I. HIV PREVENTION, DIAGNOSIS, TREATMENT AND CARE FOR KEY POPULATIONS

The new consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations bring together all existing World Health Organization (WHO) guidance relevant to five key populations: men who have sex with men, people who inject drugs, people in prisons and other closed settings, sex workers and transgender people. It includes a number of new recommendations and updates existing guidance and recommendations. These guidelines aim to: 1 provide a comprehensive package of evidence-based HIV-related recommendations for key populations 2 increase awareness of the needs of and issues important to key populations 3 improve access to, uptake and coverage of effective and acceptable services and 4 catalyze greater national and global commitment to adequate funding and services.

- Between 40% and 50% of all new HIV infections among adults worldwide occur among people from key populations and their immediate partners.
  Estimates by the Joint United Nations Programme on HIV/AIDS (UNAIDS) suggest that as many as 50% of all new HIV infections worldwide occur in people from key populations.1 In countries in Asia, Central Asia and Eastern Europe, people from key populations account for more than half of new infections – from 53% to 62%. Even in the sub-Saharan African countries with generalized epidemics that have carried out modes of transmission (MOT) analyses, the proportion of new infections in key populations is substantial, although it varies greatly – for example, an estimated 10% in Uganda, 30% in Burkina Faso, 34% in Kenya, 37% in Nigeria, 43% in Ghana and 45% in Benin. In all countries and settings key populations are disproportionately affected by HIV. This disproportionate burden reflects both behaviour common among members of these populations and specific legal and social issues that increase their vulnerability. Yet HIV services for key populations remain largely inadequate. In many settings HIV incidence in key populations continues to increase, even as incidence stabilizes or declines in the general population. Country programmes and other end-users have indicated the importance of consolidating WHO's key population guidance to aid national programme managers and service providers, including those from community-based and community-led programmes, in planning and implementing services. To date, WHO has developed normative guidance separately for each of the five key populations, but in general that guidance has not fully addressed overarching issues common to all key populations. At

the same time, other WHO global HIV guidance, including the 2013 Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection and the 2015 update, which focuses on people living with HIV, has not specifically considered issues relating to key populations. The consolidated key populations guidelines aim to address these gaps and limitations. The guidelines include a comprehensive package of interventions comprising the clinical interventions and critical enablers required for successful implementation of programmes for the five key populations. These guidelines also consider service delivery issues and provide guidance on decision-making, planning, and monitoring and evaluation.

SUMMARY OF WHO RECOMMENDATIONS CONCERNING KEY POPULATIONS HEALTH SECTOR INTERVENTIONS HIV prevention.

1 The correct and consistent use of condoms with condom-compatible lubricants is recommended for all key populations to prevent sexual transmission of HIV and sexually transmitted infections (STIs). 2 Oral pre-exposure prophylaxis (PrEP) containing tenofovir disproxil fumerate (TDF) should be offered as an additional prevention choice for key populations at substantial risk of HIV infection as part of combination HIV prevention approaches. NEW RECOMMENDATION 3 Post-exposure prophylaxis (PEP) should be available to all eligible people from key populations on a voluntary basis after possible exposure to HIV. 4 Voluntary medical male circumcision (VMMC) is recommended as an additional important strategy for the prevention of heterosexually acquired HIV infection in men, particularly in settings with hyperendemic and generalized HIV epidemics and low prevalence of male circumcision. Harm reduction 5 All people from key populations who inject drugs should have access to sterile injecting equipment through needle and syringe programmes. 6 All people from key populations who are dependent on opioids should be offered and have access to opioid substitution therapy in keeping with WHO guidance. 7 All people from key populations with harmful alcohol or other substance use should have access to evidence-based interventions, including brief psychosocial interventions involving assessment, specific feedback and advice. 8 People likely to witness an opioid overdose should have access to naloxone and be instructed in its use for emergency management of suspected

opioid overdose. NEW RECOMMENDATION HIV testing and counselling (HTC) 9 Voluntary HTC should be routinely offered to all key populations both in the community and in clinical settings. Community-based HIV testing and counselling for key populations, linked to prevention, care and treatment services, is recommended, in addition to provider-initiated testing and counselling. HIV treatment and care 10 Key populations living with HIV should have the same access to antiretroviral therapy (ART) and to ART management as other populations. 11 All pregnant women from key populations should have the same access to services for prevention of mother-to child transmission of HIV (PMTCT) and follow the same recommendations as women in other populations.

Risk Reduction, Assessment, Planning and Support Toolkit for HIV Prevention

Overview The Standard Operating Procedures (SOP) Manual for Risk Reduction Assessment, Planning and Support (RRAPS) was developed as an HIV prevention tool by the Capable Partners Project (CAP) Botswana as part of its capacity building mandate to strengthen current behaviour change programs implemented by civil society organisations (CSOs) supported through the project. The RRAPS tool provides the opportunity for individuals to assess their personal risk for HIV transmission based on their current behaviours, better understand how these behaviours put them at risk and to then develop a risk reduction plan with relevant strategies to encourage healthier behaviours. The RRAPS process integrates individualised assessment, planning and support with community outreach activities to provide in-depth, personalised education and support to individuals in various community settings, including homes, clinics, schools, workplaces and churches. In Botswana, the spread of HIV is primarily through heterosexual sex (National Strategic Framework II). In the absence of a cure for AIDS, HIV prevention efforts must engage effective communication tools, directing the right message to the right people. According to the Botswana AIDS Impact Survey (BAIS II), HIV prevalence is 24.8% amongst 15 to 49-year-olds. HIV prevalence rates among young people are particularly high, especially among young women, who out-number young men living with HIV by more than two to one. It is therefore crucial

that young people (and especially girls and young women) are provided with HIV prevention education and skills to help protect themselves from infection and promote positive behaviour change. FHI 360 has collaborated with the Government of Botswana to develop this manual and its accompanying tools, working closely with the Behaviour Change Information and Communications (BCIC) Unit and the Department of HIV and AIDS Prevention and Care, Ministry of Health. At the time of print, discussions were on-going as to whether this tool can be applied more widely and adapted to different contexts. FHI 360 commends the efforts of its CAP project partners who tested the risk reduction tool in their respective communities. Their feedback has been invaluable in improving and refining the RRAPS process and developing this manual. Purpose of the manual The SOP manual provides guidance to organisations implementing HIV prevention interventions at the community level for risk reduction implementation. It aims to assist organisations implementing HIV prevention programmes to think through the elements of risk reduction and apply them in their own settings. It encourages a targeted behaviour change approach for those who are setting out to: t 1SFWFOU*7 USBOTNJTTJPOCZ identifying and then supporting those who are vulnerable or at risk (referred throughout the manual as 'clients') in the community; and t 1SPWJEFTVQQPSUUPDMJFOUTUISPVHI information and education, taking into consideration the structural and social factors that impact behaviour, as well as increase access to services. The aim is to empower individuals to sustain, healthier behaviours.

The risk reduction process is as follows:

The risk reduction process for HIV involves several key steps aimed at minimizing transmission and impact. First, education and awareness play a crucial role in understanding HIV, its transmission, and the difference between HIV and AIDS. This includes efforts to reduce stigma, encouraging people to seek information, testing, and treatment without fear of judgment.

Prevention methods are essential in risk reduction. Promoting safe sex practices, such as the use of condoms and other barrier methods, is critical in reducing sexual transmission. Additionally, informing high-risk individuals about Pre-Exposure

Prophylaxis (PrEP) and Post-Exposure Prophylaxis (PEP) provides effective preventive measures. Implementing needle exchange programs helps prevent transmission through intravenous drug use by providing clean needles and syringes.

Testing and diagnosis are vital components in the process. Regular HIV testing, especially for high-risk populations, ensures early diagnosis and treatment. Confidential and accessible testing services increase testing uptake and help identify infections early, facilitating prompt intervention and care.

Treatment and care for people living with HIV include ensuring access to Antiretroviral Therapy (ART) to reduce viral load and prevent transmission. Supporting individuals to adhere to their treatment regimens is essential for the effectiveness of ART. Providing counseling and mental health services offers psychological support, while creating social support networks helps individuals cope with the social and emotional aspects of living with HIV.

Monitoring and evaluation of prevention and treatment programs are necessary to track progress and identify areas for improvement. Supporting ongoing research and innovation to develop new prevention methods, treatments, and potential cures for HIV ensures that efforts remain effective and up-to-date. Implementing these steps can significantly reduce the risk of HIV transmission and improve the quality of life for those affected by the virus.

Who is the manual aimed at? The manual targets those implementing or planning to implement the RRAPS. It is simple to use and utilises a step-by-step process to understand how to assess, identify, and encourage behaviour change for an individual. The contents of this manual are user-friendly, to enable facilitators to think through what risk reduction implies for community organisations and how to effectively address the key drivers of HIV. The RRAPS process and tool can be used by individuals including peer educators, counsellors, community health care workers, clinic staff and other individuals who work in a community setting. How to use the manual ? The manual provides instructions to the facilitator on how to

complete the RRAPS process. Facilitators should use the accompanying risk reduction tool during implementation with cli ents. To complement this toolkit, FHI 360 has produced a set of nine (9) Communication Guides on HIV Prevention on different risk topics for use by facilitators including: Alcohol Use Condoms Cross Generational Sex Delayed Sexual Debut Gender-Based Violence Multiple and Concurrent Sexual Partnerships Positive Health, Dignity and Prevention Relationship Enrichment Safe Male Circumcision The Communication Guides are designed to spark discussion on the key drivers of HIV, and helps participants think through and discuss strategies towards safer behaviours. They also provide facilitators with a better understanding of each risk topic, and give guidance on how to effectively work with individuals to promote behaviour change. The RRAPS tool and the Communication Guides are produced in both English and Setswana to suit the needs of the target audience.

II. GUIDELINES FOR THE MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS

PREFACE

Sexually transmitted infections (STIs) are among the most common causes of illness in the world and have far-reaching health, social and economic consequences for many countries. The emergence and spread of human immunodefi ciency virus (HIV) infection and acquired immunodefi ciency syndrome (AIDS) have had a major impact on the management and control of STIs. At the same time, resistance of several sexually transmitted pathogens to antimicrobial agents has increased, adding to therapeutic problems. In 1991, WHO published recommendations for the comprehensive management of patients with STIs within the broader context of control, prevention and care programmes for STI and HIV infection. WHO convened an Advisory Group Meeting on Sexually Transmitted Diseases Treatment in May 1999 to review and update treatment recommendations in the light of recent developments (see Annex 1). In November 2001, an expert consultation on improving the management of STIs was convened by WHO in Geneva (see Annex 2). The consultation focused on the syndromes of genital ulcers and vaginal discharge. The former because of the observed increase of herpes simplex virus type 2 (HSV2) as the main cause of genital ulcers in developing countries, and the

latter for its continued complexity and controversy as an entry point for managing cervical gonococcal and chlamydial infections. Recommendations from the consultation have led to the revisions included in this publication, covering the two areas of syndromic management of genital ulcer disease and vaginal discharge.

INTRODUCTION

Sexually transmitted infections (STIs) remain a public health problem of major signifi cance in most parts of the world. The incidence of acute STIs is believed to be high in many countries. Failure to diagnose and treat STIs at an early stage may result in serious complications and sequelae, including infertility, fetal wastage, ectopic pregnancy, anogental cancer and premature death, as well as neonatal and infant infections. The individual and national expenditure on STI care can be substantial. The appearance of HIV and AIDS has focused greater attention on the control of STIs. There is a strong correlation between the spread of conventional STIs and HIV transmission, and both ulcerative and non-ulcerative STIs have been found to increase the risk of sexual transmission of HIV. The emergence and spread of HIV infection and AIDS have also complicated the management and control of some other STIs. For example, owing to HIV-related immunosuppression, the treatment of chancroid has become increasingly diffi cult in areas with a high prevalence of HIV infection. Antimicrobial resistance of several sexually transmitted pathogens is increasing, rendering some regimen ineffective. New agents, such as third-generation cephalosporins and fl uoroquinolones, capable of treating infections with resistant strains, are available but remain expensive. However, their initial high cost must be weighed against the costs of inadequate therapy, including complications, relapse and further transmission of infection

Effective management of STIs is one of the cornerstones of STI control, as it prevents the development of complications and sequelae, decreases the spread of those infections in the community and offers a unique opportunity for targeted education about HIV prevention. Appropriate treatment of STIs at the fi rst contact between patients and health care providers is, therefore, an important public health measure. In the case of adolescent1 patients, there is the potential to infl uence future sexual behaviour and treatment-seeking practices at a critical stage of development. It is strongly recommended that countries establish and use national standardized treatment protocols for STIs. These can help to ensure that

all patients receive adequate treatment at all levels of health care services. The protocols can also facilitate the training and supervision of health care providers and can help to reduce the risk of development of resistance to antimicrobials. Finally, having a standardized list of antimicrobial agents can also facilitate drug procurement. It is anticipated that the recommendations contained in this document will help countries to develop standardized protocols adapted to local epidemiological and antimicrobial sensitivity patterns. It is recommended that national guidelines for the effective management of STIs be developed in close consultation with local STI and public health experts.

