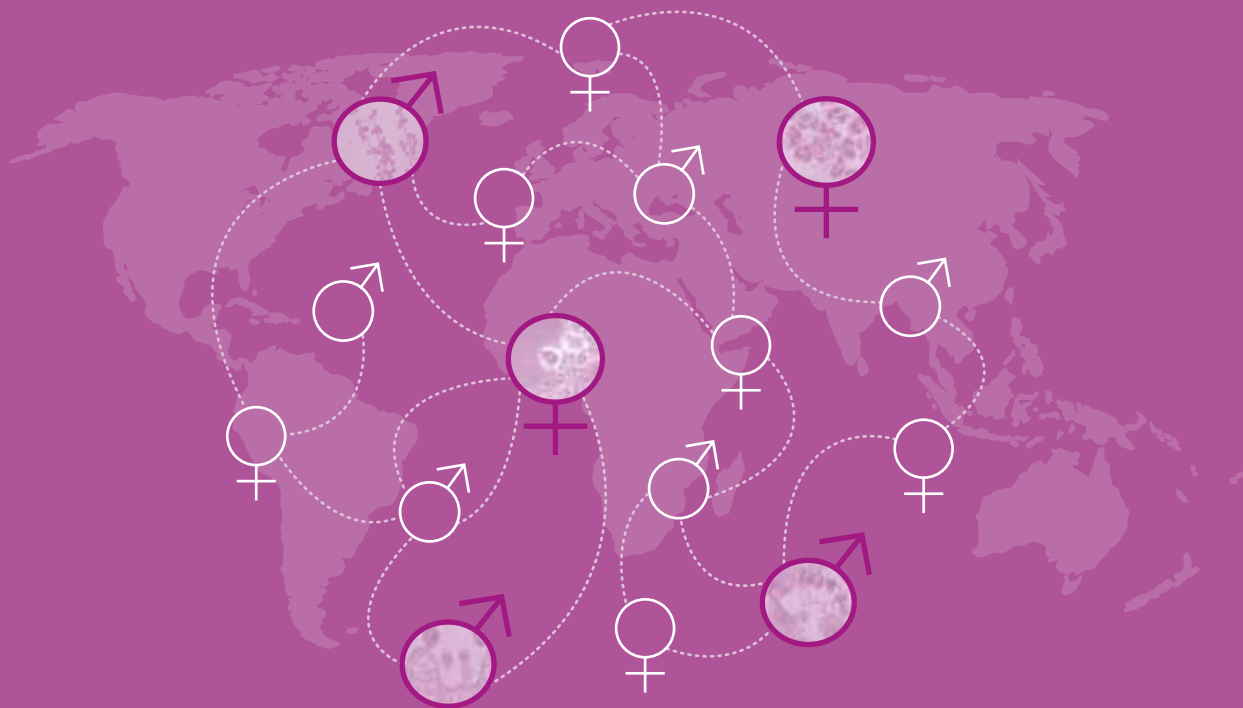


# Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd Edition

## Module 1 Introduction to STI Prevention and Control

*Breaking the chain of transmission*

*Breaking the chain of transmission*



World Health  
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# Module 1

## Introduction to STI Prevention and Control

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## Programme introduction

Welcome to this training programme in the syndromic case management of patients with sexually transmitted infections (STIs).

This training course is intended for in-service training for people responsible for STI management at any first-level health facility, such as a health centre, district hospital, mission hospital or STI clinic. It aims to equip all relevant clinicians and service providers with the skills to manage STIs using syndromic management.

STIs are a common and serious problem worldwide. The most widely known are gonorrhoea, syphilis and the human immunodeficiency virus (HIV) – but there are more than 20 others. Many of these are curable with effective treatment, but they continue to be a major public health concern in both industrialized and developing countries. The World Health Organization (WHO) estimates that, globally, more than 340 million new cases of syphilis, gonorrhoea, chlamydia and trichomoniasis occur every year in men and women aged between 15–49 years.

As you will learn, the relationship between HIV, the virus that causes the acquired immunodeficiency syndrome (AIDS) and other STIs makes it even more urgent to prevent and control curable STIs.

Syndromic case management offers many benefits in this effort. It enables all trained first-line service providers to diagnose an STI syndrome and treat patients "on the spot", without waiting for the results of time-consuming and costly laboratory tests. By offering treatment on the patient's first visit, it helps to prevent the further spread of STIs. It also includes patient education (about the infection, how STIs are transmitted, risky sexual behaviour and how to reduce risk), partner management and the provision of condoms.

The syndromic management approach is based on an STI syndrome: a group of patient symptoms and clinical signs that we can use to decide the appropriate treatment. The antimicrobial regimens are chosen to cover the major pathogens responsible for the syndromes in the specific geographical area. In order to make this determination, a laboratory analysis of the syndromes is made and the pathogens for each syndrome are identified. This means that, afterwards, the management of individual patients will not depend on laboratory investigation.

Periodically, the syndromes are reviewed. This is for two reasons: to ensure that the antimicrobial choices are still valid and to monitor any antimicrobial resistance that may necessitate a change of therapeutic choices. Because of this review, the syndromic approach has a scientific basis and is not second-rate medicine.

### ***The aims of STI prevention and care***

STI prevention and care aims to:

1. interrupt the transmission of sexually transmitted infections;
2. prevent development of diseases, complications and sequelae;
3. reduce the risk of HIV infection.

This training programme covers seven syndromes:

- urethral discharge in men;
- genital ulcer;
- inguinal bubo;
- scrotal swelling;
- vaginal discharge;
- lower abdominal pain in women;
- neonatal conjunctivitis.

*Annex 1 on page 48 lists the most common STIs.*

This programme does not cover other STI syndromes such as vesicular lesions and genital warts.

For each syndrome, it is possible to devise a flowchart that takes the service provider through easy steps in making a diagnosis and selecting the best available treatment. Because the diagnosis is not dependent upon internal examinations or microscopy, *all* health workers can treat STI patients, not only STI specialists.

## Your overall objectives

Whatever your role is or will be in STI case management, this training programme will equip you with the information and skills you need. It will help you to:

- appreciate the burden of STIs throughout the world;
- identify the features of a syndromic approach to diagnosis and treatment of STIs;
- develop your skills in interviewing, history-taking and diagnosis;
- use the syndromic flowcharts to help you diagnose and treat a patient with an STI;
- educate and counsel patients about the prevention and successful treatment of STIs, including the importance of following treatment instructions and engaging in safe sex;
- treat the partners of patients who attend your health centre;
- explain, if appropriate, the value of recording the number of STI syndromes you see in the course of your work, and how you and others might use such information.

In this Introduction, we give you an overview of the modules and help you to identify your learning needs, based upon the role you will play in STI case management. We also suggest ways to plan your study, whether you are studying with a group or mostly on your own.

## The programme structure

STI case management entails five broad steps, which are covered in other modules in this series.

1. History-taking and examination
2. Diagnosis and treatment, using flowcharts
3. Counselling and education on safer sex, including condom promotion and provision
4. Partner management
5. Data gathering (recording).



This training programme comprises seven modules.

1. **Introduction to STI Prevention and Control** introduces you to the size and scope of the epidemic of STIs, how they are transmitted and the burden they place on individuals, society, health services and national economies.
2. **Introducing STI Syndromic Case Management** introduces the syndromic approach to STI case management. You will learn why syndromic case management is an effective approach to treating and preventing STIs. The module also introduces flowcharts and explains how to use them.
3. **History-taking and Examination** takes you step by step through what to ask, how to ask it and how to examine patients.
4. **Diagnosis and Treatment** covers each syndromic flowchart in detail, explaining the specific signs and symptoms to help you diagnose and treat each patient. It also lists the drug options recommended by WHO for each condition identified.
5. **Educating and Counselling the Patient** explores how to educate and motivate patients about STI prevention and treatment by using effective education and interviewing skills.
6. **Partner Management** is about managing and treating the patient's sexual partners. It discusses why partner management is so important and explores the relative benefits of two approaches to partner management.
7. **Recording and Development Plan** explores the benefits of gathering information about STIs, nationally, regionally and locally. Accurate statistics are always needed to give a full and up-to-date picture of the epidemiology of STIs anywhere in the world.

## Your role in the STI case management process

Some health centres have specialist staff who work on specific aspects of patients' health – for example patient educators. In other centres, each service provider works through every step with each STI patient. If you are not already sure of your role in syndromic management, please find out what it will be.



### Activity 1

To clarify your role in syndromic case management, please consult your supervisor or trainer to find out which of the five steps on page 3 will be your responsibility. Note them down below.

Note down any skills or experience you have that may help you to carry out your responsibilities in syndromic case management of STIs (history-taking or patient education, for example).

