromes: vaginal discharge, urethral discharge, genital ulcer, lower abdominal pain, scrotal swelling, inguinal bubo, and neonatal conjunctivitis (47).

- index patients agree to notify their sexual partners, with the understanding that health-care personnel will notify those partners who do not present for treatment within a given time.

Epidemiological treatment (treatment for the same organisms or syndrome as in the index patient) should be given to all recent sexual partners. Management of sexual partners for STIs is one of the most difficult interventions to achieve, but it is an important component of STI control. It offers a significant opportunity for identifying and treating asymptomatic persons, particularly women, at an early stage and prior to the development of complications. The management of STIs in sexual partners should not be coercive, however, and special care needs to be taken to observe confidentiality and to take gender into account, in view of the fact that the implications for partners will differ according to their sex and their sexual and social norms.

There is no strong or consistent evidence for the relative effects of the three approaches or patient choice among strategies. Patient referral incurs fewer costs and can be more effective with appropriate education and counselling (53). More operational research, especially in developing countries, is needed to evaluate the different approaches in terms of acceptability, the number of sex partners that present for medical evaluation, the impact on index patient reinfection rates, and incidence of STIs. In addition, whatever approach of partner notification is implemented, costs and potential harm related to the process need to be monitored and documented.

3.2.4 Access to medicines and appropriate technology

Medicines for STIs

Consistent availability of appropriate medicines to treat STIs is essential for a successful STI control programme. Prompt and effective treatment of STIs breaks the chain of transmission and prevents the development of complications and long-term sequelae. Most medicines used to treat STIs are inexpensive, and cost should not be a barrier to their availability. Some of the newer and improved formulations are, however, expensive and require procurement mechanisms that would make them affordable to governments and clients. Factors related to affordability can include national, regional and international features such as patents, limited volume, limited competition, import duties and tariffs, and local taxes and mark-ups for wholesaling, distribution and dispensing.

A medicine that is appropriate for treatment of an STI is one that is highly efficacious, that has acceptable toxicity, for which microbial resistance is either unlikely or will be delayed, that is administered orally and preferably as a single dose, and that is not contraindicated for pregnant or lactating women. A two-tier medicines policy, with the provision of less effective medicines at the peripheral health-care level and the most effective (usually more expensive) ones only at a referral level, can result in an unacceptable rate of treatment failures, complications and referrals, and bring about drug resistance more rapidly and erode confidence in health services.

To ensure a consistent supply of safe and effective medicines for STI treatment, countries need to have a sustainable procurement strategy that ensures a 60-day reserve stock at a minimum. Procurement strategies are discussed in section 3.5.6.

Diagnostic tests for STIs

Some 80%–90% of the global burden of STIs occurs in the developing world where there is limited or no access to STI diagnostics. There is a need for the development of rapid STI diagnostic tests in order to improve the quality of care and diagnosis for patients in resource-limited settings.

There is a particularly urgent need for improved diagnostics for STIs in HIV-endemic areas, as certain STIs are important cofactors in the transmission of HIV infection.

Vaccines

As immunization of populations at risk is, in general, a highly effective method of controlling infectious diseases, the search for effective vaccines against STIs, including HIV infection, is very compelling. Vaccines against STIs will be an important addition to existing STI prevention technologies. Currently, hepatitis B vaccine is the only effective vaccine available against a sexually transmitted pathogen.

Preventive vaccination against the oncogenic human papillomavirus types will soon become available, as was shown by a recent trial which demonstrated a vaccine efficacious in prevention of incident and persistent cervical infections with HPV-16 and HPV-18 (35). Discussions have been held, under the auspices of WHO, to determine appropriate endpoint measures for human papillomavirus vaccines and engender interest at country level to embrace human papillomavirus infection as a public health problem. WHO is encouraging countries to consider the benefits of introducing these vaccines in their programmes as well as to explore issues of acceptability and feasibility when it comes to implementation of such vaccination programmes (34).

Clinical trials found that a vaccine against HSV-2 was highly effective compared with a placebo, but effectiveness was only in women, not men, and only in women who had not been previously infected with HSV-1 (36). As more research and clinical trials continue on HSV-2 vaccines, country programme managers should engage in discussions on conducting HSV-2 vaccine trials in different epidemiological settings to evaluate utility, acceptability and feasibility, while at the same time building capacity for research and implementation.

For a successful implementation of any vaccination strategy, the target population must be carefully defined and the acceptability of the vaccine must be assured, especially within a population that may not perceive itself as at risk for STIs. Once the population has been defined and mobilized to accept the vaccine, it will be important to provide that population – reliably and consistently – with a potent vaccine to ensure the success of an immunization strategy. Lessons may be taken from some vaccination programmes against infectious diseases and, indeed, from the lack of widespread implementation of an existing vaccine against the sexual transmission of hepatitis B virus.

3.2.5 Scaling up

Small-scale and pilot programmes provide only limited geographical and population coverage and cannot be expected to have a meaningful impact on the burden of STIs. Many STI programmes tend to implement interventions on a small pilot scale, which, though producing good results, do not reach a wider population for a greater impact. To achieve greater impact, STI prevention and care interventions must be evaluated for their technical elements and those found to be effective must be scaled up. The objectives of scaling up are to ensure that an effective intervention reaches the populations in need of the service. This means increasing geographical coverage and the number of people served within a particular target population, extending a programme to reach additional target populations, and broadening the scope of interventions provided by a programme.

Scaling up will have the greatest impact if it is focused on priority target populations (i.e. those who have the most significant effect on the dynamics of STI spread) and reaches as many individuals as possible within those populations. Scaling up also requires a special focus on:

- quality of services, as there is a risk of trading off quality and intensity of efforts in order to reach more people;
- absorptive capacity, i.e. ensuring sufficient resources are available to support the scaling up;
- sustainability: before scaling up, mechanisms for sustained provision of care should be established.

3.3 IMPROVING INFORMATION FOR POLICY AND PROGRAMME DEVELOPMENT

3.3.1 Surveillance

STI surveillance at the national, regional and global levels needs to be enhanced for the purposes of advocacy, programme design, monitoring and evaluation, and patient care. The basic components of STI surveillance that need to be enhanced include the following:

- case-reporting that disaggregates by age and sex (syndromic or etiological reports depending on the availability of diagnostic tests; universal or sentinel-site reports depending on whether a functional national reporting system for notifiable infectious diseases exists as well as on how STI services are delivered and organized);
- prevalence assessment and monitoring to identify and track the burden of STIs (symptomatic and asymptomatic) in defined populations;
- assessment of STI etiologies;
- antimicrobial resistance monitoring;
- special studies, for example assessment of quality of care using mystery clients.

The above components are complementary activities, and the ways in which each one of them is performed will depend on the existing STI surveillance infrastructure and on the systems that are already in place for reporting as part of integrated disease surveillance. The state of the HIV epidemic in the country also has implications for STI surveillance activities and priorities (54, 55).

Second-generation HIV surveillance

STI surveillance is closely linked to and has a special role in second-generation HIV surveillance; it includes, in addition to HIV surveillance and AIDS case reporting, behavioural surveillance to monitor trends in risk behaviour over time and STI surveillance to monitor the spread of other STIs in populations at risk for HIV. For example, HSV-2 studies can be used as markers for HIV vulnerability. Strengthening of STI surveillance is, therefore, an important component of second-generation HIV surveillance.

STI surveillance should be closely linked to behavioural surveys, especially to surveys on sexual behaviours, determinants of STI epidemiology and health-care seeking behaviours and their relationship to underdetection and underreporting of STIs. Surveillance is also important in assessing which population groups should receive targeted interventions.

Periodically, there is a need to perform special studies to focus on other STI surveillance issues that are not part of the routine case reporting or prevalence assessment. These studies can include investigations for outbreaks of particular STIs, such as outbreaks of syphilis, lymphogranuloma venereum and chancroid in certain populations and geographical settings.

The private sector, to the greatest extent possible, should be included in the reporting system, despite the reluctance often encountered to report STIs to public health authorities because of concerns about privacy and stigma, apathy, or a perception that little is to be gained from the notification process. In many countries patients with STIs seek to obtain medication directly from pharmacies or from the informal private sector, without first seeking diagnosis from a clinician. This can be a source of a substantial amount of underreporting, and special studies could be necessary to determine the extent of the practice and the magnitude of underreporting. Incentives to encourage reporting should be considered. Some of these could include accreditation or franchising.

Current surveillance systems need to be strengthened through improving laboratory facilities, materials and personnel, and enforcing reporting mechanisms, especially when diagnostic facilities are in place. As current surveillance systems are further limited by underestimation of the burden of STIs attributable to asymptomatic infection, accompanying strategies for screening and case-finding need to be put in place.

Data to support advocacy

The timely collection of reliable data is required to estimate the burden of STIs, their complications and their economic impact. In turn, this information provides the rationale for enhanced policy attention and resource allocation to STI control at the national, regional and global levels.

Data to guide programme design and monitoring

Timely and reliable STI data are also required to support programme management. STI prevalence studies in various populations help to assess the distribution of STIs, identify priority target populations and estimate the burden of asymptomatic STIs in a community. STI trend data are useful to evaluate the effectiveness and impact of STI control programmes and interventions, and also serve as biological markers of trends in unsafe sexual practices.

Data to guide patient care

Antimicrobial resistance to commonly used medicines that took decades to develop continues to diminish their effectiveness. Resistance develops largely because medicines are misused through indiscriminate use and over-prescribing. Medicines are misused by patients who do not complete prescribed courses either because of non-adherence or poverty. Poverty often forces both health-care providers and their patients to opt for lower doses of prescribed medications or cheaper, less effective alternatives in order to save money. Ironically, far more expensive medicines must replace cheaper ones once the latter lose their effectiveness.