STI case management is the care of a person with an STI-related syndrome or with a positive test for one or more STIs. The components of case management include: history taking, clinical examination, correct diagnosis, early and effective treatment, advice on sexual behaviour, promotion and/or provision of condoms, partner notifi cation and treatment, case reporting and clinical follow-up as appropriate. Thus, effective case management consists not only of antimicrobial therapy to obtain cure and reduce infectivity, but also comprehensive consideration and care of the patient's reproductive health.

Etiological diagnosis of STIs is problematic for health care providers in many settings. It places constraints on their time and resources, increases costs and reduces access to treatment. In addition, the sensitivity and specifi city of commercially available tests can vary signifi cantly, affecting negatively the reliability of laboratory testing for STI diagnosis. Where laboratory facilities are available they must be staffed by suitably qualifi ed personnel with adequate training to perform technically demanding procedures, and the establishment of external quality control must be made mandatory. Many health care facilities in developing countries lack the equipment and trained personnel required for etiological diagnosis of STIs. To overcome this problem, a syndrome-based approach to the management of STI patients has been developed and promoted in a large number of countries in the developing world. The syndromic management approach is based on the identifi cation of consistent groups of symptoms and easily recognized signs (syndromes), and the provision of treatment that will deal with the majority of, or the most serious, organisms responsible for producing a syndrome. WHO has developed a simplifi ed tool (a fl owchart or algorithm) to guide health workers in the implementation of syndromic management of STIs.

Syndromic management for urethral discharge in men, and genital ulcers in men and women, has proved to be both valid and feasible. It has resulted in adequate treatment of large numbers of infected people, and is inexpensive, simple and very cost-effective. However, recent data have indicated that herpes simplex virus type 2 (HSV2) is fast becoming the commonest cause of genital ulcer disease (GUD) in developing countries. This may negatively affect the treatment outcome of GUD if antiviral therapy is not appropriately instituted.

WHO's simplifi ed generic tool includes fl owcharts for women with symptoms of vaginal discharge and/or lower abdominal pain. While the fl owcharts for abdominal pain are quite satisfactory, those for vaginal discharge have limitations, particularly in the management of cervical (gonococcal and chlamydial) infections. In general, but especially in low-prevalence settings and in adolescent females, endogenous vaginitis rather than an STI is the main cause of vaginal discharge. Attempts made to increase the sensitivity and specifi city of the vaginal discharge fl owchart for the diagnosis of cervical infection, by introducing an appropriate, situation-specifi c risk assessment, have not been successful. Some of the risk assessment questions based on demographics, such as age and marital status, tend to classify too many adolescents as being at risk of cervical infection. Therefore, there is a need to identify the main STI risk factors for adolescents in the local population and tailor the risk assessment accordingly. For adolescents in particular it may be preferable to base the risk factors on sexual behaviour patterns.

The fl owcharts currently available for the management of cervical infection, referred to in section 1.4, are therefore far from ideal. Initially, it was thought that the fi nding of vaginal discharge would be indicative of both vaginal and cervical infection. However, it has become clear that while vaginal discharge is indicative of the presence of vaginal infection, it is poorly predictive of cervical infection (gonococcal and/or chlamydial), particularly in adolescent females. Some clinical signs seem to be more frequently associated with the presence of cervical infection. In the published literature, clinical observations that have consistently been found to be associated with cervical infection are the presence of cervical mucopus, cervical erosions, cervical friability and bleeding between menses or during sexual intercourse. A number of demographic and behavioural risk factors have also been frequently associated with cervical infection. Some of those, which in some settings have been found to be predictive of cervical infection, are: being

less than 21 years old (25 in some places); being unmarried; having more than one sexual partner in the previous three months; having a new partner in the previous three months; having a current partner with an STI; recent use of condoms by the partner. Such risk factors are, however, usually specifi c for the population group for which they have been identifi ed and validated, and cannot easily be extrapolated to other populations or to other locations. Most researchers have suggested that it is important to obtain more than one demographic risk factor in any particular patient. Adding these signs and a risk assessment to the vaginal discharge fl owchart does increase its specifi city and, therefore, its positive predictive value, although the latter remains low especially when the fl owchart is applied to populations with relatively low rates of infection.

SELECTION OF DRUGS: Antimicrobial resistance of several sexually transmitted pathogens has been increasing in many parts of the world and this has rendered some low-cost regimen ineffective. Recommendations to use more effective drugs frequently raise concerns about cost and possible misuse. A two-tier drug policy with the provision of less effective drugs at the peripheral health care level and the most effective and usually more expensive drugs only at a referral level may result in an unacceptable rate of treatment failures, complications and referrals, and may erode confi dence in health services. This approach is not recommended. The drugs used for STI treatment in all health care facilities should have an effi cacy of at least 95%. Criteria for the selection of drugs are listed in the box below.

Criteria for the selection of STI drugs Drugs selected for treating STI should meet the following criteria: ■ high effi cacy (at least 95%) ■ low cost ■ acceptable toxicity and tolerance ■ organism resistance unlikely to develop or likely to be delayed ■ single dose ■ oral administration ■ not contraindicated for pregnant or lactating women. Appropriate drugs should be included in the national essential drugs list and in choosing drugs, consideration should be given to the capabilities and experience of health personnel.

2. TREATMENT OF STI-ASSOCIATED SYNDROMES

This section discusses the management of the most common clinical syndromes caused by sexually transmitted agents. Flowcharts for the management of each syndrome are provided. For all these conditions (except vaginitis) the sexual

partner(s) of patients should also be examined for STIs and promptly treated for the same condition(s) as the index patient. Successful management of STIs requires members of staff to be respectful of patients and not to be judgemental. Clinical examination must take place in appropriate surroundings where privacy can be ensured and confi dentiality guaranteed. When dealing with adolescents, the health care provider should be reassuring, experienced and conversant with the changes in anatomy and physiology associated with the different maturation stages, e.g. the menarche in girls or nocturnal emissions in boys. In some situations, health care workers require training to overcome their own sensitivities and to be able to address the issues associated with sexuality and STIs in an open and constructive manner.

URETHRAL DISCHARGE

Male patients complaining of urethral discharge and/or dysuria should be examined for evidence of discharge. If none is seen, the urethra should be gently massaged from the ventral part of the penis towards the meatus. If microscopy is available, examination of the urethral smear may show an increased number of polymorphonuclear leukocytes and a Gram stain may demonstrate the presence of gonococci. In the male, more than 5 polymorphonuclear leukocytes per high power fi eld (x 1000) are indicative of urethritis.

The major pathogens causing urethral discharge are Neisseria gonorrhoeae (N. gonorrhoeae) and Chlamydia trachomatis (C. trachomatis). In the syndromic management, treatment of a patient with urethral discharge should adequately cover these two organisms. Where reliable laboratory facilities are available, a distinction can be made between the two organisms and specifi c treatment instituted. Recommended syndromic treatment ■ therapy for uncomplicated gonorrhoea (for details see section 3.1) PLUS ■ therapy for chlamydia (for details see section 3.2) Note ■ Patients should be advised to return if symptoms persist 7 days after start of therapy.

PERSISTENT OR RECURRENT URETHRAL DISCHARGE. Persistent or recurrent symptoms of urethritis may result from drug resistance, poor compliance or reinfection. In some cases there may be infection with Trichomonas vaginalis (T. vaginalis). New evidence suggests a high prevalence of T. vaginalis in men with urethral discharge in some geographical areas. Where symptoms persist or recur

after adequate treatment for gonorrhoea and chlamydia in the index patient and partner(s), the patient should be treated for T. vaginalis if the local epidemiological pattern so indicates. If the symptoms still persist at follow-up the patient must be referred. For details, see section 3.9.

GENITAL ULCERS The relative prevalence of causative organisms for GUD varies considerably in different parts of the world and may change dramatically over time. Clinical differential diagnosis of genital ulcers is inaccurate, particularly in settings where several etiologies are common. Clinical manifestations and patterns of GUD may be further altered in the presence of HIV infection. After examination to confi rm the presence of genital ulceration, treatment appropriate to local etiologies and antimicrobial sensitivity patterns should be given. In areas where both syphilis and chancroid are prevalent, for example, patients with genital ulcers should be treated for both conditions at the time of their initial presentation, to ensure adequate therapy in case of loss to follow-up. In areas where either granuloma inguinale or lymphogranuloma venereum (LGV) is prevalent, treatment for either or both conditions should be included for the same reason. Recent reports from parts of Africa, Asia and Latin America indicate that GUD is more frequently a result of HSV2 infections. This has implications for the effi cacy of the syndromic management of GUD if specifi c antiviral treatment of HSV2 is not considered. In areas of high HIV/AIDS prevalence, the clinical presentation of these HSV2 ulcers is different from the classical descriptions.

GENITAL ULCERS AND HIV INFECTION There have been a number of anecdotal reports in the literature suggesting that the natural history of syphilis may be altered as a result of concomitant HIV infection. Some reports have indicated atypical presentations of both primary and secondary syphilis lesions. Some have noted an increase in treatment failure rates among patients with early syphilis who are treated with single-dose therapies of penicillin. In chancroid, atypical lesions have been reported in HIV-infected individuals. The lesions tend to be more extensive, or multiple lesions may form that are sometimes accompanied by systemic manifestations such as fever and chills. Reports of rapidly aggressive lesions have been noted by some clinicians. This emphasizes the need for early treatment, especially in HIV-infected individuals. There is evidence to suggest that HIV infection may increase rates of treatment failure in chancroid, especially when single-dose therapies are given. More research is needed to confi rm these

observations. In immunosuppressed individuals, herpes simplex lesions may present as persistent multiple ulcers that require medical attention, as opposed to the self-limiting vesicles and ulcers which occur in immunocompetent individuals. Thus, antiviral treatment is particularly important in such instances, to be given therapeutically or prophylactically to offer comfort to the patient. Adequate education needs to be given to the patient as well, to explain the nature and purpose of treatment and in order to avoid false expectations of cure.

Recommended syndromic treatment ■ therapy for syphilis (for details see section 3.4) PLUS EITHER ■ therapy for chancroid where it is prevalent (for details see section 3.5) OR ■ therapy for granuloma inguinale where it is prevalent (for details see section 3.6) OR ■ therapy for LGV where it is prevalent (for details see section 3.3) OR ■ therapy for HSV2 infection where indicated (for details, see section 3.7)

Note ■ The decision to treat for chancroid, granuloma inguinale or LGV depends on the local epidemiology of the infections. ■ Specifi c treatment for herpes genitalis is recommended as it offers clinical benefi ts to most symptomatic patients. Health education and counselling regarding the recurrent nature of genital herpes lesions, the natural history, sexual transmission, probable perinatal transmission of the infection and available methods to reduce transmission, are an integral part of genital herpes management (see section 3.7).

Genital Ulcer Disease Management Herpes Simplex Management ■ Treat for syphilis, and, depending upon ■ Advise on basic care of the lesion local epidemiology, either chancroid, (keep clean and dry) granuloma inguinale or ■ Provide or prescribe specifi c antiviral herpes lymphogranuloma venereum treatment according to local policy ■ Aspirate any fl uctuant glands ■ Educate and counsel on compliance, risk (surgical incision should be avoided) reduction and natural history of HSV2 infection ■ Educate and counsel on risk reduction ■ Offer syphilis and HIV serologic testing ■ Offer syphilis serologic testing and where appropriate facilities and counselling HIV serologic testing where appropriate are available facilities and counselling are available ■ Promote condom use and provide condoms ■ Review if lesion not fully healed in 7 days ■ Advise to return in 7 days if lesion is not ■ Promote condom use and provide condoms fully healed, and sooner

if there is clinical deterioration; if so, treat for other causes of GUD as per guidelines.