If you feel that none of your current skills or experience are relevant to syndromic management, please do not worry – the modules will guide you through all you need to know and do and ask you to practise whenever relevant.

Even if you are very experienced – perhaps in standard STI case management or a particular task such as patient education – it is still important that you study the relevant modules carefully because you need to apply your skills or knowledge in the context of syndromic case management.

## Offering the STI patient a respectful attitude

If our technical role in managing patients with STIs is important, equally important is the interpersonal role we play.

***You will play a key role in a global enterprise to prevent and cure sexually transmitted infections.***



### Activity 2

For the moment, imagine the impact you could have in enabling others to live without STIs: what might it mean to them?

From time to time, the material will challenge conventional service provider attitudes and behaviours. Service providers are, after all, human beings, and we all carry views and assumptions that help us to understand and cope with people and our environment.

This process of challenging views might sometimes be uncomfortable, but it is essential to confront and work through such challenges.



### Activity 3

Please note any thoughts or concerns you might have at this early stage.

How will you resolve any concerns? For example, perhaps you might consult a colleague about them, or share them with other learners.

## About this programme

### Your expectations of the programme

Having read a brief outline of the syndromic STI case management programme and its overall objectives, you might like to think about your own expectations.



### Activity 4

Note down your expectations of the programme. What do you hope to achieve by the end of it?

No module or course can hope to achieve every expectation. Your own determination to succeed will help you to do so, especially if you can draw on your colleagues' ideas and share thoughts and experience with them.

### Ways to study the programme

As you can see if you skim through this one, each module offers a number of features to help you learn actively. If you are learning as part of a group of people, perhaps in a professional workshop or on a course, your tutor will indicate the relevant activities. If you are studying on your own, you will find it useful to know how to use the module features.

### Features of the modules

The modules are designed so that, as well as reading, you have other things to do: reflect on experience, make notes, answer questions, practise skills and so on.

The purpose of the activities is to help you reflect on your learning and check your understanding of key points as you study. In other words, they are an aid to effective learning.

Throughout each module you will find question and activity symbols as illustrated below.



### Question

This indicates a question for you to answer, usually by making notes. If the question is numbered, you will find our answer to it at the back of the module – but do not be tempted to read the answer until you have tried to answer the question yourself.



### Activity

You have already come across four activities, so you know that one of these activities might ask you to make notes on your own needs or experience, or refer to your own country or region. There may not be an answer in the module, but instead, it might ask you to:

- discuss something with colleagues or fellow learners; or
- relate ideas or examples to local conditions or your own experience.

Your tutor or facilitator will assist you where necessary.

At the back of each module you will find a **Review** and an **Action Plan** or **Project**. The Action Plan suggests ways you might develop practical skills before working with real patients.

A **Glossary** at the back of each workbook will help you check any words with which you are not familiar.

## Studying with a group of people

If you are studying the modules as part of an organized course or workshop, your tutor or group leader will guide you through the modules and how to use them. He or she will also lead discussions on many of the activities and questions in the modules.

For example, you may be asked to read part or all of a module on your own, before coming together with your group or tutor to discuss issues or practise key skills. The module is a very flexible tool for this purpose, because you can make notes in it as you wish. If you are a fast reader, you can spend more time on the activities; if you read more slowly, nothing is lost because you can read what remains of the "lesson" at your leisure.

## Studying on your own

If you need to study one or more of the modules in your own time, it is very important to keep your learning active. You will find plenty of questions to think about – and you can check your answers by reading our Answers at the back of the module.

However, to make your learning more effective, it is important that you work with other people from time to time. For example:

- it is essential that you practise certain skills with one or two other people who are either learning or have experience in the appropriate step in syndromic case management of STIs, in particular, the Action Plans for Modules 3, 5 and 6 suggest that you role-play the appropriate skills;
- it is also useful to discuss progress with someone who will support you; please ask your supervisor or a colleague experienced in syndromic management if they would be willing to support you in these ways.



### Activity 5

If you will mainly be studying the modules on your own, note with whom you might practise the key skills and discuss issues.

#### ***Extra tips if studying on your own***

- Find out which module(s) you need to study and any targets you need to set for yourself.
- If possible, make sure that you have a good place to study: preferably somewhere quiet where you will not be interrupted. If this is difficult to arrange, perhaps your tutor or supervisor can help you.
- You might also find it useful to make a study timetable: plan short study sessions that fit in with your working day. Try to study when you feel fresh and alert; for this reason, three or four short sessions spread over a week are better than one whole day.
- Keep a note of any questions or problems as you study, and try to get answers or sort them out as soon as possible.

***Remember: use your tutor and colleagues – they are there to help you.***

# Introduction to STI Prevention and Control

Sexually transmitted infections (STIs) are very common. The most widely known are gonorrhoea, syphilis and HIV but there are more than 20 others.

- The World Health Organization (WHO) estimated that in 1999 there were 340 million new cases of curable STIs. In other words, almost one million new infections occur every day.
- According to the Joint United Nations Programme on HIV/AIDS (UNAIDS) and WHO, in 2005 an estimated 4.9 million people were newly infected with HIV. Another 40.3 million people were already living with HIV.

This first module will explain the severity and impact of the STI epidemic. You will learn how STIs are transmitted, what biological and social factors influence their transmission, their epidemiology and social and behavioural impact, and about the links between STIs and HIV. Finally, you will learn why the control of STIs is so difficult, and what needs to be done to improve it.

## Your learning objectives

This module will enable you to:

- identify how STIs are transmitted and the factors that influence transmission
- explain:
  - the extent of STIs, including issues that may mask the true level of infection;
  - the serious complications that can arise from untreated STIs;
  - ways in which STIs are linked with the spread of HIV;
  - why the control of STIs is so difficult, and what must be done to improve our capacity for control.

# 1: The transmission of STIs

This first section will help you to answer three questions.

- How are STIs transmitted?
- What factors increase the risk of transmission?
- Which population groups, if any, are particularly vulnerable?

## How are STIs transmitted?

By far the most common mode of transmission of STIs is *through unprotected penetrative sexual intercourse* (vaginal or anal).

Other, more rare modes of transmission include:

- from mother to child:
  - during pregnancy (e.g. HIV and syphilis);
  - at delivery (e.g. gonorrhoea, chlamydia and HIV);
  - after birth (e.g. HIV);
  - through breast milk (e.g. HIV);
- through the unsafe (unsterile) use of needles or injections or other contact with blood or blood products (e.g. syphilis, HIV and hepatitis).

It is important to remember that HIV is transmitted in the same ways as any other STI.

## What factors increase the risk of transmission?

Not all acts of unprotected sexual intercourse result in the transmission of an STI from an infected person to a partner. Whether or not a person will be infected depends on many factors, both biological and behavioural.

### Biological factors

Certain biological factors influence the transmission of STIs. They are age, sex, immune status of the host and the virulence of the organism.



### **Age**

The vaginal mucosa and cervical tissue in young women is immature and makes them more vulnerable to STIs than older women. This is due to cervical ectopy, a normal condition for young women, when cervical surface cells more readily allow infections to occur.

Young women are especially at risk in cultures where they marry or become sexually active during early adolescence. On average, women become infected at a younger age than men.

### **Sex**

Infections enter the body most easily through a mucosal surface such as the lining of the vagina. Since the mucosal surface that comes into contact with the infective agent is much greater in women than in men, women can be more easily infected than men.

### **Immune status**

The immune status of the host and virulence of the infective agent affect transmission of STIs. As we will detail later in this module, certain STIs increase the risk of transmission of HIV – itself a sexually transmitted infection. HIV, in its turn, facilitates the transmission of some STIs and worsens the complications of STIs by weakening the immune system.

## **Behavioural factors**

Many behavioural factors may affect the chance of getting an STI. Such behaviours are known as "risky". Risky behaviours include the following.

### ***Personal risky sexual behaviours include:***

- changing sexual partners frequently;
- having more than one sexual partner;
- having sex with "casual" partners, sex workers or their clients:
  - recent or frequent change of sexual partner, having more than one sexual partner or having sex with sex workers or their clients makes it more likely that a person will come into contact with someone who has an STI;
- having unprotected penetrative sexual intercourse in a situation where either partner has an infection;
- having had an STI in the last year:
  - people who have had an STI in the last year are at risk of getting infected again if they have not been able to change their sexual behaviour.

### ***Social factors***

A number of social factors link sex and behavioural issues and may affect a person's risk of getting an STI, for example:

- in most cultures women have very little power over sexual practices and choices, such as use of condoms;
- women tend to be economically dependent on their male partners and are therefore more likely to tolerate men's risky behaviour of multiple sexual partners, thus putting themselves at risk of infection;
- sexual violence tends to be directed more towards women by men, making it difficult for women to discuss STIs with their male counterparts;
- in some societies the girl-child tends to be married off to an adult male at a very young age, thus exposing the girl to infection;
- in some societies a permissive attitude is taken towards men allowing them to have more than one sexual partner.