It is essential that health authorities regularly monitor and detect the relative prevalence of pathogens responsible for STI syndromes in the local settings and the emergence of resistance to medicines for the treatment of STIs, so that treatment guidelines and national lists of essential medicines can be kept up to date. Sexually transmitted organisms that particularly warrant monitoring include *Neisseria gonorrhoeae* and *Haemophilus ducreyi* among the bacterial ones and HSV-2 among the viral STIs.

As levels of resistance vary widely from one country to another, WHO does not recommend any one single first-line treatment for gonorrhoea. Instead, each country must make decisions according to its own resistance patterns – a quandary, given that many cannot afford surveillance and have to rely on proxy data gathered by neighbouring countries or use regional estimates.

3.3.2 Monitoring and evaluation

Progress of programme implementation needs to be monitored to ensure that activities are performed as planned, on time and within budgeted resources, and determine whether the activities are producing the anticipated outcome or impact. There is a lack of data at the implementation level that makes it difficult to measure accurately the effectiveness and cost-effectiveness of various STI interventions. Such information is important to guide priority setting, strategic planning and resource allocation. A data collection and analysis process should be established to track standard parameters to measure the following:

- service delivery (e.g. number of clients served, pregnant women screened and treated for syphilis, condoms distributed, individuals referred for voluntary counselling and testing);
- quality of care provided (e.g. proportion of clients treated according to national guidelines using standard indicators such as the Priority Prevention Indicators);
- adequacy of staffing patterns (e.g. patient load);
- client response and satisfaction (e.g. total number of clients served, initial versus repeat or return visits, proportion using facilities as first treatment option);
- capital and recurrent programme costs to assess efficiency and cost-effectiveness.

Further, it is important that the results of such monitoring, which could be limited to operational research, are linked in a meaningful way with programme implementation. The results should be used to evaluate and improve the ongoing programmes and to design new ones. More operational research is needed to examine which interventions work best in particular settings, and research on issues related to women's sexual and reproductive health should be conducted to guide the formulation of gender-sensitive strategies and interventions.

3.4 INTERFACE WITH OTHER PROGRAMMES AND PARTNERS

3.4.1 Public sector health programmes

STIs are implicated in programmes concerned with adolescent health, family planning, women's health, safe motherhood, immunization, child survival and HIV prevention. These programmes are interdependent and should interface or integrate strategically. The interface is

imperative to broaden the coverage of STI interventions for clients, and reduce missed opportunities for the prevention, detection and treatment of STIs. It should also strengthen the collaboration between the public and private health sectors for better quality and wider coverage. However, such interfacing or integration is made difficult by the need to accommodate additional tasks in existing programmes, particularly when the health goals of the new tasks are different from those of the existing services. Additional supervision, and financial and managerial support might be required. Until these are in place, integration cannot be assumed to have been established. Although interfacing and integration facilitate increased coverage for clients, access to health care and management planning, they are not easy to achieve or cheaper in the first instance. Benefits are felt and appreciated only after initial difficulties and costs.

HIV/AIDS

The predominant mode of transmission of HIV and other STIs is sexual. Other routes of transmission for both include injecting drug use, blood and blood products, donated organs or tissue, and vertical transmission from a mother to her fetus or newborn infant. Many of the measures for preventing the sexual transmission of HIV and other STIs are the same, as are the target audiences and populations for the interventions.

Some STIs, when present, facilitate the transmission of HIV. A number of studies have demonstrated both ulcerative and non-ulcerative pathogens to be implicated to varying degrees, with relative risks ranging from 1.5 to 8.5 (see Table 2). The increase in transmission probability for HIV infection per single act is probably much higher than the relative risks observed in cohort studies, because participants are not continuously affected by an STI during the follow-up period. Although the cofactor effect seems to be higher for ulcerative diseases, non-ulcerative infections could be more important in some populations because of their frequency and prevalence. More recently, intervention studies have added information and weight to STI/HIV cofactor effect.

The community-based randomized control trial in the Mwanza district of the United Republic of Tanzania showed that strengthened STI case management of symptomatic patients, by using syndromic management provided through the existing primary health-care clinics, reduced HIV incidence by 38%. A study conducted in Malawi among HIV-1 seropositive men showed that men with urethritis had HIV-1 RNA concentrations in seminal plasma eight times higher than those in seropositive men without urethritis (18). Gonorrhoea was associated with the greatest concentration of HIV-1 in semen. After the urethritis patients received antimicrobial therapy directed against STIs, the concentration of HIV-1 RNA in semen decreased significantly at two weeks. Blood plasma viral RNA concentrations did not change. There was no significant change in seminal plasma HIV-1 RNA concentrations during the two-week period in the control group. These results suggest that treating urethritis decreases the infectiousness of men with HIV-1 infection, which gives further evidence that HIV/AIDS control programmes that include detection and treatment of other STIs in patients already infected with HIV-1 could help to curb the epidemic.

Treatment of STIs is a cost-effective option for countries to invest in, both in terms of STIs as a serious cause of morbidity and of an HIV-prevention intervention. Therefore, STI and HIV programmes should establish and maintain strong linkages and complement their efforts, given the synergistic interactions between HIV and other STIs and the common elements for prevention of both. Already, in many regions and countries of the world, STI and HIV programmes are fully or partially integrated or coordinated through joint planning.

Areas of collaboration between these programmes include advocacy, policy formulation, training, programme planning and evaluation, surveillance and research. The STI and HIV

programmes should not only collaborate but should also share their resources for planning and implementing these activities. They can work together to:

- educate clients on risk behaviours and prevention methods at the health-centre level and in the community, involving the public and private sectors alike;
- offer counselling and confidential, voluntary testing for HIV to enable individuals to know their HIV status and be appropriately evaluated for antiretroviral treatment;
- offer effective treatment for other established STIs to improve the quality of life of persons living with HIV and reduce infectivity;
- develop and implement strategies to improve access to appropriate, safe and effective medicines and condoms of high quality at affordable prices;
- ensure that national investments in health systems infrastructure and commodity distribution systems contribute to improving the quality and accessibility of care for STIs, including HIV;
- ensure a comprehensive prenatal care package that includes screening for STIs such as HIV and syphilis.

Table 2 Studies on sexually transmitted infection as risk factor for HIV transmission

Reference	Study population	STI studied	Relative risk	Odds ratio
(56) Plummer, 1991	Female sex workers, Kenya	Chlamydia		3.6
(57) Laga, 1993	Female sex workers, Democratic Republic of the Congo	Chlamydia Gonorrhoea Trichomoniasis		3.6 4.8 1.9
(58) Kassler, 1994	Heterosexual cohort, USA	Gonorrhoea		2.5
(59) Craib, 1995	Cohort of MSM, Canada	Rectal gonorrhoea		3.18
(60) Cameron, 1989	Heterosexual men, Kenya	Mainly chancroid	4.7	
(61) Telzak, 1993	Heterosexual men, USA	GUD, chancroid	3.0	
(62) Limpakarnjanarat, 1999	Female sex workers, Thailand	Syphilis GUD and herpes		3.7 2–2.4
(63) Mbizvo, 1996	Antenatal care women, Zimbabwe	GUD + PID		5.8
(64) Bollinger, 1997	STI clinic attendees, India	GUD		4.2
(65) Stamm, 1988	MSM, USA	Herpes, syphilis	3.3–8.5	
(66) Holmberg, 1988	MSM, USA	Herpes	4.4	
(67) Darrow, 1987	MSM, USA	Syphilis	1.5–2.2	

MSM, men who have sex with men; GUD, genital ulcer disease; PID, pelvic inflammatory disease.

Sexual and reproductive health

The interface between STIs and sexual and reproductive health services is extensive. Both STI and reproductive health care seek to improve the quality of life and, in particular, the sexual and reproductive life of women and men. The following are the key areas of interface between STI and sexual and reproductive health services.

- Improving access to STI services. As antenatal, maternal and child health, and family planning clinics serve many women of reproductive age, they constitute a network of health facilities that have the potential to expand the reach and coverage for STI care to a significant segment of the general female population that would otherwise not be reached through categorical STI clinics and general curative medical services. Age-appropriate health education and counselling for STIs and their risk factors can be provided and help in further prevention of infection. Through the establishment of systematic screening programmes, women with asymptomatic STIs could be detected and treated, and many adverse pregnancy outcomes of untreated STIs avoided.
- Improving women's health. STIs and RTIs contribute significantly to a woman's ill-health by increasing her risk of infertility, ectopic pregnancy, cervical cancer, spontaneous abortion and HIV infection. STI prevention, detection and early treatment, therefore, constitute key elements in women's health services.
- Ensuring contraceptive choice and safety. As the presence of some STIs or RTIs restricts a woman's access to the full range of contraceptives, and since the contraceptive user may attribute the symptoms of STIs or RTIs to a particular contraceptive method as a side-effect (leading to decreased acceptance and discontinuation of contraceptive methods), screening and treatment of STIs, together with counselling on dual protection, are important elements in ensuring contraceptive choice and safety.
- Dealing with sexual and gender-based violence. Violence against women can have serious consequences for women's reproductive health, including the acquisition of STIs. Treatment of STIs and post-exposure prophylaxis for HIV after rape need to be offered. Gender-sensitive methods for partner notification in the case of an STI need to be explored in order to avoid violence. There is a need to identify successful case studies of partner notification for STIs in different cultural settings, and at the same time to initiate operational research to learn how to conduct partner notification in a more acceptable manner across different sociocultural and religious settings.
- Screening and treatment for STIs. Screening and treatment for STIs can improve health outcomes following abortion, as the presence of an infection in the lower reproductive tract at the time of abortion is a risk factor for post-procedural complications (68). Therefore, pre-abortion management of STIs is an important step in preventing post-procedural infections.
- Incorporating gender-sensitive approaches. Both STI and sexual and reproductive health services face similar challenges of incorporating gender-sensitive approaches, in particular involving men, reaching marginalized or otherwise neglected populations (such as sex workers, substance users, the poor people in urban and rural areas, migrant populations, displaced persons and refugees) and responding to adolescents' special needs.
- Preventing RTIs. RTIs, other than those that are sexually transmitted, usually present with symptoms that can be mistaken for an STI. The endogenous RTIs, i.e. bacterial vaginosis and

candidiasis, result from alterations in the balance of normal, protective bacterial flora in a woman's reproductive tract. Bacterial vaginosis is the most prevalent RTI in the world, and it is the most prevalent cause of vaginal discharge in developing countries. Up to 50% of pregnant women have been found to have bacterial vaginosis in sub-Saharan Africa. Bacterial vaginosis has been implicated as a cause of preterm birth, low birth weight, preterm pre-rupture of membranes, postpartum sepsis and spontaneous miscarriage (69). Bacterial vaginosis has also been implicated in the transmission of HIV infection (70). Education for the prevention of RTIs and their complications requires a common approach with services for STI control within reproductive health-care settings.