INGUINAL BUBO Inguinal and femoral buboes are localised enlargements of the lymph nodes in the groin area, which are painful and may be fl uctuant. They are frequently associated with LGV and chancroid. In many cases of chancroid an associated genital ulcer is visible. Non-sexually transmitted local and systemic infections (e.g. infections of the lower limb or tuberculous lymphadenopathy) can also cause swelling of inguinal lymph nodes. Recommended syndromic treatment ■ ciprofl oxacin, 500 mg orally, twice daily for 3 days AND ■ doxycycline, 100 mg orally, twice daily for 14 days OR ■ erythromycin, 500 mg orally, four times daily for 14 days Note ■ Some cases may require longer treatment than the 14 days recommended above. Fluctuant lymph nodes should be aspirated through healthy skin. Incision and drainage or excision of nodes may delay healing and should not be attempted. Where there is doubt and/or treatment failure, referral for diagnostic biopsy is advisable.

SCROTAL SWELLING Infl ammation of the epididymis (epididymitis) usually manifests itself by acute onset of unilateral testicular pain and swelling, often with tenderness of the epididymis and vas deferens, and occasionally with erythema and oedema of the overlying skin. In men under 35 years this is more frequently caused by sexually transmitted organisms than in those over 35 years. When the epididymitis is accompanied by urethral discharge, it should be presumed to be of sexually transmitted origin, commonly gonococcal and/or chlamydial in nature. The adjacent testis is often also infl amed (orchitis), giving rise to epididymo-orchitis. In older men, where there may have been no risk of a sexually transmitted infection, other general infections may be responsible, for example, Escherichia coli, Klebsiella spp. or Pseudomonas aeruginosa. A tuberculous orchitis, generally accompanied by an epididymitis, is always secondary to lesions elsewhere, especially in the lungs or bones. In brucellosis, usually caused by Brucella melitensis or Brucella abortus, an orchitis is usually clinically more evident than an epididymitis. In pre-pubertal children the usual etiology is coliform, pseudomonas infection or mumps virus. Mumps epididymo-orchitis is usually noted within a week of parotid enlargement. It is important to consider other non-infectious causes of scrotal swelling, such as trauma, testicular torsion and tumour. Testicular torsion, which should be suspected when onset of scrotal pain is sudden, is a surgical

emergency that needs urgent referral. If not effectively treated, STI-related epididymitis may lead to infertility. Recommended syndromic treatment ■ therapy for uncomplicated gonorrhoea (for details, see section 3.1) PLUS ■ therapy for chlamydia (for details, see section 3.2).

VAGINAL DISCHARGE A spontaneous complaint of abnormal vaginal discharge (in terms of quantity, colour or odour) is most commonly a result of a vaginal infection. It may in rare cases be caused by mucopurulent STI-related cervicitis. T. vaginalis, C. albicans and bacterial vaginosis (BV) are the commonest causes of vaginal infection. N. gonorrhoeae and C. trachomatis cause cervical infection. The clinical detection of cervical infection is diffi cult because a large proportion of women with gonococcal or chlamydial cervical infection is asymptomatic. The symptom of abnormal vaginal discharge is highly indicative of vaginal infection, but poorly predictive for cervical infection. Thus, all women presenting with vaginal discharge should receive treatment for trichomoniasis and BV. Among women presenting with discharge, one can attempt to identify those with an increased likelihood of being infected with N. gonorrhoeae and/or C. trachomatis. To identify women at greater risk, therefore, of cervical infection, an assessment of a woman's risk status may be useful, especially when risk factors are adapted to the local situation. Given that microscopy requires special training, is time consuming and adds relatively little given the amount of time and resources it requires, it is generally not recommended at the primary health care level. However, in settings where Gram stain can be carried out in an effi cient manner, such as a referral clinic, identifi cation of Gram-negative intracellular diploccoci and/or T. vaginalis can be attempted. Knowledge of the local prevalence of gonococcal and/or chlamydia in women presenting with vaginal discharge is important when making the decision to treat for cervical infection. The higher the prevalence, the stronger the justifi cation for treatment. Women with a positive risk assessment have a higher likelihood of cervical infection than those who are risk negative. Women with vaginal discharge and a positive risk assessment should, therefore, be offered treatment for gonococcal and chlamydia cervicitis. Where resources permit, the use of laboratory tests to screen women with vaginal discharge should be considered. Such screening could be applied to all women with discharge or selectively to those with discharge and a positive risk assessment.

In some countries, syndromic management fl owcharts have been used as a screening tool to detect cervical infection among women not presenting with a genital complaint (e.g. in family planning settings). While this may assist in detecting some women with cervical infections, it is likely that there will be substantial over diagnosis. CERVICAL INFECTION Recommended syndromic treatment ■ therapy for uncomplicated gonorrhoea (for details, see section 3.1) PLUS ■ therapy for chlamydia (for details, see section 3.2),

LOWER ABDOMINAL PAIN All sexually active women presenting with lower abdominal pain should be carefully evaluated for the presence of salpingitis and/or endometritis — elements of pelvic infl ammatory disease (PID). In addition, routine bimanual and abdominal examination should be carried out on all women with a presumptive STI since some women with PID or endometritis will not complain of lower abdominal pain. Women with endometritis may present with complaints of vaginal discharge and/or bleeding and/or uterine tenderness on pelvic examination. Symptoms suggestive of PID include abdominal pain, dyspareunia, vaginal discharge, menometrorrhagia, dysuria, fever, and sometimes nausea and vomiting. PID is diffi cult to diagnose because clinical manifestations are varied. PID becomes highly probable when one or more of the above symptoms are seen in a woman with adnexal tenderness, evidence of lower genital tract infection, and cervical motion tenderness. Enlargement or induration of one or both fallopian tubes, a tender pelvic mass, and direct or rebound tenderness may also be present. The patient's temperature may be elevated but is normal in many cases. In general, clinicians should err on the side of over-diagnosing and treating suspected cases. Hospitalization of patients with acute PID should be seriously considered when: ■ the diagnosis is uncertain; ■ surgical emergencies such as appendicitis and ectopic pregnancy cannot be excluded; ■ a pelvic abscess is suspected; ■ severe illness precludes management on an outpatient basis; ■ the patient is pregnant; ■ the patient is unable to follow or tolerate an outpatient regimen; or ■ the patient has failed to respond to outpatient therapy. Many experts recommend that all patients with PID should be admitted to hospital for treatment. Etiological agents include N. gonorrhoeae, C. trachomatis, anaerobic bacteria (Bacteroides spp. and Gram-positive cocci). Facultative Gram-negative rods and Mycoplasma hominis have also been implicated. As it is impossible to differentiate between these clinically, and a precise microbiological diagnosis is diffi cult, the treatment regimen must be

effective against this broad range of pathogens. The regimen recommended below are based on this principle.

OUTPATIENT THERAPY Recommended syndromic treatment ■ single-dose therapy for uncomplicated gonorrhoea (see section 3.1. Single-dose ceftriaxone has been shown to be effective; other single-dose regimen have not been formally evaluated as treatments for PID) PLUS ■ doxycycline, 100 mg orally, twice daily, or tetracycline, 500 mg orally, 4 times daily for 14 days PLUS ■ metronidazole, 400–500 mg orally, twice daily for 14 days Note ■ Patients taking metronidazole should be cautioned to avoid alcohol. ■ Tetracyclines are contraindicated in pregnancy. Adjuncts to therapy: removal of intrauterine device (IUD) If PID should occur with an IUD in place, treat the PID using appropriate antibiotics. There is no evidence that removal of the IUD provides any additional benefi t.2,3,4 Thus, if the individual should wish to continue its use, it need not be removed. If she does not want to keep the IUD, removal of the IUD is recommended after antimicrobial therapy has been commenced. When the IUD is removed, contraceptive counselling is necessary. Follow-up Outpatients with PID should be followed up after 72 hours and admitted if their condition has not improved.

INPATIENT THERAPY Recommended syndromic treatment options for PID 1. Ceftriaxone, 250 mg by intramuscular injection, once daily PLUS ■ doxycycline, 100 mg orally or by intravenous injection, twice daily, or tetracycline, 500 mg orally 4 times daily PLUS ■ metronidazole, 400–500 mg orally or by intravenous injection, twice daily, or chloramphenicol, 500 mg orally or by intravenous injection, 4 times daily 2. Clindamycin, 900 mg by intravenous injection, every 8 hours PLUS ■ gentamicin, 1.5 mg/kg by intravenous injection every 8 hours 3. Ciprofl oxacin, 500 mg orally, twice daily, or spectinomycin 1 g by intramuscular injection, 4 times daily PLUS ■ doxycycline, 100 mg orally or by intravenous injection, twice daily, or tetracycline, 500 mg orally, 4 times daily PLUS ■ metronidazole, 400–500 mg orally or by intravenous injection, twice daily, or chloramphenicol, 500 mg orally or by intravenous injection, 4 times daily Note ■ For all three regimen, therapy should be continued until at least two days after the patient has improved and should then be followed by either doxycycline, 100 mg orally, twice daily for 14 days, or tetracycline, 500 mg orally, 4 times daily, for 14 days. ■ Patients taking metronidazole should be cautioned to avoid alcohol. ■ Tetracyclines are contraindicated in pregnancy.

NEONATAL CONJUNCTIVITIS Neonatal conjunctivitis (ophthalmia neonatorum) can lead to blindness when caused by N. gonorrhoeae and treatment is delayed. The most important sexually transmitted pathogens which cause ophthalmia neonatorum are N. gonorrhoeae and C. trachomatis. In developing countries, N. gonorrhoeae accounts for 20–75% and C. trachomatis for 15–35% of cases brought to medical attention. Other common causes are Staphylococcus aureus, Streptococcus pneumoniae, Haemophilus spp. and Pseudomonas spp. Newborn babies are generally presented because of redness and swelling of the eyelids or "sticky eyes", or because of discharge from the eye(s). As the clinical manifestations and possible complications of gonococcal and chlamydial infections are similar, in settings where it is impossible to differentiate between the two infections, treatment should be provided to cover both. This would include single-dose therapy for gonorrhoea and multiple dose therapy for chlamydia.

3. TREATMENT OF SPECIFIC INFECTIONS 3.1.

GONOCOCCAL INFECTIONS

A large proportion of gonococcal isolates worldwide are now resistant to penicillins, tetracyclines, and other older antimicrobial agents. Therefore, these drugs can no longer be recommended for the treatment of gonorrhoea. It is important to monitor local in vitro susceptibility, as well as the clinical effi cacy of recommended regimen. In general it is recommended that concurrent anti-chlamydia therapy be given to all patients with gonorrhoea, as described in section 3.2, because dual infection is common. This does not apply to patients in whom a specifi c diagnosis of C. trachomatis has been excluded by a laboratory test.

Recommended regimen ■ ciprofl oxacin, 500 mg orally, as a single dose OR ■ ceftriaxone, 125 mg by intramuscular injection, as a single dose OR ■ cefi xime, 400 mg orally, as a single dose OR ■ spectinomycin, 2 g by intramuscular injection, as a single dose Note ■ Ciprofl oxacin is contraindicated in pregnancy, and is not recommended for use in children and adolescents. ■ There are variations in the anti-gonococcal activity of individual quinolones, and it is important to use only the most active

DISSEMINATED GONOCOCCAL INFECTION:

Recommended regimen ■ ceftriaxone, 1 g by intramuscular or intravenous injection, once daily for 7 days (alternative third-generation cephalosporins may be required where ceftriaxone is not available, but more frequent administrations will be needed) OR ■ spectinomycin, 2 g by intramuscular injection, twice daily for 7 days. There are some data to suggest that therapy for 3 days is adequate Note ■ For gonococcal meningitis and endocarditis the same dosages apply but for endocarditis the duration of therapy will need to be increased to 4 weeks.