### ***Other personal behaviours may be associated with increased risk, including:***

- skin piercing; this refers to a wide range of practices including the use of unsterile needles to give injections or tattoos, scarification or body piercing and circumcision using shared knives;
- use of alcohol or other drugs before or during sex; alcohol or drug use may negatively affect condom use; alcohol may diminish the perception of risk, resulting in not using a condom; or if a condom is used it may not be used correctly.

### ***Risky behaviour of partner(s) includes:***

- having sex with others
- having an STI
- injecting drugs
- male partner having sex with other men.

A partner with one or more of these behaviours is more exposed to STIs, and in turn is more likely to transmit an STI.

## Which population groups are particularly vulnerable?

In most countries some groups of people are particularly vulnerable to STIs. This may be because they are exposed to infected partners more frequently, or because they are more susceptible to getting infected each time they are exposed. Such groups include:

- sexually active teenage girls;
- sex workers and their clients;
- men or women who have multiple sexual partners; men or women whose jobs separate them from their regular sex partners for long periods of time, such as long-distance drivers, soldiers and migrant workers.

For various reasons, these people may hesitate to go to health facilities for treatment. Special effort may be necessary to reach them and make services acceptable to them.



### Activity 6

Is there anything that surprises you about these biological or behavioural factors that influence transmission?

Do any of these factors and vulnerable groups apply to patients in your region? If so, which are they?

Are there any other factors in your region that we have not included in the list?

Please discuss these questions with colleagues.

## 2: STIs – the problem

In this section, we explore the extent of STIs, their complications and sequelae when untreated or not treated effectively, and the links between STIs and HIV which make it so important to control their spread.

This section will enable you to:

- discuss the frequency and distribution of STIs;
- identify the range of serious complications which some STIs can cause;
- explain the links between STIs and HIV.

### The frequency and distribution of STIs

*Epidemiology* is the frequency and distribution of a disease in the population. We begin by exploring questions such as the following.

- What is the distribution of STIs in different parts of the world?
- What is the distribution of STIs by age and sex?
- Do existing statistics provide an accurate picture of the extent of STIs in vulnerable groups or the general population? Why or why not?

### What is the distribution of STIs?

Worldwide, WHO estimated that in 1999 there were 340 million new cases of curable STIs. Figure 1 on the next page illustrates the global spread of new cases among adults. It shows that the largest number of new infections occurred in the region of South and South-East Asia, followed by sub-Saharan Africa, then Latin America and the Caribbean.

Figure 2 represents the estimated prevalence of curable STIs among adults in 1999.

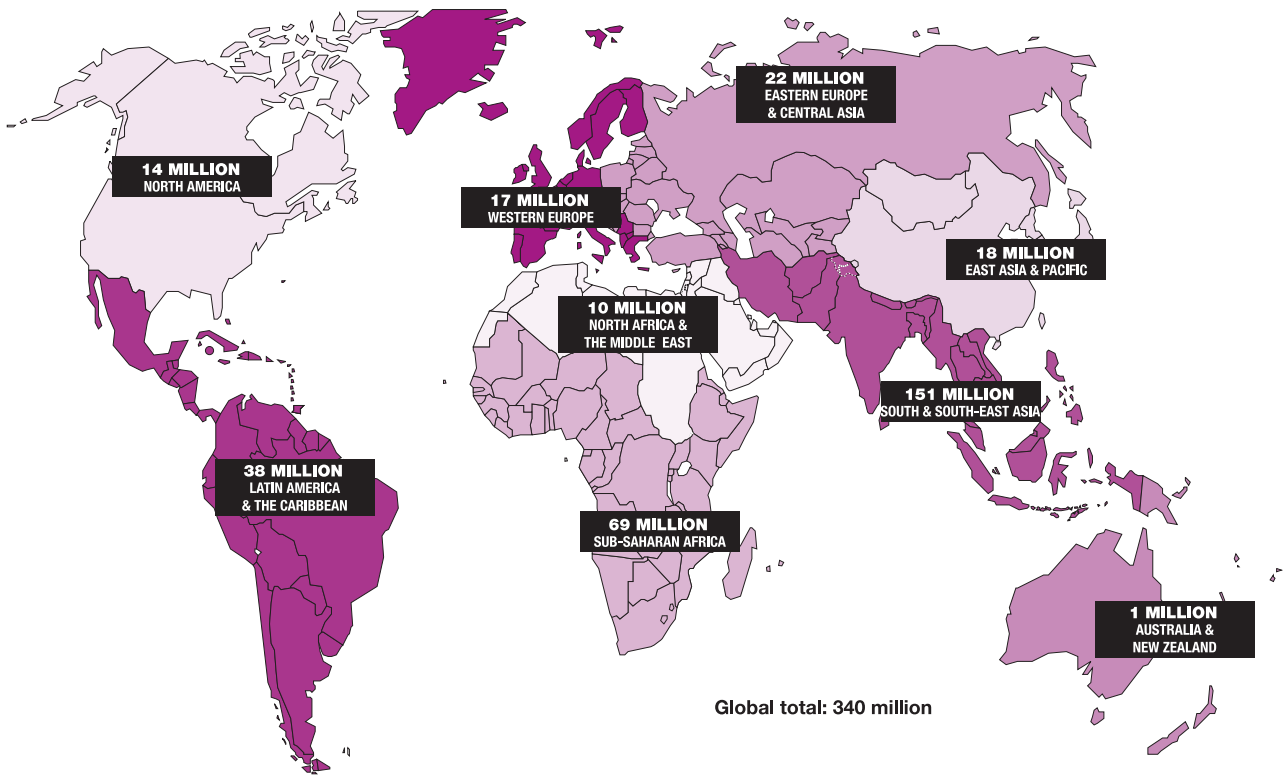


Figure 1: Estimated new cases of curable STIs among adults, 1999\*

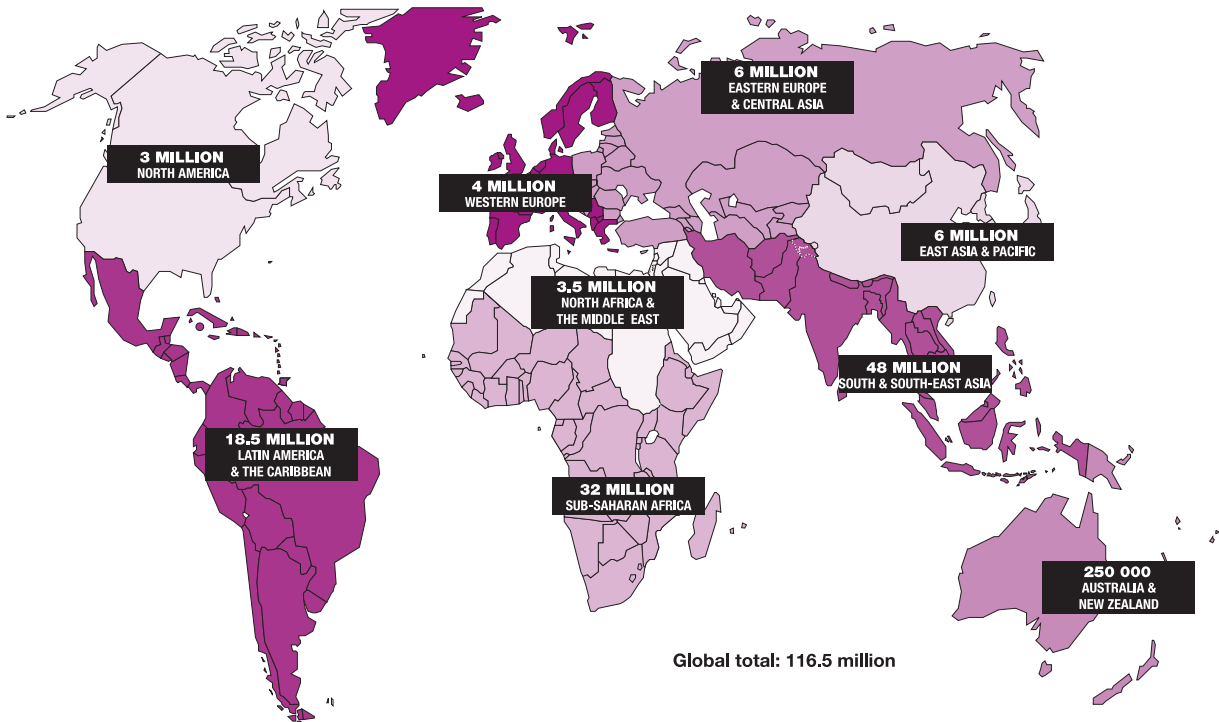


Figure 2: Estimated prevalence of curable STIs among adults, 1999\*

\* Colours denote which countries are included in regional calculations.