- Promotion of safe transcervical procedures. For example, clients should be checked or treated for endogenous infections or STIs before insertion of the contraceptive intrauterine device or termination of pregnancy, to avoid ascending bacterial contamination of the upper genital tract. Alternatively, women who select the intrauterine device should be encouraged to choose a different form of contraception if they consider themselves at risk of exposure to an STI (71).
- Scaling up provision of existing and potential vaccines to prevent genital and liver cancers and some STIs. Collaboration and joint planning between the STI and sexual and reproductive health programmes, within national immunization programmes, will facilitate the rollout of existing and potential vaccines such as hepatitis B and HPV vaccines, and provide a ready channel for the introduction of any new vaccines.

In addition, sexual and reproductive health services are best positioned to ensure the health of women, neonates and children in collaboration with STI programmes. Thus, sexual and reproductive health services should ensure the following:

- Health education to prevent HIV infection and other STIs, including their long-term sequelae such as PID, infertility, ectopic pregnancy and genital cancers. Gender inequalities, culturally constructed roles as well as biological factors all contribute to women's and young people's vulnerability to infections. Recognizing the influence of ethnicity, culture, sexual orientation, geographical location (urban, rural or inaccessible remote locations), age and different life-skills is essential to better target and tailor responses to the burden of STIs and their complications and long-term sequelae.
- Prevention of congenital syphilis. Effective prevention of congenital syphilis depends firstly on prevention of syphilis in pregnant women. If that fails, then secondary prevention involves screening for syphilis during pregnancy and providing adequate treatment for both the woman and her sexual partner. Given the high social and economic costs of congenital syphilis, and the possibility of changes in the epidemiology of syphilis, prenatal syphilis screening followed by treatment of seroreactive women is a highly cost-effective intervention for the prevention of congenital syphilis and the complications of untreated syphilis in the parents, even in settings with prevalence levels of below 1%.
 - Pregnant women should routinely be screened during their first prenatal visit, ideally before 28 weeks of gestation (72). In communities where the risk for congenital syphilis is high, a policy to institute a second screening test at 36 weeks or at delivery should be considered. Clear national guidelines will need to be developed on clinical and serological follow-up for both mother and child.

- Discussion concerning treatment of STIs in sexual partners should be held and an assessment of the risk of reinfection should be made and appropriate action taken.
- As with other STIs, pregnant women found to have syphilis should be offered voluntary counselling and confidential testing for HIV. In high HIV prevalence settings, voluntary counselling and testing should be offered to all pregnant women.
- Prevention of neonatal blindness. Prophylaxis against ophthalmia neonatorum among neonates has been shown to be highly cost effective where the prevalence of gonorrhoea among pregnant women is 1% or more (24).
- STI care for sexually exploited and abused children. Sexual exploitation and abuse of children and adolescents have come to be recognized as serious social problems that require the attention of policy-makers, educators, and a variety of professionals who deliver social and health care and basic social services when sexual exploitation or abuse is suspected. Screening and exclusion of a sexually transmissible agent, including HIV, should be performed by a trained child clinician following locally defined procedures and guidelines. A standardized approach to the management of STIs in children and adolescents who are suspected of having been sexually abused is important because the infection could be asymptomatic (47). Psychological and social support should be included for complete management of these young patients.

Adolescent health services

Sexually transmitted infections are a major health risk to all sexually active adolescents¹. Every year, one in 20 adolescents contracts a bacterial STI, and the age at which infections are acquired is becoming younger (74). Most projects to improve sexual and reproductive health for adolescents have focused on sexual health counselling and family planning but have neglected STI care among their service-delivery objectives. Involving parents and young people at the appropriate age of maturity in the planning and implementation of interventions for them is crucial in making an impact on their behaviour. STI programmes, including sexual and reproductive health services as part of primary health care, should, at a minimum, institute and provide the following basic interventions.

- Strengthening STI surveillance among adolescents and young people. STI data need to be stratified by age and sex to enable an appropriate programme assessment and response to meet the needs of adolescents.
- Improving the awareness and knowledge of adolescents about STIs and their complications, and how to prevent them. Appropriate sexual education and consistent access to male and female condoms, with clear messages about correct and consistent use, should be available to all who need them. This will lead to the common goal of improving the sexual health and well-being of adolescents (45).
- Improving adolescents' access to STI services. It is unlikely that one model for the delivery of STI care will suffice to meet the needs of all adolescents. Services can build on those that already exist including: adult health clinics made youth-friendly through special training of health-care providers; sexual and reproductive health clinics dedicated to adolescents; "one-stop

¹ WHO has defined adolescents as persons in the 10-19 years age group, while youth has been defined as the 15-24 years age group. "Young people" is a combination of these two overlapping groups covering the range 10-24 years (73).

shops” where all health-care services for young people can be obtained; multi-purpose youth health centres; and age-appropriate school-based or linked services (75). However, new innovative formats such as mobile clinics might be required to reach the most vulnerable youth, including sex workers and street children, particularly during main festivals and events.

3.4.2 The private sector

Although free public-sector services are available even in most resource-poor countries, they might not always be acceptable to the clients or have appropriate health personnel or the necessary medicines available. The private sector or traditional healers and informal providers are frequently the first port of call for STI patients, even for those who believe that government health clinics are technically superior. Private providers, whether medically qualified or not, are more acceptable to many people because they are perceived to offer better access and confidentiality, and often have the reputation of being less stigmatizing than public sector facilities. Self-medication, following direct over-the-counter purchases from pharmacists, druggists and vendors, is also common.

Given this scenario, public policy and interventions should necessarily involve the private and informal sectors, and public–private partnerships should be established in the provision of STI care. Effective and appropriate regulatory measures should be taken by governments to ensure technical quality and accountability in the private sector STI services. Strategies for collaboration and quality control should be examined at country level. These can include training of pharmacists and private practitioners on STI case management and national guidelines. Governments should explore how to establish formal relations for the promotion of appropriate STI care with pharmacists’ unions, traditional healers’ associations and other providers, depending on the setting and prevailing policies, laws and regulations. This should be done in collaboration with the communities themselves.

3.4.3 Community involvement

The involvement of the community in decisions that affect their health is important, and STI control programmes need to devise mechanisms for obtaining input from the whole community through appropriate representatives of civil society. This can best be achieved by forming partnerships with nongovernmental organizations, faith-based organizations, community-based organizations and the private sector. Communities should be educated about the availability, advantages and disadvantages of the different types of providers for STI care. Consumer advocacy groups can be established, and well-informed and discerning patients can also help to improve care. Consumers can be encouraged to use providers who adhere to predefined, agreed and well-publicized quality standards. Strategies to engage the community include the following:

- provision of information to increase community awareness of the problem and increase community demand for interventions and services;
- ongoing consultations with the community;
- community involvement in the design and implementation of interventions;
- accountability and responsibility sharing with the community for programme outcomes;

- involving local political and opinion leaders, including traditional and faith leaders, in advocacy for prevention and care of STIs.

Religious and faith-based organizations are often instrumental in shaping opinions, attitudes and behaviour of the followers of the faith and the community in general. In many places they are uniquely placed to provide health education on HIV and other STIs through their extensive networks that reach even the most remote villages and communities. These community-based organizations can be vital partners in promoting prevention, counselling, home care, clinical care and even advanced treatment as well as reducing stigmatization and discrimination. They should, therefore, be engaged in discussions on sexuality, gender and STIs, including HIV, in order to facilitate and enhance an open environment to discuss these issues. Strengthening collaboration with, and capacity of, these organizations is important to ensure that they work more effectively in partnership with governments and others in the prevention and control of STIs.

3.4.4 Other partners

There are several other partners and stakeholders who should be included in the response to STIs, depending on the setting. These can include other government departments such as education and labour, sports and cultural authorities, police and border control officials, and private companies such as the transport and tourism industries, among others. Different strategies for STI prevention and control can be explored with them, including STI prevention and care in the education sector and the workplace. Mechanisms should be developed to encourage organizations to be accountable for STI care. In some settings there is a need for cross-border collaboration to establish interventions among cross-border traders, temporary or permanent migrants, displaced persons and persons whose occupation puts them in a different place at one time or another in the course of their work.

3.5 STRENGTHENING THE CAPACITY OF HEALTH SYSTEMS FOR EFFECTIVE SERVICE DELIVERY

Health systems, broadly defined as comprising all the organizations, institutions and resources devoted to producing health actions, are a prerequisite to the establishment, delivery and monitoring of STI programmes and outcomes discussed in this document. The capacity of each country's health system will largely determine the extent to which national STI programmes are able to provide high quality care to the largest geographical spread, reaching disadvantaged and targeted populations to achieve a measurable impact on reducing the burden of STIs and other RTIs, while preventing new infections. The ability to provide services in an equitable manner is an important consideration, particularly given the stigma that surrounds the primary prevention and treatment of STIs. In many resource-limited settings, health systems are overstretched, inadequately funded and ill-equipped to cope with the present and future demands for care. In strengthening health systems, a special focus must be placed on financing to ensure sustainability (including resource mobilization, pooling, allocation and payment), stewardship and regulatory guardianship (to ensure quality and equity) and public-private partnerships to extend the reach of the programme to the largest coverage possible.