GONOCOCCAL OPHTHALMIA:

This is a serious condition that requires systemic therapy as well as local irrigation with saline or other appropriate solutions. Irrigation is particularly important when the recommended therapeutic regimen are not available. Careful hand washing by personnel caring for infected patients is essential. A. Adult gonococcal conjunctivitis Recommended regimen ■ ceftriaxone, 125 mg by intramuscular injection, as a single dose OR ■ spectinomycin, 2 g by intramuscular injection, as a single dose OR ■ ciprofl oxacin, 500 mg orally, as a single dose Note ■ This regimen is likely to be effective although there are no published data on its use in gonococcal ophthalmia. Alternative regimen where the recommended agents are not available ■ kanamycin, 2 g by intramuscular injection, as a single dose Follow-up Careful monitoring of clinical progress is important. B. Neonatal gonococcal conjunctivitis Recommended regimen ■ ceftriaxone, 50 mg/kg by intramuscular injection, as a single dose, to a maximum of 125 mg Alternative regimen where ceftriaxone is not available ■ kanamycin, 25 mg/kg by intramuscular injection, as a single dose, to a maximum of 75 mg OR ■ spectinomycin, 25 mg/kg by intramuscular injection, as a single dose, to a maximum of 75 mg Note ■ Single-dose ceftriaxone and kanamycin are of proven effi cacy. The addition of tetracycline eye ointment to these regimen is of no documented benefi t. Follow-up Patients should be reviewed after 48 hours. Prevention of ophthalmia neonatorum Gonococcal ophthalmia neonatorum is preventable with timely eye prophylaxis. The infant's eyes should be carefully cleaned immediately after birth. The application of 1% silver nitrate solution or 1% tetracycline ointment to the eyes of all infants at the time of delivery is strongly recommended as a prophylactic measure. However, ocular prophylaxis provides poor protection against C. trachomatis conjunctivitis. Infants born to mothers with

gonococcal infection should receive additional treatment. Recommended regimen for infants born to mothers with gonococcal infection ■ ceftriaxone 50 mg/kg by intramuscu Alternative regimen where ceftriaxone is not available ■ kanamycin, 25 mg/kg by intramuscular injection, as a single dose, to a maximum of 75 mg OR ■ spectinomycin, 25 mg/kg by intramuscular injection, as a single dose, to a maximum of 75 mg 3.2. lar injection, as a single dose, to a maximum of 125 mg.

CHLAMYDIA TRACHOMATIS INFECTIONS (OTHER THAN LYMPHOGRANULOMA VENEREUM)

UNCOMPLICATED ANOGENITAL INFECTION Recommended regimen ■ doxycycline, 100 mg orally, twice daily for 7 days OR ■ azithromycin, 1 g orally, in a single dose Alternative regimen ■ amoxycillin, 500 mg orally, 3 times a day for 7 days OR ■ erythromycin, 500 mg orally, 4 times a day for 7 days OR ■ ofl oxacin, 300 mg orally, twice a day for 7 days OR ■ tetracycline, 500 mg orally, 4 times a day for 7 days Note ■ Doxycyline and other tetracyclines are contraindicated during pregnancy and lactation. ■ Current evidence indicates that 1 g single-dose therapy of azithromycin is effi cacious for chlamydial infection. ■ There is evidence that extending the duration of treatment beyond 7 days does not improve the cure rate in uncomplicated chlamydial infection. ■ Erythromycin should not be taken on an empty stomach.

Follow-up Compliance with the 7-day regimen is critical. Resistance of C. trachomatis to recommended treatment regimen has not been observed. CHLAMYDIAL INFECTION DURING PREGNANCY Recommended regimen ■ erythromycin, 500 mg orally, 4 times a day for 7 days OR ■ amoxycillin, 500 mg orally, three times a day for 7 days Note ■ Doxycycline (and other tetracyclines) and ofl oxacin are contraindicated in pregnant women. ■ Preliminary data suggest that azithromycin is safe to use in pregnant women.5,6 However, the number of women in the trials so far is too small to assess safety for use in pregnancy as rare adverse outcomes are unlikely to be detected. ■ Erythromycin estolate is contraindicated during pregnancy because of drug related hepato-toxicity. Hence, only erythromycin base or erythromycin ethylsuccinate should be used. NEONATAL CHLAMYDIAL CONJUNCTIVITIS All newborn infants with conjunctivitis should be treated for both N. gonorrhoeae and C. trachomatis, because of the possibility of

mixed infection. Recommended regimen ■ erythromycin syrup, 50 mg/kg per day orally, in 4 divided doses for 14 days Alternative regimen ■ trimethoprim 40 mg with sulfamethoxazole 200 mg orally, twice daily for 14 days.

Note ■ There is no evidence that additional therapy with a topical agent provides further benefit. If inclusion conjunctivitis recurs after therapy has been completed, erythromycin treatment should be reinstituted for 2 weeks. INFANTILE PNEUMONIA Recommended regimen ■ erythromycin syrup, 50 mg/kg per day (given orally in four doses) for 14 days Note ■ The optimal duration of therapy has not been defi nitively established, but treatment should not be less than 14 days. 3.3. LYMPHOGRANULOMA VENEREUM There are limited published data on the treatment of LGV. Treatment recommendations are based on expert opinion and a comparative study published in the WHO Bulletin in 1963.7 Recommended regimen ■ doxycycline, 100 mg orally, twice daily for 14 days OR ■ erythromycin, 500 mg orally, 4 times daily for 14 days Alternative regimen ■ tetracycline, 500 mg orally, 4 times daily for 14 days Note ■ Tetracyclines are contraindicated in pregnancy. ■ Fluctuant lymph nodes should be aspirated through healthy skin. Incision and drainage or excision of nodes may delay healing. Some patients with advanced disease may require treatment for longer than 14 days, and sequelae such as strictures and/or fistulae may require surgery.

SYPHILIS CLINICAL PRESENTATION SUMMARY Syphilis is a systemic disease from the outset and is caused by the spirochaete, Treponema pallidum (T. pallidum). The infection can be classifi ed as congenital (transmitted from mother to child in utero) or acquired (through sex or blood transfusion). Acquired syphilis is divided into early and late syphilis. Early syphilis comprises the primary, secondary and early latent stages. Late syphilis refers to late latent syphilis, gummatous, neurological and cardiovascular syphilis. Primary syphilis is characterised by an ulcer or chancre at the site of infection or inoculation. Secondary syphilis manifestations include a skin rash, condylomata lata, mucocutaneous lesions and generalised lymphadenopathy. As its name implies, latent syphilis has no clinical manifestations. Early latent syphilis is infection of less than two years duration. An infection of more than two years duration without clinical evidence of treponemal infection is referred to as late latent syphilis. WHO has based this division on the

infectiousness of syphilis and its response to therapy. Early stages are more infectious but respond better to treatment. In the early phase of primary syphilis the cardiolipin/non-treponemal tests, such as the Venereal Disease Research Laboratory (VDRL) and rapid plasma reagin (RPR) tests may be negative and should, therefore, not be interpreted as absence of syphilis infection. Therapeutic considerations A treponemicidal level of antimicrobials needs to be achieved in the serum and cerebrospinal fl uid (CSF) to provide effective treatment for syphilis. A penicillin level of greater than 0.018 mg per litre is considered suffi cient, and needs to be maintained for at least 7–10 days in early syphilis, and for a longer duration in late syphilis. Long-acting benzathine benzylpenicillin, at a dose of 2.4 million units, provides a treponemicidal penicillinaemia for up to three weeks and is recommended for late syphilis treatment. Parenteral, rather than oral, penicillin treatment is preferred as it provides guaranteed bioavailability and supervised treatment. More data are required before either ceftriaxone or oral azithromycin can be generally recommended. Azithromycin has the advantage of being effective against C. trachomatis, H. ducreyi and the gonococcus. Management of patients with cardiovascular syphilis should include consultation with a cardiologist. All patients with cardiovascular syphilis and neurosyphilis should be monitored for many years. The follow-up should include clinical, serological, CSF and, based on the clinician's assessment of the individual patient's condition, radiological examinations. Follow-up of patients treated for syphilis The follow-up of patients treated for early syphilis should be based on available medical services and resources. The clinical condition of the patients should be assessed and attempts made to detect reinfection during the fi rst year after therapy. Patients with early syphilis who have been treated with appropriate doses and preparations of benzathine benzylpenicillin should be evaluated clinically and serologically, using a non-treponemal test, after three months to assess the results of therapy. A second evaluation should be performed after six months and, if indicated by the results at this point, again after 12 months to reassess the condition of the patient and detect possible reinfection. At all stages of the disease, repeat treatment should be considered when: ■ clinical signs or symptoms of active syphilis persist or recur; ■ there is confi rmed increase in the titre of a non-treponemal test. Examination of the CSF should be undertaken before repeat treatment, unless reinfection and a diagnosis of early syphilis can be established. Patients should be re-treated with the schedules recommended for syphilis of more than two years' duration. In

general, only one re-treatment course is indicated because adequately treated patients often maintain stable, low titres of non-treponemal tests.

SYPHILIS AND HIV INFECTION All patients with syphilis should be encouraged to undergo testing for HIV infection because of the high frequency of dual infection and its implications for clinical assessment and management. Neurosyphilis should be considered in the differential diagnosis of neurological disease in HIV-infected individuals. In cases of congenital syphilis, the mother should be encouraged to undergo testing for HIV; if her test is positive, the infant should be referred for follow-up. Recommended therapy for early syphilis in HIV-infected patients is no different from that in patients not infected with HIV. However, some authorities advise examination of the CSF and/or more intensive treatment with a regimen appropriate for all patients with the dual infections of T. pallidum and HIV, regardless of the clinical stage of syphilis. In all cases, careful follow-up is necessary to ensure adequacy of treatment. SYPHILIS IN PREGNANCY Pregnant women should be regarded as a separate group, requiring close surveillance, in particular to detect possible reinfection after treatment has been given. It is also important to treat their sexual partner(s). Pregnant patients at all stages of pregnancy, who are not allergic to penicillin, should be treated with penicillin according to the dosage schedules recommended for the treatment of non pregnant patients at a similar stage of the disease. The effectiveness of erythromycin in all stages of syphilis and its ability to prevent the stigmata of congenital syphilis are both highly questionable, and many failures have been reported. Its effi cacy in neurosyphilis is probably low. Although data are lacking, consideration should probably be given to using an extended course of a third-generation cephalosporin in pregnant women whose penicillin allergy is not manifested by anaphylaxis. Penicillin desensitisation of pregnant women with syphilis requires that the procedure be performed in a hospital setting. This is not feasible at most primary health care settings and cannot be recommended as a routine procedure.

Follow-up Following treatment, quantitated non-treponemal serological tests should be performed at monthly intervals until delivery, and re-treatment should be undertaken if there is serological evidence of reinfection or relapse. CONGENITAL SYPHILIS Congenital syphilis is divided into early (fi rst two years of life) and late (becomes apparent later in life). Prevention of congenital syphilis is feasible. Programmes should implement effective screening strategies for syphilis

in pregnant women. Screening for syphilis should be conducted at the fi rst prenatal visit. Some programmes have found it benefi cial to repeat the tests at 28 weeks of pregnancy and at delivery in populations with a high incidence of congenital syphilis. Congenital syphilis may occur if the expectant mother has syphilis, but the risk is minimal if she has been given penicillin during pregnancy. All infants of seropositive mothers should be examined at birth and at monthly intervals for three months until it is confi rmed that serological tests are, and remain, negative. Any antibody carried over from mother to baby usually disappears within three months of birth. Where available, IgM-specifi c serology may aid diagnosis. All infants born to seropositive mothers should be treated with a single intramuscular dose of benzathine benzylpenicillin, 50 000 IU/kg whether or not the mothers were treated during pregnancy (with or without penicillin). Hospitalization is recommended for all symptomatic babies born to mothers who were seropositive. Symptomatic infants and asymptomatic infants with abnormal CSF (up to two years of age) should be treated as for early congenital syphilis. Early congenital syphilis generally responds well, both clinically and serologically, to adequate doses of penicillin. Recovery may be slow in seriously ill children with extensive skin, mucous membrane, bone or visceral involvement. Those in poor nutritional condition may succumb to concurrent infections, such as pneumonia.

TREATMENT REGIMEN FOR SYPHILIS EARLY SYPHILIS (primary, secondary, or latent syphilis of not more than two years' duration) Recommended regimen ■ benzathine benzylpenicillin,8 2.4 million IU by intramuscular injection, at a single session. Because of the volume involved, this dose is usually given as two injections at separate sites Alternative regimen ■ procaine benzylpenicillin,9 1.2 million IU by intramuscular injection, daily for 10 consecutive days Alternative regimen for penicillin-allergic non-pregnant patients ■ doxycycline, 100 mg orally, twice daily for 14 days OR ■ tetracycline, 500 mg orally, 4 times daily for 14 days Alternative regimen for penicillin-allergic pregnant patients ■ erythromycin, 500 mg orally, 4 times daily for 14 days LATE LATENT SYPHILIS (infection of more than two years' duration without evidence of treponemal infection) Recommended regimen ■ benzathine benzylpenicillin, 2.4 million IU by intramuscular injection, once weekly for 3 consecutive weeks.