Both prevalence and incidence of STIs are higher in the developing world than in the industrialized world.

*"The STDs that are caused by bacterial, mycological and protozoal agents have ... continued to be a public health problem in both industrialized and developing countries. Equilibrium has been reached, however, in most industrialized countries, with low (and often still falling) rates of infection. In contrast, the equilibrium reached in many developing countries has been with highly endemic levels of disease. In many developing countries STDs have for several decades ranked among the top five diseases for which adults seek health care services."*

***Sexually transmitted diseases: policies and principles for prevention and care. UNAIDS/WHO, 1999.***

Any global figures will mask widely different incidence and prevalence in different regions and countries. Even within countries, prevalence may be high within specific, high-risk groups or within the general population.

## The distribution of STIs

In general, the prevalence of STIs tends to be higher in urban areas than in rural ones, and higher in unmarried people and younger adults. STIs, including HIV, occur in both males and females. However, statistics rarely show an equal distribution between men and women, nor do they show an equal distribution between different age groups.

### ***Distribution by age***

Most children under 14 years of age are not affected by STIs, other than by congenital syphilis, ophthalmia neonatorum and HIV infection.

New STI cases begin to occur during adolescence and tend to be most frequent in the 15–44 age group, decreasing in older adults.

### ***Distribution by sex***

Upon first thought, it would be reasonable to assume that men and women are equally vulnerable to STIs. However, cases occur:

- more frequently among females than males between the ages of 14 and 19 years;
- slightly more frequently among males than females over the age of 19 years.

Why are there differences?

The higher frequency among females aged 14–19 years may be attributable to several factors:

- the start of sexual activity is usually earlier for girls than for boys;
- girls tend to have sex with older male partners, who have more sexual experience and are more likely to carry infections;
- due to the characteristics of the genital tract of young girls, they are especially vulnerable to infection with STIs.

After the age of 19 years, the slight male preponderance may be for one or more reasons, as follows.

- Sexually transmissible infections often produce no symptoms or only mild symptoms in women. For example, more women than men are symptom-free:
  - Up to 70% of women and 30% of men infected with chlamydia may not have symptoms.
  - Up to 80% of women and 10% of men infected with gonorrhoea may also have no symptoms (some studies in Africa have shown asymptomatic infections with gonorrhoea and chlamydia in men to be higher than those shown above. Clearly, more research will elucidate the extent of asymptomatic infection in men).

This means that as few as 20% of the women infected will come forward for treatment – so the rest do not appear in statistics.

- Services in general may be more accessible to men than women. For example, where men migrate to urban areas for employment, they have access to the urban services – and therefore are more likely to appear in statistics.
- Cultural and economic constraints might also prevent a proportion of women from attending for treatment.
- A large number of men might be infected after practising unsafe sex with a small number of sex workers.
- Older men may be more sexually active than women of the same age.
- Men are more likely to change partners than women.

In many developing countries, the best available indicators of STI levels in women are surveys taken by antenatal, family planning or gynaecological clinics.

### How accurate can any figures be?

Estimates for STIs tend to be higher than the figures suggest in national reports because these reports often under-represent the true number of people infected with STIs.

STI statistics are usually based on the numbers attending health facilities for treatment. This tends to underestimate the true extent of STIs in the general population for a number of reasons:

- people with symptom-free STIs do not seek treatment;
- health facilities offering treatment for STIs may be too far away for many people;
- people seeking other health care such as antenatal services may not be routinely screened for STIs;
- many patients perceive a stigma in attending traditional STI referral clinics, where anyone might be perceived to be at risk of infection by STIs;
- many people may choose to go to alternative providers, both in the formal and informal sectors, who do not report case numbers. Cost may sometimes be an important factor in patients' decisions:

*"Demand for many health services in developing countries, including STI treatment, is dependent to a significant extent on price. Although these services are highly valued, even relatively small out-of-pocket expenses can act as a significant deterrent to seeking care. As the cost of care in the public sector increases (... with users' fees being levied to help offset the government's cost of health care provision), clients will inevitably turn to the private sector for care. Because the cost of care in the formal private sector is often prohibitive, the informal private sector may be the only recourse that is open to them."*

**Moses, S. Sexually transmitted disease care services in developing countries. Improving quality and access. *Sexually Transmitted Diseases*, 2000, 27(8): p. 465–467.**



## The complications of STIs

Sexually transmitted infections are of public health concern not only because of their high prevalence worldwide, but also because of their potential to cause serious and permanent complications in infected people who are not treated in a timely and effective way. In addition they are known to facilitate HIV.

A UNAIDS Technical Update in May 1998 states that:

*"Both symptomatic and asymptomatic infections can lead to the development of serious complications.*

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

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

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

***The public health approach to STD control May 1998.  
UNAIDS/WHO Technical Update.***

The complications of STIs are summarized in Table 1 below.

**Table 1: Complications that may result from STIs**

| Cause   | Complication  |
|---|---|
| Gonococcal and chlamydial infection                       | Infertility in men and women<br>Epididymitis<br>Ectopic pregnancy due to tubal damage |
| Gonorrhoea  | Blindness in infants  |
| Gonococcal, chlamydial and anaerobic bacterial infections | Pelvic and generalized peritonitis  |
| Acquired syphilis   | Permanent brain and heart disease   |
| Congenital syphilis                                       | Extensive organ and tissue destruction in children                                    |
| Human papillomavirus                                      | Genital cancer  |

Some more facts about the complications of STIs

**Pelvic inflammatory disease**, caused by gonorrhoea and chlamydia, is inflammation of the uterine lining (endometritis), fallopian tubes and ovaries.

The pain from PID is often the first symptom a woman notices. If the fallopian tubes are damaged when the woman first feels pain, this damage is irreversible.

PID permanently scars and narrows the fallopian tubes, so increasing the risk of **ectopic pregnancy** by seven to ten times. This condition can be fatal for women because the tubes rupture, causing extensive haemorrhage.

*Ectopic pregnancies cause an estimated 1% to 5% of all maternal deaths.*

**Gonorrhoea in men** can lead to serious complications and sequelae. An infection can spread from the urethra (where it is known as urethritis) to the epididymis (where it is known as epididymitis). This in turn may cause sub-fertility.

**PID and infertility**

*Without treatment, between 28% to 65% of women with PID may become infertile. Many women may lose their fertility without ever realizing they had PID.*

During pregnancy, a **syphilis** infection can spread through the placenta and infect the fetus.

*Up to 40% of syphilitic pregnancies end in spontaneous abortion, stillbirth or perinatal death. This is particularly serious when the maternal infection is untreated during the first 20 weeks of pregnancy.*

**Ophthalmia neonatorum** afflicts 5% of the newborn in some developing countries. Without treatment, it damages the vision of 1% to 6% of affected infants.

**Chlamydia** may spread to the lungs of the newborn and lead to chlamydial pneumonia.

**All these complications can be avoided if the correct treatment is provided early before the medical conditions develop.**

## The effect on society

The social and economic burden of STIs can be enormous. Untreated STIs can lead to loss of employment and broken marriage. For example, one of the biological effects of pelvic inflammatory disease (PID) is infertility – the effect of childlessness can mean divorce and disruption of the family. Below is a simple example.

***In a family of two adults and three children, first one parent and then the other loses work due to the complications of untreated STIs. The oldest daughter gives up her teaching job to care for her parents: the younger son stops going to school for financial reasons. To raise some money for the family he takes on poorly paid and unskilled work whenever he can.***

***The state not only loses three skilled workers, but also its investment in a potentially skilled worker.***

STIs can therefore place a heavy financial burden on families, communities and health services. If an epidemic of STIs is uncontrolled, the loss to the national income can be significant. For example, in one African country more than 70% of the budget for antibiotic drugs was used for STI treatment.

The following two case-studies also deal with the socioeconomic effects of STIs. Read through them, and then answer the questions that follow.