In countries where health system reform is under way, efforts should be undertaken to ensure that STI services are considered in the process. Priority-setting processes that are used to select an essential package of health interventions for primary care should reflect the significant contribution of STIs to the burden of reproductive ill-health. The goals of reform (improving quality, equity and client responsiveness – as well as sustainability and efficiency) must also take STI health-care providers into

consideration. In particular, financing by the private sector, and the effective engagement of the private sector should be used to expand access to STI care.

Health system response to STIs must be based on an analysis of the STI epidemiology, sexual risk behaviours and vulnerabilities, patterns of health-seeking behaviour and the skills and attitudes of health-care providers. Based on the findings of the analysis, a comprehensive programme for STI prevention and control should be developed to cover all the population groups for which interventions are required. Care delivery strategies should be tailored to the needs of the particular population groups for whom they are intended. The programme should include a continuum of all aspects of STI prevention and control, including health promotion and prevention activities and technologies, curative services, linkages to family planning, sexual and reproductive health, immunization, HIV/AIDS and other services. It should expand the collaboration among its different partners, in both the public and private sectors, for a multisectoral response.

The STI programme should also include a plan for monitoring the impact of the implementation of the interventions. The provision of timely data on programme performance and impact will assist in securing resources for additional activities, and provide an evidence base for future programme directions.

3.5.1 Access to STI services

In most countries, patients have a choice of settings from which to seek STI care. Public providers compete with many different types of qualified and unqualified private providers and traditional practitioners. In both the public and private sectors, potential sources of STI care include specialized (categorical) STI clinics, hospital outpatient departments of other specialties such as obstetrics and gynaecology, dermatology or urology, dispensaries and primary health-care centres, and family planning, maternal and child health and antenatal care clinics. The extent to which STI services are offered through primary care centres or specialized clinics will depend on the epidemiological, organizational and resource circumstances and should take into account the health-care seeking behaviours and preferences of the different subpopulations.

In many settings, the problem is one of an unmet need for good quality care. Creating a supply of STI care in the public sector does not necessarily lead to better coverage for priority populations, even when such services are of a technically superior quality and are offered free of charge. A number of additional factors need to be taken into account to achieve access to care, and a client-oriented approach should be adopted in all settings. Particular attention should be given to gender equity, adolescents, and poor and marginalized groups when planning the services. Services should be made more user-friendly by improving factors such as distance to residence, professionalism of health-care staff, privacy, confidentiality and reduction of waiting time. The private sector, including pharmacists and other dispensers of medicines, needs to be engaged and committed to providing good quality services, including measures for regulatory supervision and control. Communities and consumers should be educated on health matters in general and STIs in particular, by stressing the importance of having STIs diagnosed and treated by a trained health professional. The price or availability of medicines and condoms can be a barrier to access for some populations. Policy change may be needed to improve the availability of medicines and to consider options such as subsidies for poor people, widespread condom provision for all population subgroups, coverage of diagnostic expenses in health insurance schemes, and referral mechanisms for higher level care. Outreach may improve access to care for hard-to-reach populations, where needed.

3.5.2 Quality assurance

Decentralization and privatization of the medical sector are some of the components of health sector reform embarked upon by governments. A key challenge for governments is ensuring quality in the large and rapidly growing private sector, about which there is little information. Governments must fulfil the core public function of stewardship and put in place processes that ensure good quality of care for the population, both in the public and private sectors.

National guidelines for STI case management

To promote good quality case management, guidelines based on identified patterns of infection and disease should be developed and disseminated to all providers of STI care. The guidelines development, adoption and dissemination processes should involve representatives of both the public and private sectors. Training on the content and use of national guidelines should be imparted to both public sector health workers and private sector health-care providers.

A syndromic approach to STI management overcomes many obstacles to the provision of good quality and efficient STI management, particularly – but not only – in resource-limited settings. Though desirable, etiological diagnosis for STIs is not feasible in many resource-constrained settings. National experts and committees should be consulted to advise on the most appropriate STI management strategy that will benefit all sectors of the population in need of STI care. A carefully planned and implemented mixture of protocols may be devised based on the financial, human and technical resources available and the burden of disease.

Licensing, certification and accreditation

Licensing of professionals and certification of facilities help to maintain the quality, safety and geographical distribution of health-care services. Licensing and certification not only apply to the health-service industry but also to the pharmaceutical and health-insurance industries. Effective government stewardship functions through these enforcement mechanisms, which are best established through strong ties with, and broad participation of, the private sector. Professional associations and other self-regulatory bodies that function outside of or in partnership with government are an essential element of regulatory and quality control.

Accreditation is a process of certifying that a facility meets certain standards, and is often linked to coverage of procedures by health insurance schemes. Provider licensing and certification supported by professional associations, as well as community-based consumer educational campaigns in local languages, can help to ensure standards for quality of care. There is an important role for accrediting pre-service and in-service training programmes in helping to ensure quality (including the monitoring of training curricula and requirements for continuing medical education).

Where the capacity to monitor and enforce regulations is limited or non-existent, as is the case in many resource-limited settings, national and local policy-makers should find incentives for rewarding good practice. Accreditation or other forms of recognition linked to payment modalities of private providers (including health insurance coverage) who provide comprehensive high quality and reasonably priced STI care (76) is one possible incentive. Incentive payments can be linked to the obligation to provide data to health authorities on a regular basis, participation in continuing medical education, and willingness to have practices audited. Other incentives not linked to payments but of a financial nature could include access to subsidized medicines or other commodities (e.g. a condom social marketing programme), preferential access to diagnostic and referral services, and options to

participate in schemes which franchise or contract out service provision, such as vouchers or other forms of pre-payment given to the clients directly. Adherence to regulations can be enhanced by provision of adequate resources to regulatory bodies, a clear distinction of roles between regulators and those being regulated, and the establishment of consumer advocacy groups.

Peer review and self-regulation

Settings that have effective regulatory mechanisms in place are characterized by frequent dialogue in a range of different venues between government and professional associations in the private sector. Professional associations and provider networks can be called upon to exert peer pressure and promote self-regulation in partnership with government. For example, they can promote a high quality of service provision by their members through the introduction of professional points (or continuing education credits) for attending sessions and workshops that educate and update participants. However, several randomized controlled trials have found that continuing medical education programmes that are not linked to financial incentives or access to better working conditions have limited success in improving practice (77).

Supportive supervision and monitoring

Regular supervisory and monitoring visits to health facilities are an important component of ensuring the continued provision of good quality care and sustaining provider morale and motivation, as also demonstrated in the Mwanza trial in the United Republic of Tanzania. Such supervisory visits need not be confined to the public sector. They can be adapted to the private sector to maintain quality, provide continuing education and serve as a means of collaboration between the private and the public sectors. Supervisory visits need to adopt a facilitation process in order not to be a threat to the health-care providers, but rather a source of encouragement, and a means of updating health-care providers and constantly improving quality of care. Training of supervisors is important, so that they can reorient their skills to being supportive rather than judgemental and fault-finding.

Referral centres

Establishment of national and regional referral centres for referral of complicated cases and for confirming diagnosis improves quality control. Referral protocols, specifying when and where to refer, should be part of the standard management protocols developed for all health workers involved in STI care. High drop-out rates among referred patients are common (78). Care should be taken not to send patients on long and expensive journeys to centres that have nothing extra to offer.

Active supervision and continuing medical education through feedback on cases and formal in-service training sessions help to build the links between the centres. Consultations and communication between health centre and referral centre by means of visits or radio link also facilitate the development of professional trust and confidence.

Most important, however, is the establishment of a programme at the district level with agreed goals and objectives, standard protocols, performance targets and annual or semi-annual review sessions. The link with the referral centre then becomes more comprehensive and interactive, which thereby establishes a more meaningful and motivational relationship among staff.

3.5.3 Financing services

Financing and payment are central functions for any health-care system, and involve four distinct functions: resource mobilization, resource pooling, resource allocation, and payment and purchasing. Although every health system carries out these functions, each will organize them differently, reflecting variation in institutional structures, societal expectations and systems of governance. Health system financing has a strong impact on programme coverage, equity and health outcomes.

Resource mobilization for STIs is necessarily linked to that for HIV/AIDS programmes. Ensuring that adequate funds are devoted to prevention and control of other STIs within the overall HIV/AIDS funding envelope is an essential aspect of both international and national fund-raising decisions, particularly given the need to scale up existing interventions for STI control. Given that STI prevention and control is part and parcel of HIV funding, policies relating to user fees for STI and HIV care should be the same.

Shifting the responsibility of resource mobilization to the point of service delivery, through the introduction of user fees, must necessarily include exemption schemes for poor people. Universal coverage will be achieved if pre-payment systems such as health insurance or social health insurance are developed rather than relying on user fees. As countries move towards the creation or expansion of health insurance systems (public-provided, employment-based or privately purchased schemes and community-based pooling schemes), STI programmes will need to ensure that their medical procedures are included in the benefit packages. In many resource-constrained countries, the cost of medicines is the largest portion of out-of-pocket expenses (those met by patients themselves rather than the health system or a health insurance) for an individual or household (79). Out-of-pocket expenditure for all medicines can be as high as 65% of total cost of medicines in sub-Saharan Africa and 81% in Asia (80). In industrialized countries it rarely exceeds 20% (81).

Adequate or reasonably adequate financial flows at every level of the system improve the responsiveness and effectiveness of STI service provision. In countries where such decisions are decentralized, financial allocations are often made at the local level, requiring the STI programme manager to have effective lobbying presence and skills in elaborating and implementing a business plan. In general, public health-care clinics in resource-constrained countries are often poorly equipped and inadequately financed, resulting in low staff morale. Flexibility in designing and implementing different payment and purchasing options that respond to local conditions should be encouraged. Options from both the demand side (e.g. vouchers) and the supply side (e.g. incentive payments as salary supplements) need to be tried.