Alternative regimen ■ procaine benzylpenicillin, 1.2 million IU by intramuscular injection, once daily for 20 consecutive days Alternative regimen for penicillin-

allergic non-pregnant patients ■ doxycycline, 100 mg orally, twice daily for 30 days OR ■ tetracycline, 500 mg orally, 4 times daily for 30 days Alternative regimen for penicillin-allergic pregnant patients ■ erythromycin, 500 mg orally, 4 times daily for 30 days NEUROSYPHILIS Recommended regimen ■ aqueous benzylpenicillin,10 12–24 million IU by intravenous injection, administered daily in doses of 2–4 million IU, every 4 hours for 14 days Alternative regimen ■ procaine benzylpenicillin, 1.2 million IU by intramuscular injection, once daily, and probenecid, 500 mg orally, 4 times daily, both for 10–14 days This regimen should be used only for patients whose outpatient compliance can be assured. Note ■ Some authorities recommend adding benzathine benzylpenicillin, 2.4 million IU by intramuscular injection, in 3 consecutive doses once weekly, after completing these regimen, but there are no data to support this approach. Benzathine benzylpenicillin, 2.4 million IU by intramuscular injection does not give adequate therapeutic levels in the CSF.

Alternative regimen for penicillin-allergic non-pregnant patients ■ doxycycline, 200 mg orally, twice daily for 30 days OR ■ tetracycline, 500 mg orally, 4 times daily for 30 days Note ■ The above alternatives to penicillin for the treatment of neurosyphilis have not been evaluated in systematic studies. Although their efficacy is not yet well documented, third-generation cephalosporins may be useful in the treatment of neurosyphilis. ■ The central nervous system may be involved during any stage of syphilis. Clinical evidence of neurological involvement (e.g. optic or auditory symptoms, or cranial nerve palsies) warrants examination of the CSF. However, examination of the CSF is also highly desirable in all patients with syphilis of more than two years' duration, or of uncertain duration, in order to evaluate the possible presence of asymptomatic neurosyphilis. Some experts recommend consulting a neurologist when caring for a patient with neurosyphilis. Careful follow-up is essential. CONGENITAL SYPHILIS A. Early congenital syphilis (up to 2 years of age) AND Infants with abnormal CSF Recommended regimen ■ aqueous benzylpenicillin 100 000–150 000 IU/kg/day administered as 50 000 IU/kg/dose IV every 12 hours, during the first 7 days of life and every 8 hours thereafter for a total of 10 days OR ■ procaine benzylpenicillin, 50 000 IU/kg by intramuscular injection, as a single daily dose for 10 days Note ■ Some experts treat all infants with congenital syphilis as if the CSF findings were abnormal. Antimicrobials other than penicillin (e.g. erythromycin) are not recommended for congenital syphilis except in cases of allergy to penicillin. Tetracyclines should not

be used in young children. B. Congenital syphilis of 2 or more years Recommended regimen ■ aqueous benzylpenicillin, 200 000–300 000 IU/kg/day by intravenous or intramuscular injection, administered as 50 000 IU/kg/dose every 4–6 hours for 10–14 days Alternative regimen for penicillin-allergic patients, after the first month of life ■ erythromycin, 7.5–12.5 mg/kg orally, 4 times daily for 30 days.

CHANCROID The causative organism is a Gram-negative facultative anaerobic bacillus, H. ducreyi. The infection is common in several parts of the world including Africa, the Caribbean and south-east Asia. Owing to widespread antimicrobial resistance in all geographical areas, tetracyclines and penicillins are not recommended for treatment of chancroid. To enhance compliance, single-dose treatments with effective antibiotics are preferred. Management of lesions No special treatment is required. Ulcerative lesions should be kept clean. Fluctuant lymph nodes should be aspirated as required through the surrounding healthy skin. Incision and drainage or excision of nodes may delay healing and is not recommended. Follow-up All patients should be followed up until there is clear evidence of improvement or cure. In patients infected with HIV, treatment may appear to be less effective, but this may be a result of coinfection with genital herpes or syphilis. Since chancroid and HIV infection are closely associated, and therapeutic failure is likely to be seen with increasing frequency, patients should be followed up weekly until there is clear evidence of improvement.

Recommended regimen ■ ciprofl oxacin, 500 mg orally, twice daily for 3 days OR ■ erythromycin base, 500 mg orally, 4 times daily for 7 days OR ■ azithromycin, 1 g orally, as a single dose Alternative regimen ■ ceftriaxone, 250 mg by intramuscular injection, as a single dose.

GRANULOMA INGUINALE (DONOVANOSIS) Donovanosis is caused by the intracellular Gram-negative bacterium Klebsiella granulomatis, (previously known as Calymmatobacterium granulomatis). The disease presents clinically as painless, progressive, ulcerative lesions without regional lymphadenopathy. The lesions are highly vascular and can easily bleed on contact. Treatment should be continued until all lesions have completely epithelialized. Recommended regimen ■ azithromycin, 1 g orally on fi rst day, then 500 mg orally, once a day OR ■ doxycycline, 100 mg orally, twice daily Alternative regimen ■ erythromycin, 500 mg

orally, 4 times daily OR ■ tetracycline, 500 mg orally, 4 times daily OR ■ trimethoprim 80 mg/sulfamethoxazole 400 mg, 2 tablets orally, twice daily for a minimum of 14 days Note ■ The addition of a parenteral aminoglycoside such as gentamicin should be carefully considered for treating HIV-infected patients.

Follow-up: Patients should be followed up clinically until signs and symptoms have resolved.

GENITAL HERPES INFECTIONS The primary cause of genital herpes is the herpes simplex virus type 2 (HSV2) infection. It is highly prevalent in human populations in many parts of the world, and is the most common cause of GUD worldwide. The major public health importance of HSV2 relates to its potential role in facilitating HIV transmission. There is no known cure for genital herpes, but the course of symptoms can be modifi ed if systemic therapy with acyclovir, or its analogues, is started as soon as possible following the onset of symptoms. Treatment can be expected to reduce the formation of new lesions, the duration of pain, the time required for healing, and viral shedding. However, it does not appear to infl uence the natural history of recurrent disease. Topical therapy with acyclovir produces only minimal shortening of the duration of symptomatic episodes and is not recommended. Recurrent infections Most patients with a fi rst episode of genital herpes infection will have recurrent episodes of genital lesions. Episodic or suppressive antiviral therapy will shorten the duration of genital lesions. Many patients benefi t from antiviral therapy, therefore options for such treatment should be discussed with all patients. Many patients who have recurrent disease benefi t from episodic therapy if treatment is started during the prodrome or within one day after onset of lesions. If episodic treatment of recurrences is chosen, the patient should be provided with antiviral therapy, or a prescription for the medication, so that treatment can be initiated at the fi rst sign of prodrome or genital lesions. HERPES IN PREGNANCY During the fi rst clinical episode of genital herpes, treat with oral acyclovir. Vaginal delivery in women who develop primary genital herpes shortly before delivery puts babies at risk for neonatal herpes. Babies born to women with recurrent disease are at very low risk. Genital cultures late in pregnancy are poor predictors of shedding during delivery. Careful history

taking and physical examination serve as a guide to the need for caesarean section in mothers with genital herpes lesions.

HERPES AND HIV COINFECTION In people whose immunity is defi cient, persistent and/or severe mucocutaneous ulcerations may occur, often involving large areas of perianal, scrotal or penile skin. The lesions may be painful and atypical, making a clinical diagnosis diffi cult. The natural history of herpes sores may become altered. Most lesions of herpes in HIV-infected persons will respond to acyclovir, but the dose may have to be increased and treatment given for longer than the standard recommended period. Subsequently, patients may benefi t from chronic suppressive therapy. In some cases the patients may develop thymidine-kinase defi cient mutants for which standard antiviral therapy becomes ineffective.

SUPPRESSIVE THERAPY Daily suppressive therapy reduces the frequency of genital herpes recurrences by more than 75% among patients who have frequent recurrences (six or more recurrences per year). Safety and effi cacy have been documented among patients receiving daily therapy with acyclovir for as long as six years, and with valaciclovir and famciclovir for one year. Suppressive therapy has not been associated with the emergence of clinically signifi cant acyclovir resistance among immunocompetent patients. Suppressive treatment with acyclovir reduces, but does not eliminate, asymptomatic viral shedding. Therefore, the extent to which suppressive therapy may prevent HSV transmission is unknown. TREATMENT OPTIONS FOR GENITAL HERPES Recommended regimen for fi rst clinical episode ■ acyclovir, 200 mg orally, 5 times daily for 7 days OR ■ acyclovir, 400 mg orally, 3 times daily for 7 days OR ■ valaciclovir, 1 g orally, twice daily for 7 days.

OR ■ famciclovir, 250 mg orally, 3 times daily for 7 days Recommended regimen for recurrent infection ■ acyclovir, 200 mg orally, 5 times daily for 5 days OR ■ acyclovir, 400 mg orally, 3 times daily for 5 days OR ■ acyclovir, 800 mg orally, twice daily for 5 days OR ■ valaciclovir, 500 mg orally, twice daily for 5 days OR ■ valaciclovir, 1000 mg orally, once daily for 5 days OR ■ famciclovir, 125 mg orally, twice daily for 5 days Recommended regimen for suppressive therapy ■ acyclovir, 400 mg orally, twice daily, continuously OR ■ valaciclovir, 500 mg orally, once daily OR ■ valaciclovir, 1000 mg orally, once daily OR ■ famciclovir, 250 mg orally, twice daily Note ■ Some experts recommend discontinuing acyclovir after one year of continuous use so that the recurrence rate can be reassessed. The lowest

continuous dose that will suppress recurrences in an individual can only be determined empirically. Recommended regimen for severe disease ■ acyclovir, 5–10 mg/kg IV, every 8 hours for 5–7 days or until clinical resolution is attained.

Recommended regimen in severe herpes simplex lesions with coinfection with HIV ■ acyclovir, 400 mg orally, 3–5 times daily until clinical resolution is attained Recommended regimen for neonates ■ acyclovir, 10 mg/kg intravenously, 3 times a day for 10–21 days 3.8. VENEREAL (GENITAL) WARTS The human papilloma virus (HPV) is the causative agent for this common STI. Genital warts are painless and do not lead to serious complications, except where they cause obstruction, especially in pregnant women. The removal of the lesion does not mean that the infection has been cured. No treatment is completely satisfactory. In most clinical situations podophyllin, podophyllotoxin or trichloroacetic acid (TCA) is used to treat external genital and perianal warts. Cryotherapy with liquid nitrogen, solid carbon dioxide or cryoprobe is preferred by many physicians when available. Cryotherapy is non-toxic, does not require anaesthesia and, if carried out properly, does not result in scarring. Sexual partner(s) should be examined for evidence of warts. Patients with anogenital warts should be made aware that they are contagious to sexual partners. The use of condoms is recommended to help reduce transmission. Specifi c types of HPV may give rise to invasive carcinoma of the cervix. It is recommended practice to examine the cervix in all female STI patients, and to perform regular cervical smears in this population for Papanicolaou examination. However, a high percentage of smears in adolescents may appear, incorrectly, to be abnormal. The available treatments for visible anogenital warts are either: patient-applied (podophyllotoxin or imiquimod), removing the need for frequent clinic visits.