### **Case history 1: Flora**

*Flora, a nine-year-old girl, is brought to the clinic by her mother because of some genital "sores" noticed by the mother the previous day.*

*No meaningful history could be obtained from either the mother or the child on how the "sores" could have come about. There was no history of trauma.*

*A nurse examined Flora behind a screen while the mother sat in the same room. Examination showed the child to have florid, dirty, vulval warty looking lesions highly suggestive of condylomata lata of secondary syphilis.*

*Before treatment was given, the nurse-in-charge, who had experience in talking to children, took the child aside and spoke to her without the mother. After some 20 minutes she found out that an uncle (the father's brother) had regularly "played with" and "teased" the child by touching her genital area and making her sit on his lap, even when he was half-naked. He had told her that this was just a "game" between him and her and should not be mentioned to anyone else.*

*The mother was informed of this "game". She was very demure and did not seem surprised. Flora was treated for syphilis and reviewed a week later, and all her lesions had disappeared.*

*The clinic nurse discussed the situation with the mother, informing her that a serious crime of sexual abuse had been committed and she should bring this to the attention of a social worker and/or the police. The mother declined saying that in her culture it would be "wrong" to report such a close relative to the police as he may well go to prison. That would be bad for the family!*



### Question 1

What is the role of the health worker in such an obvious situation of child sexual abuse?

What are the legal constraints in your setting? Can the health worker report the situation to the police if the parents refuse to file charges?

What are the social implications of reporting the uncle to the police in your setting, if you were Flora's mother?

What one important message did you come away with from this case-study?

Please turn to page 45 to compare your answers with ours.

**Case history 2: Yaksha**

*Yaksha, a 15-year-old Asian girl, attended for treatment at a venereologist's private clinic. She complained of a recurrent vaginal discharge with a "peculiar" smell.*

*The girl admitted that she was sexually active and did not use condoms all the time with her regular boyfriend. She denied having multiple sexual partners.*

*On external vulval examination, which was the only examination she would accept because she did not want a speculum examination, the doctor noted a slight discharge and thought that it had a "fishy" odour to it. There was not enough discharge for the doctor to identify its colour.*

*Yaksha could not afford laboratory fees, so the doctor could not even take a swab to examine the discharge under the microscope.*

*The doctor suggested that Yaksha buy some medication that would treat an STI called Trichomoniasis. The course would be for five days and might make her nauseous. She did not have the money to buy expensive medicine, although she thought her boyfriend may be able to help. However, because she lived at home with her parents and sisters she could not take any medicine that took a week to complete as she would not have anywhere to hide it in the house. She could not tell her mother that she was on tablets, as her mother did not know that she had an appointment to see a doctor. Yaksha was reluctant to admit to having an STI because she was not supposed to be sexually active at her age. Furthermore, according to her religion, she was not supposed to have sex before marriage.*



## Question 2

The doctor suspects *Trichomonas vaginalis* infection and wants to prescribe a course of metronidazole tablets. What do you think about this decision?

Yaksha declines because of the length of treatment and the fact that she might feel nauseous and give the game away to her family. What should the doctor do? Should parents be involved here since Yaksha is under age of majority? Syndromically, the doctor should treat for vaginal discharge, which may require treatment for chlamydia and gonorrhoea in some settings. The girl could not even afford treatment with metronidazole. How should the doctor manage this patient?

Please turn to page 45 to compare your answer with ours.



## Activity 7

Can you think of other examples of the social and economic effects of STIs? Bear in mind that rates of STIs can tend to be highest in the 15–30 age group – a period when many people begin families and raise children.

## Summary

The extent of these complications arising from untreated bacterial STIs is extensive and severe – yet all can be avoided if the correct treatment is provided sufficiently early. More importantly, primary prevention would avoid STI transmission all together.

So far, we have focused our discussion on all STIs except for the human immunodeficiency virus (HIV) and AIDS. This is our next and final subject.



### Activity 8

Imagine that you were asked to talk to a group of people about the burden and transmission of STIs. The group could be service providers at your local health centre, teachers at a secondary school or your town's football team – or name your own group of people.

- What facts would you want the audience to know?
- What main points would you want them to remember?

Your talk should take 5–10 minutes.

## The HIV/AIDS epidemic

HIV infection, which causes AIDS, is spread by the same behaviour as other STIs. In contrast to most viruses, HIV is slow-acting, taking years to produce illness. Over 10 years or so, the immune defences of an HIV-infected person gradually become weakened. Various bacteria, viruses, fungi and parasites – known as "opportunistic" pathogens – take advantage of this to cause illnesses.

The needs of people with HIV or AIDS are many. They include therapies to treat opportunistic infections as well as the antiretroviral drugs that attack HIV itself. They also need support to deal with the fear of stigmatization, psychological support to cope with the implications of this life-threatening illness, and social support and counselling.

The provision of effective drug therapies for HIV and opportunistic infections varies a good deal between the industrialized and developing world.

*"In high-income countries ... there is generally good access to antiretroviral drugs, which combat the virus and improve health and survival. People with HIV or AIDS and their organizations have played a role in health care, for instance by putting pressure on the pharmaceutical industry to reduce the price of drugs ...*

*The developing countries faced a radically different situation. By the time the enormous new challenge of AIDS appeared, the health services with their dwindling resources were already hard-pressed to cope with a host of older diseases ...*

*The high costs of antiretroviral drugs, and the sophisticated medical facilities required to track patients' progress and monitor side-effects, have been major stumbling blocks to access for the vast majority of people with HIV in the developing world."*

**Report on the global HIV/AIDS epidemic. UNAIDS, 2000, p. 85.**

Figure 3 on the next page leaves us in no doubt of the severity of the HIV epidemic.

***By December 2005, a total of 40.3 million adults and children were living with HIV/AIDS. In the same year, a total of 4.9 million people were newly infected with HIV.***



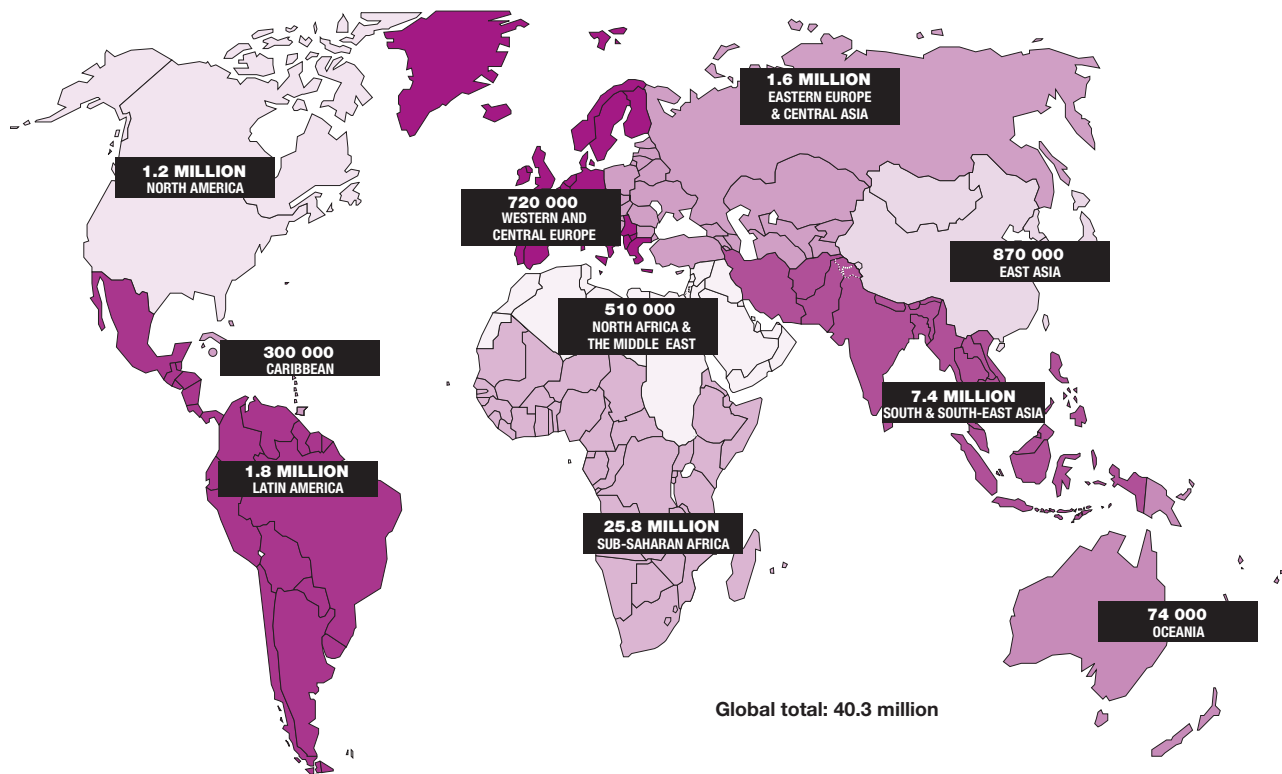


Figure 3: Estimates of HIV/AIDS prevalence throughout the world, 2005\*

\* Colours denote which countries are included in regional calculations.