As many governments and donor agencies move towards sector-wide approaches to channel aid to the health sector, STI programmes will be challenged to ensure that treatment and preventive activities are valued in the definition of the sector's goals and objectives. Through sector-wide approaches, funds are given to the entire health sector rather than to specific health projects, and ministries of health determine the priorities within the health sector. While this is intended to improve efficiency, there is a risk that funding for STI services, historically accorded a low priority in developing country health budgets, will be further curtailed.

3.5.4 Human resources development

Discussions about training in leadership, management and strategic planning, advocacy, commodity management, health information systems and other functional areas relevant to the

management of national STI/RTI programmes are beyond the scope of this strategy. These should take place in the context of a broader development strategy for human capacity in the health sector. This section will focus on training health personnel in the delivery of STI care.

Projected personnel requirements for STI services can be satisfied, to some extent, through the retention and retraining of existing health personnel and, in part, through recruitment and training of additional staff. Members of the STI programme team should be trained for their respective roles in management of different components of the programme. Health personnel should be trained according to their respective functional areas. For example, if health-care providers in antenatal care and family planning clinics are expected to provide STI care, their training should reflect this. Similarly, if physicians are expected to provide patient education and counselling, their training should be broadened to include these skills.

Medical schools and other tertiary educational institutions need to play a greater role in comprehensive STI training, which includes all the aspects of prevention, care and counselling, for physicians, nurses, laboratory workers, pharmacists and public health staff during their basic training. Training in syndromic approaches, their application to STIs, the scientific basis, and the advantages and shortcomings should be incorporated in the respective curricula. An STI component should also be an essential feature of postgraduate medical training curricula in public health.

In-service or on-the-job training should be provided to all members of the health-care team, including clinicians, pharmacists and front-line workers such as clerks and receptionists. Training should not be limited to the biomedical aspects of STI management but must also address provider attitudes and beliefs. Innovative approaches such as distance and computer-assisted learning should be explored.

Professional associations can play an important role in providing continuing medical education and skills updating, particularly to private sector providers. This can be achieved through training sessions, conferences, journal articles and mailings in the form of newsletters and self-instruction manuals.

Continuing retraining (refresher training) of staff should be based on the results of monitoring and evaluation of STI control and staff development programmes. Skills for STI prevention and control should be enhanced in other sectors as well as within communities through strengthening capacities and building awareness. The role of community health workers in the management of STIs should be explored in settings where this cadre exists.

Albeit frequently neglected because of resource constraints, follow-up and supervision are critical aspects of training and of ensuring quality of care.

3.5.5 Laboratory support for programme management

Cost and inconsistent availability of supplies, test kits and expertise severely limit the practicality and availability of laboratory investigations for STIs in many communities. Even if such resources are available, the large numbers of STI cases and the degree of difficulty in identifying some of the organisms responsible for some STIs, as well as frequent coinfections, make individual laboratory-based case management impractical and unreliable in many settings. Also, most laboratory tests take a considerable length of time to process, resulting in delays in treatment or loss to follow-up. Reliability of laboratory results compounds the problem further, as test kits for the same organism differ from one manufacturer to another, and performance of the same test can be subject to the

experience of the technician and the specimen collection technique, as well as the storage and transport capacity of the health system. On account of these limitations, laboratory support should be confined to situations where it is essential for programmatic or clinical decisions.

Good-quality laboratory systems should be established wherever laboratory-based STI diagnoses are made, either for the diagnosis of individual infections or for providing support for syndromic management. Appropriate training should be provided for all laboratory personnel, and clear guidelines should be given regarding which tests should be employed by the laboratory, the interpretation of results obtained and expected turn-around times. Internal quality control guidelines should be established and adhered to, and participation in external quality assurance programmes encouraged.

Adequate laboratory support is important for an effective STI control strategy; clear guidelines should be defined, stipulating where laboratory facilities need to be strengthened and for what purpose. Laboratories should be established and strengthened at national and regional levels and, where feasible, laboratory support can be established at a local level. Such a network of laboratories can work together to strengthen STI services. To be cost effective, the network can identify clear roles and areas of responsibility, as recommended below.

National level

- Conducting epidemiological, sentinel and etiological surveys to monitor disease trends and effectiveness of interventions.
- Validating and adapting flowcharts for recommendations and guidelines for syndromic management.
- Establishing national proficiency and quality control systems for the laboratory diagnosis of STIs.
- Providing training workshops for laboratory diagnosis of STIs.
- Evaluating performance and cost-effectiveness of new diagnostic tests.
- Collating data on antimicrobial susceptibility patterns and making recommendations.
- At referral centres, establishing diagnosis in those cases that fail syndromic case management and those for medico-legal purposes (e.g. rape or sexual abuse).
- Initiating or strengthening screening programmes, where feasible, for asymptomatic gonococcal and chlamydial infections, especially among target populations such as sexually active young women and men.

Regional level

- Conducting etiological surveys to monitor disease trends and effectiveness of interventions.
- Monitoring patterns of antimicrobial susceptibility.

- Supporting regional proficiency and quality control systems for the laboratory diagnosis of STIs.
- Providing training workshops for laboratory diagnosis of STIs.

Local level

- Supporting sentinel surveys.
- Providing routine serological testing for syphilis in pregnant women.

3.5.6 Procurement and logistics management

In order to function effectively, health personnel should have access to medicines, supplies (gloves, syringes, laboratory supplies, etc.), condoms and medical equipment (examination tables, examination light, screens for privacy, specula for vaginal examinations, sterilization equipment, etc.). Thus, the four basic elements of the logistics cycle to be considered are the following:

- selection of supplies to be stocked (requiring coordination with the national government's essential medicines programme to ensure that the required medicines and commodities are licensed by the country's national regulatory authorities and are included in the country's essential medicines and commodities lists);
- a procurement strategy that seeks to ensure that supplies are purchased at competitive and affordable prices in an open and transparent process;
- a distribution system that ensures that supplies reach the sites where they are needed on a regular basis (recognizing that the majority of medicines used in treating STIs are commonly used to treat other infections);
- commodity management that ensures timely procurement, disbursement and replenishment of supplies.

Access to medicines for STIs is poor in many developing countries, affected by factors such as affordability, sustainable financing and erratic procurement, which lead to frequent shortages. Most medicines for STIs are generic and are not prohibitively expensive, yet the cost is a significant contributor to the level of access in most developing countries. In fact, most of the medicines used in the treatment of STIs are not specifically for STIs but are used to treat other diseases. An analysis needs to be performed to identify the reasons for, and resolve the problem of inconsistent supply of medicines for STI management. Strategies to expand access to the full range of STI medicines can include using safe high-quality generic medicines, bulk purchasing to obtain the lowest price, differential pricing, financing strategies, and rationalizing the prescription of medicines (e.g. through the introduction of standardized protocols for STI management).

Other accompanying support mechanisms to promote access to medicines can be looked at and considered from region to region and country to country, and could involve policy formulation, innovation and regulatory mechanisms. Issues to be considered could include, among others:

- instituting a mandated multidisciplinary national body to coordinate medicine use policies and introduce appropriate and enforced regulations;

- establishment of medicines and therapeutic committees in districts and hospitals;
- problem-based training in pharmacotherapy in undergraduate curricula;
- continuing in-service medical education as a licensing requirement;
- public education in local languages about medicines;
- independent medicine information for prescribers, other than that obtained solely from the pharmaceutical industry;
- supervision, audit and feedback of prescribers;
- sufficient government expenditure to ensure availability of medicines and staff;
- avoidance of financial incentives from industry to prescribers who use certain medicines.

3.6 PRIORITY COMPONENTS FOR IMMEDIATE ACTION

As a priority, countries must implement or scale up the provision of STI care in a number of key areas for which there is sufficient knowledge and evidence for impact and feasibility (Table 3, Priority 1 activities). These interventions have been implemented in many places with modest additional human and financial resources, but they have not been sufficiently scaled up for maximum impact at national level. Some components may be implemented within the “plan, do, assess and scale up” (PDAS) concept to gather more information, gain more knowledge and collect data, while providing service at the same time. For interventions which may require substantial additional human and financial resources, plans should be made to implement them in a stepwise manner as resources become available (Table 3, Priority 2 activities). Each component needs to take into account the STI transmission dynamics, sexual networks, vulnerable populations and service provision, while appreciating that a person with an STI may present with or without symptoms at any of the many health facilities that exist in the country.

3.6.1 Good quality STI case management

Comprehensive STI case management must have, as a minimum, the following components:

- making a correct diagnosis;
- provision of effective treatment;
- health education and counselling for risk avoidance and risk reduction for STIs, including HIV;
- promotion and provision of condoms, and information on their correct and consistent use;
- ensuring that sexual partners are notified and treated.

There is enough evidence that syndromic management of STIs is effective and has had an impact on the STI epidemic in many care settings. For example, declines in STI rates have been observed following control strategies based on the syndromic approach in a number of countries,

including interventions among sex workers in Côte d'Ivoire, Senegal and South Africa, and in STI clinics in Burkina Faso and Kenya (50, 82). At community level, impact has been demonstrated by studies in Uganda (Masaka) and the United Republic of Tanzania (Mwanza) (83, 84). This approach is particularly effective for urethral discharge in men and genital ulcer disease in both men and women (85–91).

Syndromic management for urethral discharge and genital ulcer disease can be scaled up to cover at least 90% of relevant primary point-of-care sites and patients presenting with such syndromes. The following are important in implementation:

- medicines logistics systems;
- training of health personnel;
- confidentiality;
- periodic validation of flowcharts in order to adapt them to the epidemiological patterns of STIs in a given setting;
- strategies for partner notification that include: notification of sexual partners by health-care providers; patient-delivered therapy, where applicable; use of the Internet, where applicable; and presumptive treatment of STIs for sexual partners, especially of symptomatic men.