Recommended regimen for venereal warts A. Chemical Self-applied by patient ■ podophyllotoxin 0.5% solution or gel, twice daily for 3 days, followed by 4 days of no treatment, the cycle repeated up to 4 times (total volume of podophyllotoxin should not exceed 0.5 ml per day) OR ■ imiquimod 5% cream applied with a fi nger at bedtime, left on overnight, 3 times a week for as long as 16 weeks. The treatment area should be washed with soap and water 6–10 hours after application. Hands must be washed with soap and water immediately after application. Note ■ The safety of both podophyllotoxin and imiquimod during pregnancy has not been established. Provider-administered ■ podophyllin 10–25% in compound tincture of benzoin, applied carefully to the warts, avoiding normal tissue. External genital and

perianal warts should be washed thoroughly 1–4 hours after the application of podophyllin. Podophyllin applied to warts on vaginal or anal epithelial surfaces should be allowed to dry before the speculum or anoscope is removed. Treatment should be repeated at weekly intervals ■ where available, podophyllotoxin 0.5%, one of the active constituents of podophyllin resin, is recommended. Its effi cacy is equal to that of podophyllin, but it is less toxic and appears to cause less erosion ■ some experts advise against the use of podophyllin for anal warts. Large amounts of podophyllin should not be used because it is toxic and easily absorbed. Its use during pregnancy and lactation is contraindicated OR ■ TCA 80–90%, applied carefully to the warts, avoiding normal tissue, followed by powdering of the treated area with talc or sodium bicarbonate (baking soda) to remove unreacted acid. Repeat application at weekly intervals .

B. Physical ■ cryotherapy with liquid nitrogen, solid carbon dioxide, or a cryoprobe. Repeat applications every 1–2 weeks OR ■ electrosurgery OR ■ surgical removal VAGINAL WARTS Recommended regimen ■ cryotherapy with liquid nitrogen OR ■ podophyllin 10–25%. Allow to dry before removing speculum OR ■ TCA 80–90% CERVICAL WARTS Treatment of cervical warts should not be started until the results from a cervical smear test are known. Most experts advise against the use of podophyllin or TCA for cervical warts. Recommendations for treatment of cervical warts ■ management should include consultation with an expert ■ pap smear ■ No TCA or podophyllin MEATAL AND URETHRAL WARTS Accessible meatal warts may be treated with podophyllin 10–25%, in compound tincture of benzoin, or podophyllotoxin 0.5%, where available. Great care should be taken to ensure that the treated area is dry before contact with normal, opposing epithelial surfaces is allowed. Low success rates with podophyllin are reported. Urethroscopy is necessary to diagnose intra-urethral warts, but they should be suspected in men with recurrent meatal warts. Some experts prefer electrosurgical removal. Intra-urethral instillation of a 5% cream of fl uorouracil or thiotepa may be effective, but neither has been adequately evaluated. Podophyllin should not be used. Recommended treatments ■ cryotherapy OR ■ podophyllin 10–25%.

TRICHOMONAS VAGINALIS INFECTIONS The fl agellated protozoan, T. vaginalis, is almost exclusively sexually transmitted in adults. The infection may be

asymptomatic. Symptomatic trichomoniasis presents with an offensive vaginal discharge and vulval itching in women, and urethritis in men. Management of sexual partners Sexual partner(s) should be notifi ed and treated, and patients should be advised against sexual intercourse until both the index patient and the partner(s) are treated. Trichomoniasis is frequently asymptomatic in men but is increasingly recognized as a cause of symptomatic non-gonococcal, non-chlamydial urethritis. TRICHOMONIASIS IN PREGNANCY T. vaginalis infection has been shown to be associated with adverse pregnancy outcomes, particularly premature rupture of membranes, pre-term delivery and low birth weight. This association is particularly important in symptomatic women. Further studies are needed to demonstrate the impact of treating trichomoniasis on the prevention of adverse pregnancy outcomes. Although metronidazole is not recommended for use in the fi rst trimester of pregnancy, treatment may be given where early treatment has the best chance of preventing adverse pregnancy outcomes. In this instance a lower dose should be used (2 g single oral dose rather than a long course). Studies and meta-analyses have not demonstrated a consistent association between metronidazole use during pregnancy and tetatogenic or mutagenic effects in newborns.

Follow-up Patients should be asked to return after seven days if symptoms persist. Reinfection should be carefully excluded. Patients not cured following initial treatment often respond favourably to repeat treatment with the seven-day regimen. Resistance to the 5-nitroimidazoles has been reported, and may be one cause of treatment failure. Patients not cured with the repeated course of metronidazole may be treated with a regimen consisting of metronidazole 2 g orally, daily, together with 500 mg applied intravaginally each night for 3–7 days. Vaginal preparations of metronidazole are available in many parts of the world, but are only recommended for the treatment of refractory infections, not for the primary therapy of trichomoniasis. An alternative regimen consists of 400 mg or 500 mg metronidazole11 orally, twice daily for seven days. Recommended regimen for vaginal infections ■ metronidazole, 2 g orally, in a single dose OR ■ tinidazole, 2 g orally, in a single dose Note ■ The reported cure rate in women ranges from 82% to 88% but may be increased to 95% if sexual partners are treated simultaneously. Alternative regimen ■ metronidazole, 400 mg or 500 mg orally, twice daily for 7 days OR ■ tinidazole, 500 mg orally, twice daily for 5 days Note ■

Other 5-nitroimidazoles are also effective, both in single and in multiple dose regimen. ■ Patients taking metronidazole or other imidazoles should be cautioned not to consume alcohol while they are taking the drug, and up to 24 hours after taking the last dose. ■ Metronidazole is generally not recommended for use in the fi rst trimester of pregnancy (see text above). ■ Asymptomatic women with trichomoniasis should be treated with the same regimen as symptomatic women. Recommended regimen for urethral infections ■ metronidazole, 400 mg or 500 mg orally, twice daily for 7 days OR ■ tinidazole, 500 mg orally, twice daily for 5 days Recommended regimen for neonatal infections ■ metronidazole, 5 mg/kg orally, 3 times daily for 5 days Note ■ Infants with symptomatic trichomoniasis or with urogenital colonization persisting past the fourth month of life should be treated with metronidazole.

BACTERIAL VAGINOSIS Bacterial vaginosis (BV) is a clinical syndrome resulting from replacement of the normal hydrogen peroxide-producing Lactobacillus sp. in the vagina by high concentrations of anaerobic bacteria, such as Gardnerella vaginalis and Mycoplasma hominis. The cause of the microbial alteration is not fully understood. Whereas trichomoniasis is an STI, BV is an endogenous reproductive tract infection. Treatment of sexual partners has not been demonstrated to be of benefit. It is recommended that predisposing factors such as the use of antiseptic/antibiotic vaginal preparations or vaginal douching be reduced or eliminated. Additional studies are needed to confirm the relationship between altered vaginal microflora and the acquisition of HIV.

BV IN PREGNANCY There is evidence that BV is associated with an increased incidence of adverse pregnancy outcomes (e.g. premature rupture of membranes, preterm delivery and low birth weight). Symptomatic pregnant women should be treated, and those with a history of previous pre-term delivery should be screened to detect asymptomatic infections. Pregnant women with recurrence of symptoms should be re-treated. Screening of asymptomatic pregnant women without a prior history of preterm delivery is not recommended. Metronidazole is not recommended for use in the first trimester of pregnancy, but it may be used during the second and third trimesters. If treatment has to be given during the fi rst trimester, then in order to reduce the risks of any adverse effects, lower doses are recommended. BV AND SURGICAL PROCEDURES Women with BV scheduled to undergo reproductive tract surgery or a therapeutic abortion should receive

treatment with metronidazole. Recommended regimen for BV ■ metronidazole, 400 mg or 500 mg orally, twice daily for 7 days Note ■ Patients taking metronidazole should be cautioned not to consume alcohol while they are taking the drug and up to 24 hours after taking the last dose. Alternative regimen ■ metronidazole, 2 g orally, as a single dose OR ■ clindamycin 2% vaginal cream, 5 g intravaginally, at bedtime for 7 days OR ■ metronidazole 0.75% gel, 5 g intravaginally, twice daily for 5 days OR ■ clindamycin, 300 mg orally, twice daily for 7 days.

Follow-up Patients should be advised to return if symptoms persist as re-treatment may be needed. Recommended regimen for pregnant women ■ metronidazole, 200 or 250 mg orally, 3 times daily for 7 days, after fi rst trimester ■ metronidazole 2 g orally, as a single dose, if treatment is imperative during the fi rst trimester of pregnancy (see text above) Alternative regimen ■ metronidazole, 2 g orally, as a single dose OR ■ clindamycin, 300 mg orally, twice daily for 7 days OR ■ metronidazole 0.75% gel, 5 g intravaginally, twice daily for 7 days.

. CANDIDIASIS VULVO-VAGINAL CANDIDIASIS In the majority of cases, vulvo-vaginal candidiasis is caused by Candida albicans (C. albicans). Up to 20% of women with the infection may be asymptomatic. If symptoms occur, they usually consist of vulval itching, soreness and a non-offensive vaginal discharge, which may be curdy. Clinical examination may reveal vulval erythema (redness) or excoriations from scratching and vulval oedema. Vulvo-vaginal candidiasis is usually not acquired through sexual intercourse. Although treatment of sexual partners is not recommended, it may be considered for women who have recurrent infection. A minority of male partners may have balanitis, which is characterised by erythema of the glans penis or infl ammation of the glans penis and foreskin (balanoposthitis). Therapy generally involves topical application of any of a wide variety of imidazoles (e.g. miconazole, clotrimazole, econazole, butoconazole, terconazole) or nystatin. Although they are generally more expensive, imidazoles require shorter courses of treatment and appear to be more effective than nystatin.

VULVO-VAGINAL CANDIDIASIS IN PREGNANCY Although there are now some effective single-dose oral treatments, they are not known to be safe or effective. Therefore, only topical azoles should be used to treat pregnant women. Of those

treatments that have been investigated for use during pregnancy, the most effective are miconazole, clotrimazole, butoconazole and terconazole. VULVO-VAGINAL CANDIDIASIS AND HIV INFECTION Candidiasis at several sites, including the vulva and vagina, is an important correlate of HIV infection. It is often quite severe and frequently relapses. Prolonged treatment is generally required and chronic suppressive therapy is frequently employed. RECURRENCES It is recommended that predisposing factors such as antibiotic use, the use of antiseptic/antibiotic vaginal preparations or vaginal douching be reduced or eliminated. Simultaneous treatment of a rectal focus with oral nystatin or fl uconazole is not useful in preventing recurrences. Other underlying factors for recurrent vulvo-vaginal candidiasis include uncontrolled diabetes mellitus, immunosuppression, and corticosteroid use. BALANOPOSTHITIS Balanoposthitis refers to an infl ammation involving the glans penis and the foreskin. When caused by C. albicans it is characteristically found in men with underlying immunsuppressive disease or uncontrolled diabetes mellitus. Recommended regimen for vulvo-vaginal candidiasis ■ miconazole or clotrimazole, 200 mg intravaginally, daily for 3 days OR ■ clotrimazole, 500 mg intravaginally, as a single dose OR ■ fl uconazole, 150 mg orally, as a single dose.

Alternative regimen ■ nystatin, 100 000 IU intravaginally, daily for 14 days Recommended topical application regimen for balanoposthitis ■ clotrimazole 1% cream, twice daily for 7 days OR ■ miconazole 2% cream, twice daily for 7 days Alternative regimen ■ nystatin cream, twice daily for 7 days 3.12. SCABIES The causative mite, Sarcoptes scabiei, is transmitted by protracted direct bodily contact. In adults this is often through sexual contact. However, there are situations in which scabies is transmitted through close body contact not related to sexual activity. This can occur when people live or spend time at very close quarters, such as in schools, overcrowded housing and in institutions such as nursing homes and psychiatric hospitals. In order to prevent social stigmatization, the labelling of scabies as an STI should be avoided when the likely cause is body contact. In addition, the management recommendations are different for patients presenting with sexually acquired scabies. For outbreaks of scabies related to non-sexual bodily contact, treatment of all people involved is critical. The mites can burrow into the skin of a contact person within one hour. Proteases (enzymes) in mite faecal matter generate a hypersensitivity reaction which leads to the characteristic

symptom of pruritus (itch), usually 2–6 weeks after infestation. Special considerations Pruritus sometimes persists for several weeks after adequate therapy. A single repeat treatment after one week may be appropriate if there is no clinical improvement. Additional weekly treatments are warranted only if live mites can be demonstrated. If reinfection can be excluded and compliance assured, topical anti-inflammatory therapy may be considered, as an allergic reaction may be the reason for the clinical manifestation. Clothing or bed linen that has possibly been contaminated by the patient in the two days prior to the start of treatment should be washed and dried well, or dry-cleaned. Treatment of scabies in adults, adolescents and older children Recommended regimen ■ lindane 1% lotion or cream, applied thinly to all areas of the body from the neck down and washed off thoroughly after 8 hours OR ■ permethrin cream 5% OR ■ benzyl benzoate 25% lotion, applied to the entire body from the neck down, nightly for 2 nights; patients may bathe before reapplying the drug and should bathe 24 hours after the fi nal application OR ■ crotamiton 10% lotion, applied to the entire body from the neck down nightly for 2 nights and washed off thoroughly 24 hours after the second application; an extension to 5 nights is necessary in some geographical areas (crotamiton has the advantage of an antipruritic action) OR ■ sulphur 6% in petrolatum, applied to the entire body from the neck down nightly for 3 nights; patients may bathe before reapplying the product and should bathe 24 hours after the fi nal application Note ■ Lindane is not recommended for pregnant or lactating women. ■ Resistance to lindane has been reported in some areas. Treatment of scabies in infants, children under 10 years of age, pregnant or lactating women Recommended regimen ■ crotamiton 10%, as above OR ■ sulphur 6%, as above OR ■ permethrin 5% cream, applied in the same way as the sulphur regimen described above Contacts Sexual contacts and close household contacts should be treated as above.