## The link between STIs and HIV/AIDS

We mentioned earlier in this module that certain STIs facilitate the spread of HIV. In fact, the interrelationship between STIs and HIV is more complex, in that:

- certain STIs facilitate the transmission of HIV;
- the presence of HIV can make people more susceptible to the acquisition of STIs;
- the presence of HIV increases the severity of some STIs and their resistance to treatment.

### ***Which STIs seem to facilitate the transmission of HIV?***

A person with open sores in the genital area is much more likely both to contract and to transmit HIV. Chancroid and syphilis are the main bacterial causes of sores: if promptly diagnosed and treated, these links can be reduced.

Genital herpes also facilitates HIV transmission.

*“There is evidence that genital herpes, an incurable viral infection in which patients have recurrent genital ulcers, may play a more important part than previously thought ...*

*In high-income countries, genital herpes – infection with the herpes simplex virus-2 (HSV-2) – is the leading cause of genital ulcers, though rates are low. HSV-2 is now assuming that position in sub-Saharan Africa too ... An ulcer in the genital area provides an ‘open door’ through which HIV can easily pass. Unfortunately, HSV-2 is lifelong and incurable ... The best way to deal with the exponentially rising risks of HIV and HSV-2 infection is to increase efforts to prevent them both, particularly by increasing condom use.”*

**Report on the global HIV/AIDS epidemic. UNAIDS, 2000, p. 71–72.**

Chlamydia, gonorrhoea and trichomoniasis can also facilitate the transmission of HIV. This may be for one or both of two reasons:

- These non-ulcerative diseases stimulate the body’s immune system to increase the number of white blood cells, which are both targets and sources of HIV.
- Genital inflammation associated with these STIs can cause microscopic cuts in genital tissues, creating potential sites where HIV can enter the body.

### ***HIV makes infection with other STIs more likely***

It is also true that people infected with HIV are more vulnerable to getting multiple infections. This is because changes in their bodies make them more vulnerable to infection in general.

### ***HIV and increased severity of STIs and resistance to treatment***

The severity and resistance of STIs are increased by the presence of HIV infection.

*“An additional relationship between HIV and other STIs ... is the alteration of the natural history of an STI in an individual with coexistent immunodeficiency associated with HIV. The severity of the manifestations may be increased, infectiveness prolonged and increased, and the response to conventional regimens reduced.”*

***Sexually transmitted diseases: policies and principles for prevention and care.***  
**UNAIDS/WHO, 1999.**

The links between HIV and other STIs are summarized in Figure 4 below.

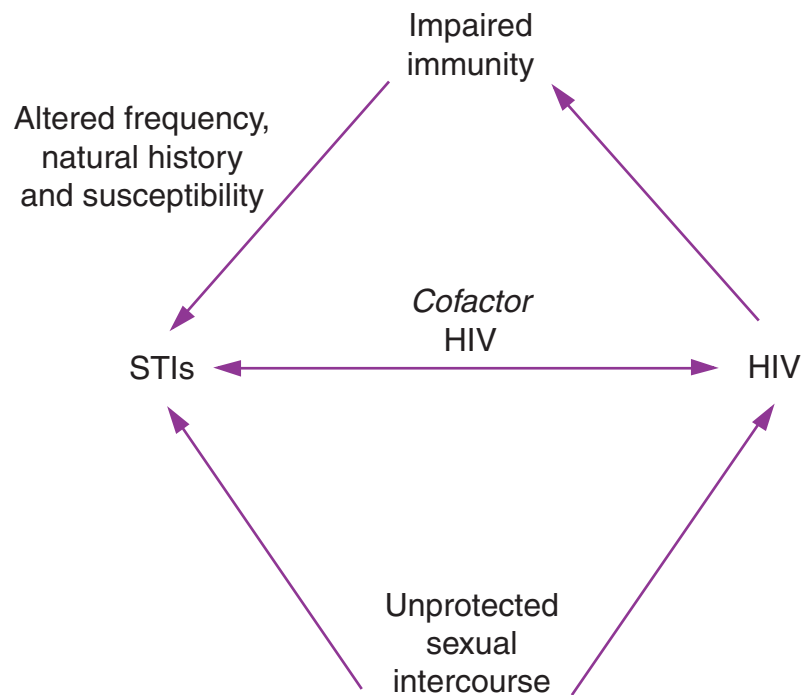


Figure 4: The interrelationship of STIs and HIV infection

***The extra and obvious link between STIs and HIV is behavioural: unprotected sexual behaviour exposes people to both HIV and other STIs.***

***Equally, the consistent use of condoms can PREVENT both kinds of infection.***

Please review this important section by answering these questions.



## Summary

Having reached the end of this long section, perhaps you agree that STIs place a heavy burden, not only on individuals and their families, but also on health services and society itself. The reasons are as follows.

- In people with untreated STIs, the complications and sequelae can be devastating.
- In most countries, STIs are underreported, for a number of reasons. There may be many more actual than recorded cases.
- Among people who have unprotected sexual intercourse with many partners, STIs spread quickly. Where selling sex is one of the few economic activities open to women, more women are put at risk.
- STIs affect the outcomes of pregnancy and childbirth and can lead to infant morbidity and mortality.
- STIs are linked to the spread of HIV. There are strong links between having an STI and becoming HIV-positive. HIV infection may make people more susceptible to other STIs – and may make other STIs more resistant to treatment.



### Activity 9

At the back of this module an activity will ask you to present data for your region to colleagues. Meanwhile, you might like to consider the questions below. Please note down your thoughts and then discuss the questions with colleagues.

To your knowledge, what are the effects of STIs on individuals and families in your region?

What are the attitudes of health workers and the community to people known to have an STI?

Which health services, such as modern or traditional ones, might people with STIs seek in your region? Why?

What happens to women who become infertile because of STIs?

How aware are people in your community of safe-sex messages and the causes of STIs including HIV?

### 3: The challenge of controlling STIs

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

Control is difficult for many reasons.

This section will enable you to:

- summarize the many factors, biological, behavioural and relating to the health system, that make controlling the spread of STIs so difficult;
- identify a number of ways to prevent transmission of STIs, concerning both primary and secondary prevention;
- list the six features of comprehensive care for STIs.



## Activity 10

What makes the control of STIs so difficult? Consider what you have read so far and list as many factors as you can.

Compare your notes with what we have written on the next page.



## Why is it so difficult to control the spread of STIs?

In fact, there are many challenges to consider:

- factors relating to the health system;
- biological factors;
- social and behavioural factors.

### Challenges arising in the health system

These may include several factors, such as the following.

- Health services able to diagnose and treat STIs may be:
  - unavailable or too far away;
  - too expensive;
  - considered to stigmatize those who visit.
- There may be too little emphasis on educational and other efforts to prevent infection.
- STI services may not be available at the patient's first visit. As few as half the patients initially referred may attend for care.<sup>1</sup>
- Health services may also be unable to offer the most effective drugs, often due to their relative cost. Growing resistance to drugs in many areas requires use of increasingly expensive drugs to achieve control.

The issue of cost can be a crucial one in turning patients towards alternative providers. Even private health care provision can be considered too expensive:

*“Demand for many health services in developing countries, including STI treatment, is dependent to a significant extent on price. Although these services are highly valued, even relatively small out-of-pocket expenses can act as a significant deterrent to seeking care ...*

*Because the cost of care in the formal private sector is often prohibitive, the informal private sector may be the only recourse that is open to them.”*

**Moses, S. Sexually transmitted disease care services in developing countries. Improving quality and access. *Sexually Transmitted Diseases*, 2000, 27(8): p. 465–7.**

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<sup>1</sup> Moses S, Ngugi EN, Bradley JE, et al. Health care seeking behaviour related to the transmission of sexually transmitted diseases in Kenya. *American Journal of Public Health*, 1994;84:1947–1951.

## Biological factors

We said earlier that as many as 70–80% of infected women may be asymptomatic and so will not seek treatment. This also applies to a significant minority of men. Such people will continue to be infected, risking complications and perhaps infecting others.

## Social factors

The many social factors to consider are as follows:

- Reluctance to seek health care. This may be for many reasons including embarrassment or guilt.
- Ignorance or misinformation. These powerful obstacles exist in all age groups and all types of people and tend to be widespread among adolescents and young people – the very ones likely to be most sexually active.
- Sexual practices that are deeply rooted in the everyday life of people and their communities.
- A preference for alternative health sources such as traditional healers.
- A reluctance to follow safe sex practices for a variety of reasons, including:
  - lack of knowledge of safe sex;
  - dislike of condoms.
- The social stigma so often attached to STIs. This may mean that people hide what they feel is shameful, and so avoid seeking treatment.
- Failure to take the full, prescribed course of treatment for STIs, for a number of reasons:
  - it can take many days to complete;
  - the patient's symptoms disappear so they believe that the infection is cured and they can save the medication for another time or other people.
- The difficulty of notifying sexual partners through fear, embarrassment or unawareness of consequences.