3.6.2 Access to essential commodities and medicines

Access to an essential package of medicines and commodities is crucial for STI management, prevention and care, and should be maintained and improved. Every health-care facility that provides a service for STI control should have available, as a minimum, a 60-day reserve stock of the necessary commodities.

3.6.3 Interventions for high-risk and vulnerable populations

Interventions should be put in place and scaled up to increase access to STI care for high-risk and vulnerable populations, including young people, sex workers, men who have sex with men, and injecting drug users, among others, depending on locally determined criteria and sensitive to local cultural values. A recent comparison of evidence-based HIV prevention interventions ranked targeted interventions with female sex workers first in terms of efficiency ratio and effect size and lowest in terms of cost and dependence on the health system (92). Building on existing knowledge of what works best and allowing for innovative approaches in some areas, priority areas for action for countries are proposed as follows:

- Information and STI interventions to reach at least 90% of persons identified as sex workers, male or female, and other locally determined priority vulnerable groups.
- Age-appropriate comprehensive sexual education in schools, including review, development and provision of evidence-based and skills-based prevention education for HIV and other STIs.
- Development and implementation of age-appropriate media-based educational interventions (sex and relationships, sexuality education, correct and consistent condom use, etc.) in order to reach all young people and communities (through Internet online chat rooms, mass media,

advertisements, posters and postage stamps, theatre with a focus on improved sexual behaviours, etc.).

- Ensuring the availability of age-appropriate client-friendly health-care services, particularly for adolescents, through retraining of health-care providers and the implementation of client-centred policies for the provision of health care.
- Endorsement and support of efforts to control bacterial genital ulcer diseases and eliminate congenital syphilis through an integrated syphilis and genital ulcer disease control strategy, bearing in mind that:
 - elimination of congenital syphilis is becoming increasingly easy to implement at national level;
 - chancroid is already decreasing in many countries, but more data and increased effort are needed for the areas where the disease remains endemic;
 - reducing genital ulcer disease prevalence involves many of the interventions that are important in HIV transmission.
- Targeted health education and counselling to prevent further transmission of HIV and other STIs, including:
 - counselling for patients with HIV, and voluntary counselling and testing for HIV for patients with other STIs;
 - linking programmes on mother-to-child transmission with syphilis screening, and screening of other STIs where feasible, to ensure that the potential for congenital syphilis is detected and treatment is given concurrently with HIV care in order to reduce child mortality (MDG 4, target 5).
- Facilitating, supporting and promoting universal vaccination for hepatitis B, especially in people with STI and high-risk persons, and development of strategies for up and coming vaccines such as human papillomavirus vaccines and HSV-2 vaccines.
- Building partnerships for implementing the STI strategy, and implementing STI interventions horizontally in STI/HIV, sexual and reproductive health, and other primary health care services, including developing policy and operational frameworks for horizontal implementation.
- Seeking additional technical and financial assistance from the United Nations and other agencies in order to meet targets and maintain quality of care.

Table 3 Summary of actionable interventions for immediate implementation

Priority 1 activities	Indicators	National-level targets
1. Build on success. Scale up STI diagnosis and treatment. (Use syndromic management where diagnostic resources are limited.)	1a) Proportion of primary point-of-care sites providing comprehensive case management for symptomatic STIs. 1b) Proportion of patients with STIs at selected health facilities who are appropriately diagnosed, treated and counselled according to national guidelines.	1a) 90% of primary point-of-care sites provide comprehensive STI care by 2015. 1b) By 2015, 90% of women and men with STIs at health-care facilities are appropriately diagnosed, treated and counselled.
2. Control congenital syphilis as a step towards elimination.	2. Proportion of pregnant women aged 15–24 years attending antenatal clinics with a positive serology for syphilis.	2a) More than 90% of first time antenatal care attendees aged 15–24 years screened for syphilis. 2b) More than 90% of syphilis sero-positive women treated adequately by 2015.
3. Scale up STI prevention strategies and programmes for HIV-positive persons.	3. Proportion of HIV-positive patients with STIs who are given comprehensive care including advice on condom use and partner notification.	3a) Strategies and guidelines for HIV positive persons with STIs interventions in place by 2010. 3b) 90% of primary point-of-care sites provide effective STI care for HIV infected persons.
4. Upgrade STI surveillance within the context of second generation HIV surveillance.	4a) Number of prevalence studies regularly conducted (at sentinel sites or in sentinel populations) every three to five years. 4b) Annual incidence of reported STIs (syndromic or etiologic reporting).	4a) At least two rounds of prevalence surveys conducted by 2015. 4b) Routine STI reporting established and sustained over at least 5 consecutive years by 2015.
5. Control bacterial genital ulcer disease (GUD).	5a) Proportion of confirmed bacterial GUD cases among patients with genital ulcerative diseases. 5b) Percentage of pregnant women aged 15–24 years attending antenatal clinics with a positive serology for syphilis.	5a) Zero cases of chancroid identified in GUD patients by 2015. 5b) Reduction to below two percent of positive syphilis serology among antenatal care attendees age 15–24 years.

(Table 3 continued)

Priority 2 activities	Indicators	National-level targets
6. Build on success. Implement targeted interventions in high-risk and vulnerable populations.	6a). Health needs identified and national plans for STI control, including HIV, for key high-risk and vulnerable populations developed and implemented. 6b). Proportion of young people (age 15–24 years) with STIs that were detected during diagnostic testing for STIs.	6a). By 2010, health needs, policies, legislation and regulations reviewed; plans in place and appropriately selected country-specific targeted interventions implemented. 6b). At least two rounds of prevalence surveys conducted among groups with high-risk behaviour and among young people by 2015.
7. Implement age-appropriate comprehensive sexual health education and services.	7. Percentage of schools with at least one teacher who can provide life-skills-based HIV and other STI prevention education.	7a). Review of policies and development of age-appropriate training and information materials for schools completed by 2007. 7b). Increased number of teachers trained in participatory life-skills-based HIV education that includes other STIs, by 2015.
8. Promote partner treatment and prevention of reinfection.	8a). Proportion of patients with STIs whose partner(s) are referred for treatment.	8a). Plans and support materials for partner notification developed, and health-care provider training in place by 2010. 8b). Double the proportion of patients who bring in or provide treatment to their partner(s).
9. Support roll out of effective vaccines (HBV, HPV and eventually HSV).	9a). Policy and plans for universal vaccination for hepatitis B. 9b). Plans and policy reviews and strategies for implementation of HPV and potential HSV-2 vaccines.	9a). Plans in place regarding vaccination for hepatitis B and HPV by 2008. 9b). Pilot vaccination programmes initiated and scaling up in progress by 2010.
10. Facilitate development and implementation of universal opt-out voluntary counselling and testing for HIV among STI patients.	10. Proportion of patients assessed for STIs who are routinely counselled and offered confidential testing for HIV.	10a). HIV testing and counselling available in all settings providing care for STIs by 2015. 10b). Double the proportion of STI patients who receive voluntary counselling and testing for HIV.

STI, sexually transmitted infections; HIV, human immunodeficiency virus; GUD, genital ulcer disease; HBV, hepatitis B virus; HPV, human papillomavirus; HSV, herpes simplex virus.

3.6.4 Surveillance and data collection

Countries need to have at their disposal strategic information obtained through an assessment of the STI situation and the response to the burden and needs. Accurate data enable strategic planning and provide information for advocacy and prioritization of interventions. As second-generation surveillance for HIV and other STIs has become increasingly feasible, countries should put in place a surveillance system that includes risk behaviour. Information and data should be collected from various population groups, including adolescents in and out of school and uniformed corps, such as the military and the police force.

3.6.5 An integrated approach to implementation: shared responsibilities

In order to accelerate accessibility of services to the population, a collaborative implementation of activities by different health disciplines at various levels of the health system is necessary. Table 4 summarizes key activities that can be undertaken collaboratively among HIV/STI and sexual and reproductive health programmes, and ministries of education and labour. At national level a number of health implementers can be recruited into this collaborative approach to prevent and control STIs, with appropriate local adaptation. These may include women's groups, clubs, community associations and religious institutions.

Table 4 A guide to collaborative implementation of interventions for STI prevention and control

Programme	Primary, prioritized core activities	Collaborative activities
HIV/AIDS	<ul style="list-style-type: none"> • HIV/STI prevention and care • Condom promotion • Positive prevention • Voluntary HIV counselling and testing • Second-generation surveillance with STI indicators • Monitoring and evaluation • Operational research 	<ul style="list-style-type: none"> • Sexual health • Targeted interventions for HIV and STI prevention and care • Promotion of STI syndromic management
STI programme	<ul style="list-style-type: none"> • Guidelines, curriculum development and integration, training, quality assurance • STI syndromic management in STI clinics • Partner treatment guide and plan • Condom promotion • STI surveillance • Targeted interventions for STI prevention and control • Monitoring and evaluation • Operational research and PDAS cycle 	<ul style="list-style-type: none"> • STI prevention among persons with HIV • Antenatal syphilis screening • Second-generation surveillance • Voluntary HIV counselling and testing in STI services
Sexual and reproductive health	<ul style="list-style-type: none"> • Antenatal syphilis prevention and care • Condom promotion for dual protection • Age-appropriate sexual health guidelines • Treatment for STIs in reproductive health settings • Monitoring and evaluation • Operational research and PDAS cycle 	<ul style="list-style-type: none"> • Second-generation surveillance
Ministries of education and youth	<ul style="list-style-type: none"> • Age-appropriate comprehensive sexual health education and services, including production of information materials in local languages 	<ul style="list-style-type: none"> • School health centres, where feasible
Ministries of labour, tourism, etc.	<ul style="list-style-type: none"> • Workplace interventions with peer education and information • STI screening and treatment 	<ul style="list-style-type: none"> • Health clinics with capacity to screen for and treat STIs

HIV, human immunodeficiency virus; AIDS, acquired immunodeficiency syndrome; STI, sexually transmitted infection; PDAS, plan, do, assess and scale up.