PUBIC LICE The louse, Phthirus pubis, is the cause of pubic lice. The infestation is usually transmitted by sexual contact. Patients usually seek medical care because of pruritus. Recommended regimen ■ lindane 1% lotion or cream, rubbed gently but thoroughly into the infested area and adjacent hairy areas and washed off after 8 hours; as an alternative, lindane 1% shampoo, applied for 4 minutes and then thoroughly washed off OR ■ pyrethrins plus piperonyl butoxide, applied to the infested and adjacent hairy areas and washed off after 10 minutes; retreatment is

indicated after 7 days if lice are found or eggs are observed at the hair-skin junction. Clothing or bed linen that may have been contaminated by the patient in the two days prior to the start of treatment should be washed and dried well, or dry-cleaned. OR ■ permethrin 1%, as above Note ■ Lindane is not recommended for pregnant or lactating women. Special considerations Infestation of the eyelashes should be treated by the application of an occlusive ophthalmic ointment to the eyelid margins daily for 10 days to smother lice and nits. The ointment should not be applied to the eyes.

KEY CONSIDERATIONS UNDERLYING TREATMENTS

4.1. THE CHOICE OF ANTIMICROBIAL REGIMEN

EFFICACY Effi cacy is the most important criterion when choosing from available regimen. STI therapy regimen should, ideally, cure at least 95% of those infected with a bacterial STI. Regimen yielding lower cure rates should be used only with great caution since in a population of unstable susceptibility patterns, they may select for resistant strains and rapidly limit their own usefulness. Such caution should be applied to regimen yielding cure rates of between 85% and 95%. Regimen with still lower cure rates are unacceptable. In order to reduce the risk of development and transmission of resistant strains of sexually transmitted pathogens to the wider population, special programmes for effective case management should be designed for groups at high risk, such as sex workers and their clients. Treatment regimen for these groups should be nearly 100% effective, and efforts should be made to promote health-seeking behaviour in these populations, preferably through the use of a participatory approach with peer educators and peer health care providers. Effi cacy data cannot be transferred reliably from one population (or in some situations, from one sub-population) to another. Thus, ideally, assessments should be based on well-designed studies conducted in the populations where the treatment will be applied. As a consequence of changes in the local epidemiology of resistant N. gonorrhoeae and H. ducreyi, therapeutic effi cacy against these infections changes over time. Periodic surveillance of clinical effi cacy, and/or in vitro sensitivity is recommended. If resistance levels and cure rates are not known in an area, the regimen used should be those which can reasonably be expected to produce acceptable cure

rates under the most adverse ecological conditions. Few comparative clinical trials are large enough to defi ne small differences in effi cacy between highly effective antimicrobial regimen. Note ■ In order to ensure effi cacy, practitioners are cautioned not to use less than the recommended dosages.

SAFETY Toxicity is a second major concern in STI treatments because of the frequency with which patients become reinfected and their consequent exposure to repeated courses of antimicrobials. In addition, treatment of resistant STI agents often requires achievement of relatively high serum levels of antimicrobials, in some cases for periods of seven days or more. Combination regimen further increase the risk of adverse drug reactions. Pregnancy, which is relatively common in sexually active groups with a high incidence of STIs, represents a special situation in which additional considerations of fetal safety become important. The safety of the fl uoroquinolones in pregnant women and adolescents is uncertain and limits their use in these groups. In some areas, doxycycline is not used because of the danger of photosensitization. Tetracyclines are contraindicated in pregnancy and children under eight years. The prominence of third-generation cephalosporins in the recommended regimen results from their combination of high effi cacy, even against relatively resistant organisms, and low toxicity. COST Cost is a major limiting factor in all locations. Kanamycin is chosen in preference to spectinomycin, for example, in the treatment of gonorrhoea in some parts of the developing world, because of its lower cost. In calculating the total cost of various regimen, however, it is important to consider the costs associated with less effective therapies: repeat treatment, further transmission of infection, complications, and selection for increased microbial resistance. Choosing the most appropriate regimen may be facilitated by the use of a formal decision analysis. Sensitivity analyses can sometimes compensate for uncertainties in primary data.

COMPLIANCE AND ACCEPTABILITY Patient compliance with STI treatment regimen is a problem which seriously limits the effectiveness of multidose regimen such as those involving erythromycin and tetracyclines. Single-dose or very-short-course regimen should therefore be given preference. Appropriate counselling and health education have been shown to increase compliance and should be a part of clinical management. Extra effort is required to achieve compliance among adolescent patients as they are often less tolerant of side-effects. They may also not want others to know that they are taking medication. Health workers must ensure that

instructions are fully understood—especially if several regimen are involved—including the implications of failure to complete treatment. In some societies, oral regimen are strongly preferred to injections, whereas among other groups, injections may be seen as the only acceptable form of treatment. In view of the emergence and spread of HIV infection, preference should be given to oral regimen in order to reduce the risks associated with needle-stick injuries. Patient education on the effi cacy of oral preparations must be included in STI management. AVAILABILITY The geographical distribution and availability of drugs vary considerably. The regional availability of some excellent drugs could be improved by their inclusion on national essential drugs lists. COEXISTENT INFECTIONS When several STIs are prevalent in a population, coinfection may be a common occurrence. Unfortunately, the ability to treat common coinfections with single drugs has been reduced by the development of resistance to the tetracyclines in N. gonorrhoeae. In most cases, dual therapy is now required for simultaneous gonococcal and chlamydial infections. Coincident chancroid and syphilis require a multi-drug regimen. The severity of disease caused by several sexually transmitted pathogens (e.g. herpes simplex virus, H. ducreyi, T. pallidum) may be increased in HIV infection and AIDS, and treatment must be intensifi ed and prolonged.

RISK OF REDUCING DRUG EFFICACY FOR OTHER INDICATIONS More effective but expensive drugs should not be reserved for referral centres. The use of less effective regimen at the primary care level quickly discourages patients from seeking the most readily and rapidly available care and fosters the transmission of infection and the risk of antimicrobial resistance developing to selected antibiotics. Simultaneous treatment with several agents has been used to prevent the emergence of resistance in individuals during therapy for tuberculosis. The effi cacy of this technique in preventing the emergence of resistance in STI populations is unknown. Unfortunately resistance to a number of antimicrobials is sometimes acquired simultaneously by N. gonorrhoeae. The use of multiple drugs to treat polymicrobial processes (e.g. PID) or presumed simultaneous infection (e.g. tetracycline for chlamydial coinfection in cases of gonorrhoea), is widely practised and recommended.

COMMENTS ON INDIVIDUAL DRUGS CEPHALOSPORINS Several third-generation cephalosporins have been shown to be effective in the treatment of gonorrhoea. Cefi xime has the advantage of being an oral preparation. It is also likely to be effective against chancroid, but has not yet been evaluated in this condition. The effi cacy of ceftriaxone in the treatment of gonorrhoea and chancroid has been well documented. There is a strong positive correlation between the minimum inhibiting concentrations of penicillins and cephalosporins. In addition to treating uncomplicated anogenital gonorrhoea, single-dose ceftriaxone is effective in gonococcal ophthalmia neonatorum, conjunctivitis and pharyngeal infection. Because of its cost it is tempting to use doses of ceftriaxone below 125 mg. However, this is likely to accelerate the development of resistance and such regimen are not recommended.

MACROLIDES Azithromycin is an azalide antibiotic, which is structurally related to the macrolide erythromycin. It is slightly less potent than erythromycin against some Gram positive organisms but demonstrates a superior activity against a wide variety of Gram-negative organisms, including Chlamydia trachomatis, Neisseria gonorrhoeae, Haemophilus infl uenza and Haemophilus ducreyi. It is characterized by a broader spectrum of activity and lower incidence of adverse events and drug interactions. It has a low plasma concentration, but a high and prolonged cellular and tissue concentration resulting in extensive tissue distribution and intracellular accumulation. This makes it an ideal antimicrobial for the management of infections in deep tissues. On account of its long tissue half-life a single daily oral dosage of 1 g is recommended in the treatment of genital chlamydia infection. Although oral azithromycin taken as a 2 g dose is effective against N. gonorrhoeae, WHO does not currently recommended it for routine treatment of this infection because of the drug's increased gastrointestinal intolerance at this dose level. Furthermore, studies in Brazil and three Caribbean countries (Trinidad, Guyana and St Vincent) and the USA have reported the emergence of isolates of N. gonorrhoeae with reduced sensitivity to azithromycin.12,13,14 Azithromycin has also been shown to be effective against other STIs such as chancroid, donovanosis and early syphilis, but more data are needed before a general recommendation for its use in these infections can be made. Preliminary data indicate that azithromycin is safe for pregnant women, although the number of women in the trials of the drug to

date have been small and the duration of follow-up rather short. The drug is currently classifi ed in “Pregnancy category B”.15 Randomized studies comparing the use of a single-dose azithromycin regimen with erythromycin for the treatment of chlamydia in pregnant women found that not only did azithromycin substantially improve the cure rates, it also reduced the occurrence of side-effects associated with use of standard courses of erythromycin.16 In one study, signifi cantly fewer gastrointestinal side-effects were noted in the azithromycin group than in the erythromycin group (11.9% versus 58.1%, $P < 0.01$), while both azithromycin and erythromycin had similar treatment effi cacy (88.1% versus 93.0%, $P > 0.05$). As there are no data on the presence of azithromycin in breast milk the drug should be administered to nursing mothers only when there are no suitable alternatives. Available data on the safety of azithromycin suggest that it can be provided even at the primary health care level on condition that health care workers are appropriately educated to advise patients to be aware of the drug’s potential mild adverse effects.

SULPHONAMIDES Sulphonamides were the fi rst effective systemic antibacterial drugs used in humans. They are primarily bacteriostatic and act by interfering with bacterial synthesis of folic acid. They are metabolized in the liver and excreted by the kidneys. Generally they are administered orally, making them preferable to other antibacterials. However, with rise in bacterial resistance to these drugs, their role and importance has decreased and they have been largely replaced by other antibacterials that are more effective and less toxic. The addition of trimethoprim to sulphonamides gives a combination drug17 that is more effective owing to the synergetic action of the two components; the combination also helps to decrease bacterial resistance by inhibiting simultaneously two sequential steps of bacterial metabolism. However, this combination has reached the limit of its usefulness in the management of STIs such as chlamydia and gonorrhoea. Although there are some countries that still use this combination for the treatment of gonococcal infections, it is not an ideal antimicrobial agent for this infection. Sulphonamides are not recommended in the last trimester of pregnancy as they may induce jaundice in the neonate; they are also not recommended for the treatment of infections in neonates and nursing mothers because the hepatic enzymes system in neonates is immature.