All STIs, including HIV, are preventable. Prevention can be primary or secondary:

- **primary prevention** aims to prevent people being infected with STIs or HIV;
- **secondary prevention** is about the provision of treatment and care for infected people in order to avoid further transmission of infection to others.

### ***Primary prevention***

This is about adopting safer sexual behaviour and engaging only in safer sexual acts.

Safer sexual behaviour implies:

- abstinence from sexual activity altogether;
- delaying the age of sexual debut;
- lifelong mutual monogamy.

Safer sexual activity implies:

- engaging only in non-penetrative sex acts: mutual masturbation and rubbing of body parts;
- engaging in penetrative sex acts only if condoms (male or female) are used. Penetrative sex acts include vaginal, oral and anal sex.

### ***Secondary prevention***

This may be achieved by:

- promoting STI care-seeking behaviour, through:
  - public education campaigns;
  - providing non-stigmatizing and non-discriminatory health facilities;
  - providing quality STI care;
  - ensuring a continuous supply of highly effective drugs;
  - ensuring a continuous supply of condoms;
- rapid and effective treatment of people with STIs:
  - comprehensive case management of STI syndromes;
  - training of service providers in case management;

- case-finding:
  - examining minimally symptomatic women attending clinics for maternal and child health and family planning;
  - partner notification and treatment;
  - education, investigation and treatment of targeted population groups who may have placed themselves at risk of infection, such as sex workers, long-distance truck drivers, uniformed services, and young people, both in and out of school.

### ***Integration of STI services within primary care***

In order to improve access, people with STIs should not need to attend a centre devoted to STI treatment. STI treatment should be available at all health facilities throughout the country.

It is possible to integrate STI care within primary health care – primary care clinics, maternal, child health and family planning clinics – through the syndromic management of STIs. This means that service providers are trained to recognize STIs syndromically and then to offer their patients comprehensive care.

Managing sexually transmitted and reproductive tract infections (STIs/RTIs) within reproductive health settings (e.g. antenatal, family planning, etc.) will require appropriate adaptation. Tools such as the Essential Care Practice Guides for RTI, family planning, etc. should be consulted for this purpose.

These are the six features of comprehensive case management for STIs:

- to make a correct diagnosis;
- to provide correct antimicrobial therapy for the STI syndrome;
- to educate on the nature of the infection, safer sexual behaviour, safe sex acts and risk reduction in order to prevent or reduce future risk-taking behaviour;
- to educate on treatment compliance;
- to demonstrate the correct use of condoms and provision of condoms;
- to advise on how the patient's partners may be treated and to issue a Partner Referral card for the patient to pass on to his/her partner(s).

***Syndromic case management of STIs blends all these features to deliver comprehensive and integrated STI care.***

**Important**

*Integration of STI services does not mean doing away with specialized STI clinics. Specialized STI clinics (or genito-urinary centres, GUCs) should be reserved as reference centres for difficult cases where specially trained health workers can give more time to those referred. The other purpose of GUCs is the training of health workers and laboratory investigations to monitor resistance patterns and distribution of disease, etc. Of course, in some cases a GUC can be a primary health centre for some patients, if it is the nearest health facility.*



**Activity 13**

Consider these questions:

- What services are currently available at, or reasonably near to, your own health facility?
- When would patients with STIs currently encounter any of the services?
- What features of STI case management does your health facility currently offer to patients with STIs?

## Review

This first module has introduced you to the scope of the problem of STIs, both worldwide and, possibly, in your own region or country. You have also learned something about the essential characteristics of any effective case management programme for STIs.

You should now be able to:

- identify how STIs are transmitted and the factors that influence transmission;
- explain:
  - the extent of STIs, including issues that may mask the true burden;
  - the serious complications that can arise from untreated STIs;
  - ways in which STIs are linked with the spread of HIV;
- summarize the many factors, biological, behavioural and relating to the health system, that make controlling the spread of STIs so difficult;
- identify a number of ways to prevent transmission of STIs, concerning both primary and secondary prevention;
- list the six features of comprehensive case management for STIs.

To complete this first module, please work through one of the projects on the next two pages. The first asks you to present STI data for your health facility/region to colleagues or a group of your choice. If little data is available, you might prefer to work on the second project, which asks you to collect statistical data.

## Project 1: Data presentation activity

If you have any data on STIs for your country, region or health facility, prepare and present this to colleagues.

Your presentation should last 5–10 minutes.

In preparing for the presentation, please consider these questions.

- If similar data have been collected over several years, can you spot trends of any sort?
- If you have data for different geographical areas, what comparisons can be made?
- To what extent do the data available reflect the real extent of STIs in the population or in men and women, adolescents or by age or social status?



## Project 2: Collecting statistical data

Now that you have learned about worldwide statistics on STIs and HIV (their frequency and distribution), it would be helpful to find out more about the statistics available for your country, region or community.

This project is one that your trainer may ask you to work on with a study group.

If you cannot join a study group, please discuss your findings with your colleagues and supervisor. Your supervisor should be able to help you access any available statistics or records.

There are three sets of activities: gathering information, interpreting the information, and drawing conclusions.

### ***Gathering information***

- Think about what sort of information would be useful to have about STIs in your country or region, and why.
- Collect information that is available on STIs and HIV for your country, region or community. Approach your local health service for any numbers they have on people seeking treatment for STIs, and find out if any special surveys using laboratory tests have been done. (Your tutor or supervisor may be able to help you with statistics or other information.)
- Collect any estimates about STIs or HIV in addition to, or perhaps in the absence of, statistics.

### ***Interpreting the information***

- According to the information you have gathered, who is most at risk of STIs? Are particular groups more at risk than others?
- To what extent is this information useful?
- How accurate can you consider the statistics (or estimates) to be?
- To what extent might the statistics ignore women, and why?

### ***Drawing conclusions***

- Make simple graphs or tables that show the information you have gathered.
- Make a list of conclusions that can be drawn from the information you have gathered.

## Answers

1. There are no straightforward answers to these questions. The primary role of the health worker is to ensure good health. The health worker's obligation is to treat Flora. The fact that the child is being sexually abused is of concern and should be addressed, but the health worker cannot report the matter to the police. She could, however, be a witness to the fact that Flora had a sexually transmitted infection. Someone else has to press charges. This should be the parents. Make it a point to look up the legal situation to enable you to deal with such a case, if you come across it in your daily work.

In this situation, the health worker referred both mother and child to a social worker for more discussion and advice.

We can think of a number of important lessons in this case-study. Firstly, that sexual abuse happens in the home, usually with a close relative. You need to be on guard for that. Secondly, even with small children, communication, privacy and training are important to get to the bottom of the story. Thirdly, sexual abuse and sexually transmitted infections involve cultural, legal and rights issues. Furthermore, the infection may be the only sign revealing sexual abuse that has been going on for some time. We are sure you can think of other lessons here.

2. The doctor diagnosed *T. vaginalis*. According to the syndromic approach, we should treat vaginal discharge as a syndrome and treatment should cover the organisms that may cause that syndrome. This varies from setting to setting depending on the epidemiological situation. In your particular setting was the doctor adhering to the recommended flowchart for the syndrome?

The doctor could give a single-dose treatment of metronidazole to be taken immediately, but the 2 g dose is more likely to cause nausea and vomiting. It is also possible to cover gonorrhoea and chlamydia using ciprofloxacin and azithromycin, but this may be too expensive for Yaksha.

The question of parental involvement, or the involvement of a guardian when a minor is being treated, crops up regularly. Legally, minors must be accompanied by a guardian who will make the decisions on their behalf. However, because of the nature of STIs and their harmful effects, doctors often decide to treat their patients to avoid long-term sequelae and suffering. What is the situation in your setting?

Actually, in this instance the decision was easier for the doctor. The boyfriend agreed to attend for an examination and was found to be clear of both gonorrhoea and chlamydia. The boyfriend also helped Yaksha to buy a single dose of metronidazole. It is unlikely that Yaksha had a cervical infection under the circumstances, if her sex history is genuine.