4. THE ADVOCACY STRATEGY: MOBILIZING POLITICAL AND SOCIAL LEADERSHIP AND FINANCIAL RESOURCES

4.1 ADVOCACY

However good the technologies and interventions that are available, they are of no benefit to the population without the political will and resources to sustain their implementation. The stigmatization associated with STI prevents public discussion and community involvement around the issue of STI prevention and care. Having an STI is still considered socially unacceptable, and there are limited patient-based constituent groups for STI who advocate publicly or lobby for STI-related programmes. Advocacy needs to occur at both the country and global levels to put STI control high on the health agenda. Furthermore, strong leadership (with support from civil society), a clear vision and clear messages, strategies and interventions (with a solid science base) are required to inspire action. Advocacy efforts should:

- document the situation strategically and package the messages;
- identify key constituencies that can influence policies and resource allocation;
- create multidisciplinary and multisectoral coalitions and networks to influence decision-makers.

At the country level, advocacy should promote enabling policies and legislation. Existing regulations and legislation should be reviewed to assess their utility and contribution to STI prevention and care policy, goals and objectives. Consideration should be given to reform policies and legislation that obstruct the goals of STI prevention and care according to sound scientific evidence (51).

Advocacy efforts can build on the experience and lessons learnt from other successful advocacy campaigns such as immunization programmes, poliomyelitis eradication, Stop TB, Roll Back Malaria, and the Tobacco Free Initiative.

4.2 WORKING WITH THE MEDIA

Public health has become news, and the media are now covering health issues and disease threats in an unprecedented fashion. The STI field needs to attract more positive media coverage and be more proactive with the media. Success stories that emphasize positive achievements are a key component of strong communication. Strategies should be developed to cultivate relationships with key media representatives in order to promote the goals of the initiative, including:

- building the capacity of media personnel to develop supportive messages;
- improving the public's perception of STI prevention, control and care;
- helping to mobilize political will;
- helping to influence society and communities to diminish stigmatization;
- communicating prevention messages and raising awareness about the devastating consequences of sexually transmitted and other reproductive tract infections.

4.3 BUILDING EFFECTIVE PARTNERSHIPS

A broad-based approach that engages multiple partners and sectors should be adopted because the goals of STI control can be achieved only by joining forces. It is therefore crucial to create strategic alliances and coalitions between the private and public sectors, multilateral and bilateral aid agencies, United Nations agencies, the pharmaceutical industry, the media, professional and civil society organizations, and academic and other institutions. Partnerships can increase the visibility, momentum and effectiveness of STI prevention and care efforts by uniting diverse elements, working synergistically and reducing unnecessary duplication of efforts.

Specific areas and issues for partners to rally around include:

- the control of specific STIs and their complications, such as the elimination of congenital syphilis and the control and elimination of chancroid;
- expanding access to, and the range of, appropriate technologies for STI prevention and care, such as rapid STI diagnostics and vaccines, and female-controlled barrier methods, including microbicides;
- ensuring access to safe and effective, high-quality medicines for STI treatment and other essential commodities at affordable prices;
- complementary interventions, such as the prevention of mother-to-child transmission of HIV and syphilis in order to ensure that babies are born free of both infections (33).

The development of interregional collaboration, regional networks of expertise and experience, provision of regional assistance and the development and strengthening of regional “centres of excellence” are all important and relevant strategies to strengthen national programmes.

4.4 MOBILIZING FINANCIAL RESOURCES

In order to implement the strategy there needs to be a mechanism to mobilize additional resources. For developing or resource-limited countries, a number of sources can be explored. For example, there are resources linked to the Global Fund to Fight AIDS, Tuberculosis and Malaria; countries should take the opportunity to develop proposals for the Global Fund that include STI control strategies. At the global level, international agencies should intensify discussion to facilitate provision of funds for STI control through such mechanisms. There are also a number of other opportunities, such as foundations that have an interest in STI control in general or for specific populations or interventions. At the national level, wherever sector-wide approaches are an approved funding mechanism, advocacy strategies for adequate resource allocation for STI programming should be developed.

REFERENCES

1. Holmes K et al., Eds. *Sexually transmitted diseases*, 3rd ed. New York, McGraw-Hill, 1999, xxi.
2. *Global prevalence and incidence of curable STIs*. Geneva, World Health Organization, 2001 (WHO/CDS/CDR/EDC/2001.10).
3. Mayaud P, Mabey D. Approaches to the control of sexually transmitted infections in developing countries: old problems and modern challenges. *Sexually Transmitted Infections*, 2004, 80:174-182.
4. Weinstock H, Berman S, Cates W. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, 2004, 36:6-10.
5. Weiss H. Epidemiology of herpes simplex virus type 2 infection in the developing world. *Herpes*, 2004, 11(Suppl. 1):24A-35A.
6. Pujades Rodriguez M et al. Herpes simplex virus type 2 infection increases HIV incidence: a prospective study in rural Tanzania. *AIDS*, 2002, 16:451-462.
7. Ferlay J. Cancer incidence, mortality and prevalence worldwide. Lyon, International Agency for Research on Cancer, 2004 (GLOBOCAN 2002. IARC Cancer Base No. 5. version 2.0).
8. *State of the art of new vaccines: research and development*. Geneva, World Health Organization, Initiative for Vaccine Research, 2003.
9. *The world health report 2004 – Changing history*. Geneva, World Health Organization, 2004.
10. *Hepatitis B*. Geneva, World Health Organization, 2002 (WHO/CDS/CSR/LYO/2002.2).
11. Montesano R. Hepatitis B immunisation and hepatocellular carcinoma: The Gambia Hepatitis Intervention Study. *Journal of Medical Virology*, 2002, 67:444-446.
12. Chang MH et al. Hepatitis B vaccination and hepatocellular carcinoma rates in boys and girls. *JAMA*, 2000, 284:3040-3042.
13. *AIDS epidemic update: December 2005*. Joint United Nations Programme on HIV/AIDS and World Health Organization, 2005 (UNAIDS/05.19E).
14. *Consultation on STD interventions for preventing HIV: what is the evidence?* Geneva, Joint United Nations Programme on HIV/AIDS and World Health Organization, 2000.
15. Wald A, Link K. Risk of human immunodeficiency virus infection in herpes simplex virus type 2. Seropositive persons: a meta-analysis. *Journal of Infectious Diseases*, 2002, 185:45-52.
16. Nagot N et al. *Effect of HSV-2 Suppressive therapy on HIV-1 genital shedding and plasma viral load: a proof of concept randomized double-blind placebo controlled trial (ANRS 1285 Trial)*.

- Thirteenth Conference on Retroviruses and Opportunistic Infections, Denver, abstract 33LB, 2006.
17. Hayes RJ, Schulz KF, Plummer FA. The cofactor effect of genital ulcers in the per-exposure risk of HIV transmission in sub-Saharan Africa. *Journal of Tropical Medicine and Hygiene*, 1995, 98:1–8.
 18. Cohen MS et al. Reduction of concentration of HIV-1 in semen after treatment of urethritis: implications for prevention of sexual transmission of HIV-1. *Lancet*, 1997, 349:1868–1873.
 19. Buchacz K et al. Syphilis increases HIV viral load and decreases CD4 cell counts in HIV-infected patients with new syphilis infections. *AIDS*, 2004, 18:2075–2079.
 20. Simms I, Stephenson JM. Pelvic inflammatory disease epidemiology: what do we know and what do we need to know? *Sexually Transmitted Infections*, 2000, 76:80–87.
 21. Westrom L et al. Incidence, prevalence and trends of acute pelvic inflammatory disease and its consequences in industrialized countries. *American Journal of Obstetrics and Gynecology*, 1980, 138:880–892.
 22. Schulz KF, Cates W Jr, O'Mara PR. Pregnancy loss, infant death, and suffering: legacy of syphilis and gonorrhoea in Africa. *Genitourinary Medicine*, 1987, 63:320–325.
 23. Gutman L. Gonococcal diseases in infants and children. In: Holmes K et al., eds. *Sexually transmitted diseases*, 3rd ed. New York, McGraw-Hill, 1999:1145–1153.
 24. Laga M, Meheus A, Piot P. Epidemiology and control of gonococcal ophthalmia neonatorum. *Bulletin of the World Health Organization*, 1989, 67:471–478.
 25. Whitcher JP, Srinivasan M, Upadhyay MP. Corneal blindness: a global perspective. *Bulletin of the World Health Organization*, 2001, 79:214–221.
 26. Schaller U, Klauss V. Is Credé's prophylaxis for ophthalmia neonatorum still valid? *Bulletin of the World Health Organization*, 2001, 79:262–266.
 27. Schmid G. Economic and programmatic aspects of congenital syphilis prevention. *Bulletin of the World Health Organization*, 2004, 82:402–409.
 28. Terris-Prestholt F et al. Is antenatal syphilis screening still cost effective in sub-Saharan Africa? *Sexually Transmitted Infections*, 2003, 79:375–381.
 29. Grosskurth H et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet*, 1995, 346:530–536.
 30. Manhart LE, Holmes KK. Randomized controlled trials of individual-level, population-level, and multilevel interventions for preventing sexually transmitted infections: what has worked? *Journal of Infectious Diseases*, 2005, 191(Suppl. 1):S7–S24.