3. Addressing the problem of asymptomatic STIs is perhaps one of the biggest challenges in delivering effective STI care. Several approaches are being tried or considered for different settings:
  - a) Improving patients' ability to detect abnormal symptoms that may suggest STIs, and their readiness to come for a check-up.
  - b) Raising patients' awareness of behavioural risks and encouraging them to come for a check-up when they think they may be infected (even though some patients may overreact and come for care when it is unnecessary).
  - c) Providing regular periodic STI care to groups with high-risk behaviour so that they can voluntarily take advantage of preventive STI services. An example of this would be sex workers coming to a health centre twice a month whether or not they currently have symptoms of STIs.
  - d) Providing periodic, selective mass STI prophylaxis among groups of people with high-risk behaviours. An example of this would be regular, periodic provision of treatment for syphilis, chancroid and chlamydia. This is known as periodic presumptive treatment (PPT), an experimental approach that is being tried in a few countries such as Côte d'Ivoire, South Africa, Zambia and Zimbabwe.
  - e) Given that syndromic management does not use laboratories, presumptively treating the female partners of men with urethritis or genital ulcers, even when they have no symptoms. In this way, intensification of partner notification with male involvement can be one strategy for asymptomatic infections.
  
4. Well done if you remembered that the ulcer-causing STIs – syphilis and chancroid – most easily facilitate the transmission of HIV. You would also be right to list genital herpes and, for different causes, gonorrhoea, chlamydia and trichomoniasis.

Please remember that this syndromic programme does not cover herpes because, as a virus, it cannot be cured. However, you should always encourage patients with this virus to avoid sexual activity when a herpes sore is present.

5. We suggested two possible reasons why non-ulcer-causing STIs (gonorrhoea, chlamydia and trichomoniasis) increase the risk of transmitting HIV:
  - a) the presence of STI viruses or bacteria in the genital tract stimulate the body's immune system to increase the number of white blood cells – which are both targets and sources of HIV;
  - b) genital inflammation may cause microscopic cuts that allow HIV to enter the body.
  
6. HIV infection may affect transmission of STIs in two ways: by making people more susceptible to STIs and by making an STI more resistant to treatment.

## Annex 1

### Commonest sexually transmissible pathogens and clinical presentation

| Disease                                   | Pathogen                                     | Symptoms and signs   |
|---|--|--|
| <b>Bacterial infections</b>               |  |  |
| Gonorrhoea                                | <i>Neisseria gonorrhoeae</i>                 | Urethral discharge; cervicitis and lower abdominal pain in women; neonatal conjunctivitis. May be asymptomatic |
| Chlamydia                                 | Chlamydia trachomatis                        | Urethral discharge; cervicitis and lower abdominal pain in women; neonatal conjunctivitis. May be asymptomatic |
| Syphilis                                  | Treponema pallidum                           | Anogenital ulcers (chancre); inguinal swelling; generalized skin rash  |
| Chancroid                                 | Haemophilis ducreyi                          | Genital ulcers with inguinal swelling (bubo) in the majority of cases  |
| Granuloma inguinale or Donovanosis        | Klebsiella (Calymmatobacterium) granulomatis | Nodular swellings and ulcerative lesions of the inguinal and anogenital areas                                  |
| <b>Viral infections</b>                   |  |  |
| Acquired immunodeficiency syndrome (AIDS) | Human immunodeficiency virus (HIV)           | Asymptomatic; generalized lymph node swelling, persistent fever, skin rash, weight loss, etc.                  |
| Herpes genitalis                          | Herpes simplex virus type 2 (HSV-2)          | Anogenital vesicular lesions and ulcerations   |
| Genital warts                             | Human papillomavirus (HPV)                   | Anogenital fleshy warts; cervical warts; cervical cancer in women  |
| Viral hepatitis                           | Hepatitis B virus (HBV)                      | Predominantly asymptomatic; nausea and malaise; enlargement of the liver; jaundice                             |
| Cytomegalovirus infection                 | Cytomegalovirus (CMV)                        | Subclinical fever; diffuse lymph node swelling; liver disease, etc.  |
| Molluscum contagiosum                     | Molluscum contagiosum virus (MCV)            | Genital or generalized umbilicated, firm skin nodules  |
| <b>Other</b>                              |  |  |
| Trichomoniasis                            | Trichomonas vaginalis                        | Asymptomatic; profuse, frothy vaginal discharge  |
| Candidiasis                               | Candida albicans                             | Thick curd-like vaginal discharge; vulval itching or burning   |

## Sources

- Page**
- 16 (Figures 1 and 2) *Global prevalence and incidence of selected curable STIs, overview and estimates*. Geneva, World Health Organization, 2001.
- 17 *Sexually transmitted diseases: policies and principles for prevention and care*. Geneva, UNAIDS/WHO, 1999 (UNAIDS Best Practice Collection).
- 19 Moses, S. Sexually transmitted disease care services in developing countries. Improving quality and access. *Sexually Transmitted Diseases* 2000, 27(8):465–467.
- 20 *The public health approach to STD control*. UNAIDS/WHO Technical Update, May 1998.
- 27 *Report on the global HIV/AIDS epidemic*. Geneva, UNAIDS, 2000, p.85.
- 28 (Figure 3) *AIDS epidemic update. December 2004*. Geneva, UNAIDS/WHO, 2005, p. 85.
- 29 *Report on the global HIV/AIDS epidemic*. Geneva, UNAIDS, 2000, p. 71–72.
- 29 *Sexually transmitted diseases: policies and principles for prevention and care*. Geneva, UNAIDS/WHO, 1999 (UNAIDS Best Practice Collection).
- 36 Moses, S. Sexually transmitted disease care services in developing countries. Improving quality and access. *Sexually Transmitted Diseases*, 2000, 27(8):465–467.

## Glossary

|                     |  |
|---------------------|--|
| AIDS                | Acquired immunodeficiency syndrome caused by the human immunodeficiency virus (HIV)  |
| Amniotic sac        | Membranes that enclose amniotic fluid and the fetus in the womb  |
| Antenatal           | Period between conception and giving birth   |
| Antibiotic          | A substance which is produced by one micro-organism and which inhibits or kills another  |
| Antimicrobial       | An agent which kills micro-organisms or suppresses their growth or multiplication  |
| Cervix              | Lower part of the uterus that protrudes into the vagina, often called the neck of the uterus/womb  |
| Complication        | A secondary disease or condition that can arise if the primary disease is not treated  |
| Congenital syphilis | Syphilis passed from the mother to the child during pregnancy  |
| Conjunctivitis      | Inflammation of the mucous membrane of the eyes and eyelids  |
| Ectopic pregnancy   | A potentially fatal condition caused by a pregnancy that occurs outside the uterus (usually in the <b>fallopian tubes</b> )              |
| Epidemic            | An outbreak of a disease which affects a large proportion of a population at the same time   |
| Epidemiology        | The study of the incidence, distribution and causes of an infection or disease in a population   |
| Epididymis          | An elongated cord-like duct, along the posterior border of the testis, which provides for storage, transit and maturation of spermatozoa |
| Fallopian tubes     | The tubes that carry ova from the ovaries to the uterus  |
| Flowchart           | A chart that shows the steps that need to be taken to perform a task   |

|                                 |  |
|---------------------------------|--|
| Natural history of an infection | The course of an infection if untreated (the natural history of different STIs varies, for example, chancroid eventually heals on its own, whereas untreated syphilis may spread to other organs and lead to complications, even after many years) |
| Ophthalmia neonatorum           | <b>Conjunctivitis</b> occurring in a baby less than one month old, usually due to gonorrhoea or chlamydial infection   |
| Periodic presumptive treatment  | Treatment repeated at designated intervals based on judgement rather than absolute certainty   |
| Sign(s)                         | Indication of the existence of disease or any objective evidence of a disease as is perceptible to the examining health care provider  |
| Susceptibility to infection     | How much resistance the body has to infection (for example, little resistance would mean that the patient was highly susceptible)  |
| Symptom(s)                      | Any subjective evidence or perception of disease or of a patient's condition   |
| Syndrome                        | A set of <b>symptoms</b> and <b>signs</b> giving rise to a consistently recognizable disease entity, e.g. the syndrome of urethral discharge   |
| Syndromic case management       | The management of a patient whereby a syndrome (a consistent group of symptoms and easily recognized signs) is used as a basis for the treatment of the causative organisms  |
| Urethra                         | Duct through which urine is discharged from the bladder  |
| Vertical transmission           | Infection which passes down from the mother to the fetus (or child) during pregnancy, delivery or breastfeeding  |



## Abbreviations

|        |  |
|--------|--|
| CMV    | cytomegalovirus                            |
| GUC    | genito-urinary centre                      |
| HBV    | hepatitis B virus                          |
| HPV    | human papillomavirus                       |
| HSV-2  | herpes simplex virus type 2                |
| MCV    | molluscum contagiosum virus                |
| PID    | pelvic inflammatory disease                |
| PPT    | periodic presumptive treatment             |
| RTI    | reproductive tract infection               |
| STD    | sexually transmitted disease               |
| STI    | sexually transmitted infection             |
| UNAIDS | Joint United Nations Programme on HIV/AIDS |
| WHO    | World Health Organization                  |