31. Gilson L et al. Cost-effectiveness of improved treatment services for sexually transmitted diseases in preventing HIV-1 infection in Mwanza Region, Tanzania. *Lancet*, 1997, 350:1805–1809.
32. Creese A et al. Cost-effectiveness of HIV/AIDS interventions in Africa: a systematic review. *Lancet*, 2002, 359:1635–1642.
33. Peeling R et al. Avoiding HIV and dying of syphilis. *Lancet*, 2004, 364:1561–1563.
34. Pagliusi SR, Aguado MT. Efficacy and other milestones for human papillomavirus vaccine introduction. *Vaccine*, 2004, 23:569–578.
35. Harper DM et al. Efficacy of a bivalent L1 virus-like particle vaccine in prevention of infection with human papillomavirus types 16 and 18 in young women: a randomised controlled trial. *Lancet*, 2004, 364:1757–1765.
36. Corey L et al. Recombinant glycoprotein vaccine for the prevention of genital HSV-2 infection: two randomized controlled trials. *JAMA*, 1999, 282:331–340.
37. Holmes KK, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bulletin of the World Health Organization*, 2004, 82:454–461.
38. *Population and Development, I: Programme of Action adopted at the International Conference on Population and Development, Cairo 5–13 September 1994*. New York, United Nations, Department for Economic and Social Information and Policy Analysis, 1995.
39. *Report of the Fourth World Conference on Women, Beijing, 4–15 September 1995*. New York, United Nations, 1995.
40. Shears KH. Family planning and HIV service integration, potential synergies are recognized. *Network*, 2004, 23:4–8.
41. Wasserheit JN, Aral SO. The dynamic typology of sexually transmitted disease epidemics: implications for prevention strategies. *Journal of Infectious Diseases*, 1996, 174(Suppl. 2):S201–S213.
42. May MM, Anderson RM. Transmission dynamics of HIV infection. *Nature*, 1987, 326:137–142.
43. Brunham RC, Plummer FA. A general model of sexually transmitted diseases and its implication for control. *The Medical Clinics of North America*, 1990, 74:1339–1352.
44. Blanchard JF. Populations, pathogens, and epidemic phases: closing the gap between theory and practice in the prevention of sexually transmitted diseases. *Sexually Transmitted Infections*, 2002, 78(Suppl. 1):i183–i188.
45. *Behavior change communication for HIV/AIDS*. Washington, DC, Family Health International, 2002.
46. *Intensifying HIV prevention: a UNAIDS policy position paper*. Joint United Nations Programme on HIV/AIDS, 2005 (UNAIDS/05.18E).

47. *Guidelines for the management of sexually transmitted infections*. Geneva, World Health Organization, 2003.
48. *The public health approach to STD control*. Geneva, World Health Organization and Joint United Nations Programme on HIV/AIDS, 1998 (UNAIDS Technical Update).
49. Dallabetta GA, Gerbase AC, Holmes KK. Problems, solutions, and challenges in syndromic management of sexually transmitted diseases. *Sexually Transmitted Infections*, 1998, 74(Suppl. 1):S1–S11.
50. Vuylsteke B. Current status of syndromic management of sexually transmitted infections in developing countries. *Sexually Transmitted Infections*, 2004, 80:333–334.
51. *Sexually transmitted diseases: policies and principles for prevention and care*. Geneva, Joint United Nations Programme on HIV/AIDS and World Health Organization, 1999 (UNAIDS/01.11E).
52. Golden MR et al. Effect of expedited treatment of sex partners on recurrent or persistent gonorrhea or chlamydial infection. *New England Journal of Medicine*, 2005, 352:676–685.
53. Fazelid E et al. Individual counseling of patients with sexually transmitted diseases: a way to improve partner notification in a Zambian setting? *Sexually Transmitted Diseases*, 1996, 23:289–292.
54. *Guidelines for sexually transmitted infections surveillance*. Geneva, World Health Organization and Joint United Nations Programme on HIV/AIDS, 1999 (WHO/CHS/HSI/99.2; WHO/CDS/CSR/EDC/99.3; UNAIDS/99.33E).
55. *Guidelines for second generation HIV surveillance*. Geneva, Joint United Nations Programme on HIV/AIDS and World Health Organization, 2000 (UNAIDS/00.03E; WHO/CDS/CSR/EDC/2000.5).
56. Plummer FA et al. Cofactors in male-female sexual transmission of human immunodeficiency virus type 1. *Journal of Infectious Diseases*, 1991, 163:233–239.
57. Cameron DW et al. Female to male transmission of human immunodeficiency virus type 1: risk factors for seroconversion in men. *Lancet*, 1989, 2:403–407.
58. Laga M et al. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: results from a cohort study. *AIDS*, 1993, 7: 95–102.
59. Kassler WK et al. Seroconversion in patients attending sexually transmitted disease clinics. *AIDS*, 1994; 8: 351–55.
60. Craib KJ et al. Rectal gonorrhoea as an independent risk factor for HIV infection in a cohort of homosexual men. *Genitourinary Medicine*, 1995, Oct;71(5):335–6.

61. Telzak EE et al. HIV-1 seroconversion in patients with and without genital ulcer disease. A prospective study. *Annals of Internal Medicine*, 1993;119:1181–6.
62. Stamm WE et al. The association between genital ulcer disease and acquisition of HIV infection in homosexual men. *The Journal of the American Medical Association*, 1988, 260:1429–1433.
63. Limpakarnjanarat K et al. HIV-1 and other sexually transmitted infections in a cohort of female sex workers in Chiang Rai, Thailand. *Sexually Transmitted Infections*, 1999, 75: 30–35.
64. Mbizvo MT et al. Trends in HIV-1 and HIV-2 prevalence and risk factors in pregnant women in Harare, Zimbabwe. *Central African Journal of Medicine*, 1996, Vol 42(1); 15–23.
65. Bollinger RC et al. Risk factors and clinical presentation of acute primary HIV infection in India. *The Journal of the American Medical Association*, 1997, 278:2085–2089.
66. Holmberg D et al. Prior herpes simplex virus type 2 infection as a risk factor for HIV infection. *The Journal of the American Medical Association*, 1988, 259:1048–1050.
67. Darrow WW et al. Risk factors for human immunodeficiency virus (HIV) infections in homosexual men. *American Journal of Public Health*, 1987, 77:479–483.
68. *Safe abortion: technical and policy guidance for health systems*. Geneva, World Health Organization, 2003.
69. Mullick S et al. Sexually transmitted infections in pregnancy: prevalence, impact on pregnancy outcomes, and approach to treatment in developing countries. *Sexually Transmitted Infections*, 2005, 81:294–302.
70. Taha TE et al. Bacterial vaginosis and disturbances of vaginal flora: association with increased acquisition of HIV. *AIDS*, 1998, 12:1699–1706.
71. *Iatrogenic infections of reproductive tract*. New York, Population Council, 2004 (Fact sheet, 1 July 2004).
72. Watson-Jones D et al. Syphilis in pregnancy in Tanzania II. The effectiveness of antenatal syphilis screening and single dose benzathine penicillin treatment for the prevention of adverse pregnancy outcomes. *Journal of Infectious Diseases*, 2002, 186:948–957.
73. *A picture of health? A review and annotated bibliography of the health of young people in developing countries*. Geneva, World Health Organization, 1995 (WHO/FHE/ADH/95.4).
74. *Programming for adolescent health and development. Report of a WHO/UNFPA/UNICEF Study Group on Programming for Adolescent Health*. Geneva, World Health Organization, 1999 (WHO Technical Report Series, No. 886).
75. Dehne KL, Riedner G. *Sexually transmitted infections among adolescents: the need for adequate health services*. Geneva, World Health Organization and Deutsche Gesellschaft für Technische Zusammenarbeit, 2005.

76. Brugha R, Zwi AB. Sexually transmitted disease control in developing countries: the challenge of involving the private sector. *Sexually Transmitted Infections*, 1999, 75:283–285.
77. Thomson O'Brien MA et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *The Cochrane Database of Systematic Reviews*, 2001 (1:CD003030. DOI: 10.1002/14651858.CD003030).
78. Grosskurth H et al. Operational performance of an STD control programme in Mwanza Region, Tanzania. *Sexually Transmitted Infections*, 2000, 76:426–436.
79. *Selected topics in health reform and drug financing*. Geneva, World Health Organization, 1998.
80. Gray A. Drug Pricing. In: *South African health review 2000*. Durban, Health Systems Trust, 2000.
81. *The world health report 2000 – Health systems: improving performance*. Geneva, World Health Organization, 2000.
82. Ghys PD et al. Increase in condom use and decline in HIV and sexually transmitted diseases among female sex workers in Abidjan, Côte d'Ivoire, 1991–1998. *AIDS*, 2002, 16:251–258.
83. Mayaud P et al. Improved treatment services significantly reduce the prevalence of sexually transmitted diseases in rural Tanzania: results of a randomized controlled trial. *AIDS*, 1997, 11:1873–1880.
84. Kamali A et al. Syndromic management of sexually transmitted infections and behaviour change interventions on transmission of HIV-1 in rural Uganda: a community randomised trial. *Lancet*, 2003, 361:645–652.
85. Htun Y et al. Comparison of clinically directed, disease specific, and syndromic protocols for the management of genital ulcer disease in Lesotho. *Sexually Transmitted Infections*, 1998, 74(Suppl. 1):S23–S28.
86. Chapel TA et al. How reliable is the morphological diagnosis of penile ulceration? *Sexually Transmitted Diseases*, 1977, 4:150–152.
87. Dangor Y et al. Accuracy of clinical diagnosis of genital ulcer disease. *Sexually Transmitted Diseases*, 1990, 17:184–189.
88. O'Farrell N et al. Genital ulcer disease: accuracy of clinical diagnosis and strategies to improve control in Durban, South Africa. *Genitourinary Medicine*, 1994, 70:7–11.
89. Ndinya-Achola JO et al. Presumptive specific clinical diagnosis of genital ulcer disease (GUD) in a primary health care setting in Nairobi. *International Journal of STD and AIDS*, 1996, 7:201–205.
90. Djajakusumah T et al. Evaluation of syndromic patient management algorithm for urethral discharge. *Sexually Transmitted Infections*, 1998, 74(Suppl. 1):S29–S33.

91. Moherdaui F et al. Validation of national algorithms for the diagnosis of sexually transmitted diseases in Brazil: results from a multicentre study. *Sexually Transmitted Infections*, 1998, 74(Suppl. 1):S38–S43.
92. Jha P et al. Reducing HIV transmission in developing countries. *Science*, 2001, 292:224–225.

= = =