QUINOLONES Earlier agents such as rosoxacin are no longer recommended. However, some of the new fl uoroquinolones show considerable promise as oral agents for the treatment of gonorrhoea. Their use is contraindicated in pregnancy and they are not recommended for use in children and adolescents, although ciprofl oxacin has been licensed in Denmark for the single-dose prophylaxis of meningococcal disease in children. The in vitro activity of individual fl uoroquinolones against N. gonorrhoeae varies considerably. There is some evidence of increased minimal inhibitory concentrations in strains isolated after treatment with less active agents. Ciprofl oxacin is considered to be the agent with the greatest activity against N. gonorrhoeae. Quinolone-resistant N. gonorrhoeae (QRNG) has become common in parts of Asia and the Pacifi c. In 1996 the proportions of quinolone-resistant gonococci reported in these areas ranged from less than 1% in New Zealand to 15% in the Republic of Korea, 24% in Hong Kong Special Administrative Region of China, 53% in Cambodia and 66% in the Philippines. In the USA, QRNG is becoming increasingly common in western regions. Quinolones are no longer recommended for the treatment of gonorrhoea in the State of Hawaii, and are to be used cautiously in California.18 Resistance of N. Gonorrhoeae to quinolones will continue to spread across the globe. It is imperative that surveillance for antimicrobial resistance be strengthened in order to guide treatment recommendations. Experience in the treatment of chlamydial infection with fl uoroquinolones is limited. Of the currently studied agents, ofl oxacin has the greatest potential when given as 300 mg twice daily for seven days. This is effective against both gonorrhoea and chlamydial infection, but the usefulness of the regimen is limited by the duration of therapy, which may affect compliance, and by the drug's high cost.

TETRACYCLINES A number of tetracyclines of equal effi cacy are available. These can be substituted for doxycycline and tetracycline hydrochloride as appropriate. 4.3. ANTIMICROBIAL RESISTANCE IN N. GONORRHOEAE There are two main types of antimicrobial resistance in N. gonorrhoeae: ■ chromosomal resistance involves penicillins and a wide range of other therapeutic agents such as tetracyclines, spectinomycin, erythromycin, quinolones, thiamphenicol, and cephalosporins; ■ plasmid-mediated resistance affects penicillins and tetracyclines. Chromosomally resistant N. gonorrhoeae, penicillinase-producing gonococci, and plasmid-mediated, tetracycline-resistant strains are all increasing and have had a major

impact on the effi cacy of traditional regimen for treating gonorrhoea. Chromosomal resistance in N. gonorrhoeae has been observed since the introduction of sulphonamides in the 1930s. Its signifi cance today is that chromosomal-resistant strains are often resistant to a number of antimicrobial agents that have been used to treat gonorrhoea. There is also cross-resistance between penicillin and the second- and third-generation cephalosporins. Although not yet of any signifi cance in relation to the clinical use of ceftriaxone, this trend is disturbing. The high-level spectinomycin resistance reported sporadically in gonococci is also chromosomally mediated. The effectiveness and usefulness of current surveillance of gonococcal resistance are limited, and a simple instrument for assessing and monitoring gonococcal antimicrobial resistance needs to be developed. Lack of standardization of sensitivity testing methodology continues to be a problem. Standard methods should be used and should include a set of reference strains. Disc-diffusion sensitivity testing remains poorly standardized, one problem being the limited availability of antimicrobial discs of the correct content.

. ANTIMICROBIAL RESISTANCE IN H. DUCREYI The surveillance of antimicrobial susceptibility in H. ducreyi is complicated by the technical diffi culties of performing sensitivity testing. Very few centres provide data. H. ducreyi has developed resistance to a number of different antimicrobials, but with the exception of two strains isolated in Singapore in the early 1980s, resistance to erythromycin has not been reported, therefore, erythromycin remains the recommended treatment. Ceftriaxone and ciprofl oxacin are suitable alternatives, since in vitro resistance has not been reported to either drug, although frequent treatment failures were observed with ceftriaxone among both HIV-positive and HIV-negative patients in a study conducted in Nairobi, Kenya, in 1991. Single-dose azithromycin therapy appears to be another promising alternative, but further data are required. Plasmid-mediated resistance has been found against ampicillin, sulphonamides, tetracycline, chloramphenicol and streptomycin. All H. ducreyi strains now contain beta-lactamase coding plasmids, several of which have been described. Neither penicillin nor ampicillin is now effective against chancroid. Tetracycline resistance is also widespread. As with N. gonorrhoeae, H. ducreyi can also carry a large plasmid capable of mobilizing smaller, non-conjugative resistance plasmids. Trimethoprim and tetracycline resistance can occur in the absence of plasmids.

Resistance to sulphonamides is now widespread, and strains with reduced sensitivity to trimethoprim are becoming increasingly prevalent in south-east Asia, in parts of Africa and in north America. Where strains remain sensitive to trimethoprim, treatment with this agent alone or combined with a sulphonamide remains effective. Plasmid-controlled aminoglycoside-inactivating enzymes have reduced the usefulness of these antimicrobials in treating chancroid in south-east Asia. At present this is not the case in Africa or elsewhere.

PRACTICAL CONSIDERATIONS IN STI CASE MANAGEMENT

THE PUBLIC HEALTH PACKAGE FOR STI PREVENTION AND CONTROL Effective prevention and control of STIs can be achieved using a combination of responses constituting the "public health package". The essential components of this package are shown below. The public health package for STI prevention and control: essential components ■ promotion of safer sexual behaviour ■ condom programming—encompassing a full range of activities from condom promotion to the planning and management of supplies and distribution ■ promotion of health care-seeking behaviour ■ integration of STI prevention and care into primary health care, reproductive health care facilities, private clinics and others ■ specifi c services for populations at risk—such as female and male sex workers, adolescents, long-distance truck drivers, military personnel and prisoners ■ comprehensive case management of STI ■ prevention and care of congenital syphilis and neonatal conjunctivitis ■ early detection of symptomatic and asymptomatic infections. 5.2. COMPREHENSIVE CASE MANAGEMENT OF STIs One of the essential components of the public health package is comprehensive case management of STIs, which comprises identification of the syndrome, antimicrobial treatment for the syndrome, education of the patient, condom supply, counselling, and notification and management of sexual partners.

IDENTIFICATION OF THE SYNDROME The feasibility of providing STI case management must be assured within any health care setting, whether within the public or private sector. An essential component will be privacy for consultation. Depending on the source of care, there may also be need to provide facilities such as an examination table or couch with adequate lighting, gloves, syringes, specula, sterilization equipment and laboratory supplies. For individuals seeking evaluation

for an STI, appropriate care consists of the following components: ■ history taking, including behavioural, demographic and medical risk assessment ■ physical examination, particularly of the genital area, an activity which, in some settings, needs to be treated with greater sensitivity and understanding ■ establishment of a syndromic or laboratory based diagnosis ■ curative or palliative therapy, using the most effective antimicrobial for the pathogen, at the fi rst port of call of the patient ■ patient education and counselling (where counselling services are available), including information on: − compliance − nature of infection − importance of partner notifi cation and partner treatment − risk reduction and prevention of further STI transmission − HIV risk perception and assessment ■ clinical follow up when appropriate and feasible. There are four major components of STI control: ■ education of individuals at risk on modes of disease transmission and means of reducing the risk of transmission ■ detection of infection in asymptomatic subjects and in subjects who are symptomatic but unlikely to seek diagnostic and therapeutic services ■ effective management of infected individuals seeking care ■ treatment and education of the sexual partners of infected individuals. The prevention of STIs is based primarily on changing the sexual behaviours that put people at risk and on promoting the use of condoms.

ANTIMICROBIAL TREATMENT FOR THE SYNDROME Whichever means is used for diagnosis—fl owcharts or laboratory tests—the availability and use of effective antimicrobials is an absolute requirement. The drugs must be available at the fi rst point of contact with a patient with an STI. Effective treatment must also be available and used in the private sector. EDUCATION OF THE PATIENT Patients should be informed, among other things, about the nature of the infection and the importance of taking the full course of medication. A consultation for an STI is a unique opportunity to provide education on the prevention of HIV and STIs to people who, by defi nition, are at risk for these infections. Adolescents are an especially important target group for primary prevention because much of their active sexual and reproductive life lies ahead. Furthermore, adolescents may be less inclined to appreciate the risks of acquiring an STI. Clinics and practitioners who treat patients with STIs should make resources available for the promotion of safer sexual behaviour. Behavioural assessment is an integral part of the STI history and patients should be educated in methods of lowering their risk of acquiring STIs and

HIV, including abstinence, careful selection of partners and use of condoms. Condoms should be available in any health care facility providing STI services. Instruction in their proper use should also be provided. Although condoms do not provide absolute protection from any infection, if properly used they greatly reduce the risk of infection. The question of pregnancy prevention should also be addressed and dual protection emphasized. Adolescents should be instructed on where to access advice on contraception and future supplies of condoms. CONDOM SUPPLY The promotion of condom use requires health authorities to ensure that there is an adequate supply of good-quality, affordable condoms at health facilities and at other distribution points in the community. Social marketing of condoms is another way of increasing access to condoms.

COUNSELLING A consultation for an STI provides an opportunity for the health worker to discuss and explore with the patient, on a one-to-one basis, his or her risk factors for HIV/ STIs and other issues related to prevention and treatment. Frequently this consists of the provision of information about STIs and their prevention, condom use and partner notifi cation. This is education for prevention and is an essential part of an STI consultation. However, merely providing information is usually not suffi cient to enable patients accurately to assess their own risk of infection, deal with the challenges of informing their partner(s), prevent future infections, or deal with the complications of STIs. Some issues which arise during an STI consultation may provoke emotional reactions in the patient. Therefore, counselling is needed in addition to education. Counselling is defi ned here as an interactive confi dential process in which a care provider helps a patient to refl ect on issues associated with STIs and to explore possible lines of action. There is often a need for skills building and practising different behaviours. This may require multiple visits. Counselling is more time consuming than the traditional means of information provision and also requires from health care workers more empathy and understanding of the social and economic situation of a patient, as well as the ability to overcome their own attitudes and avoid making judgements. Issues that should be addressed in a counselling session include: ■ informing the partner(s) or spouse about the STI diagnosis (options: either the patient or the health care provider informs the partner(s) or spouse) ■ assessing the patient’s risk for HIV and deciding whether or not to undergo testing for HIV ■ learning about, and coming to terms with, worrisome complications of STIs, such

as infertility and congenital syphilis ■ dealing with an incurable STI, such as herpes genitalis, which may be transmitted to the partner(s) or spouse ■ preventing future infections, including strategies to discuss and introduce condom use with partner(s) or spouse ■ confi dentiality, disclosure and the risk of violence or stigmatizing reactions from spouse, partner(s), family or friends ■ enabling patients to take control of their own life and their responsibilities for disease prevention. Before offering counselling to STI patients, the care provider needs to: ■ identify the needs of the client, who may feel anxiety about a particular aspect of the STI, or may have a particular need for confi dential risk assessment and planning for risk reduction ■ have the counselling skills, the privacy, and the time (usually 15–20 minutes), including the availability for follow-up discussions, as appropriate. These resources are usually not available at a busy STI clinic or general outpatient clinic. It is, therefore, suggested that when a counselling need is identifi ed, the patient should be referred to a nearby counselling service, if this is available. If it is not, then a health or social worker may be designated to provide the counselling. This person should be trained and should be accorded the necessary space and time to provide the counselling. While not all adolescents will need to be referred for counselling, they have a well-recognized need to be able to talk to someone they can trust and who is well-informed. Having links to local support groups involved with young people can reinforce the clinical advice given at the clinic and encourage patients to return to the clinic in the future if required. In many developing countries, where health resources are scarce, counselling services are not always generally available. However, it is recognized that some of the qualities needed in counselling—compassion, sensitivity and communication skills—are qualities that many health workers already possess and apply on a daily basis in their interactions with patients. Even in the absence of formal training in counselling, health workers should be encouraged to engage their patients in a dialogue about STIs to explore risk assessment and personal behavioural options, and to identify those requiring further emotional support if such support is available. NOTIFICATION AND MANAGEMENT OF SEXUAL PARTNERS Contacting the sex partners of clients with an STI, persuading them to present themselves at a site offering STI services, and treating them—promptly and effectively—are essential elements of any STI control programme. These actions, however, should be carried out with sensitivity and consideration of social and cultural factors to avoid ethical and practical problems such as rejection and violence, particularly against women. The sexual partners of

STI patients are likely to be infected and should be offered treatment. Further transmission of STIs and reinfection can be prevented by referral of sexual partners for diagnosis and treatment. Female partners of male STI patients may well be asymptomatic; thus, partner notifi cation and management offers an opportunity to identify and treat people who otherwise would not receive treatment. Partner notifi cation should be considered whenever an STI is diagnosed, irrespective of where care is provided. Notifi cation can be by patient referral or by provider referral. In patient referral, an infected patient is encouraged to notify partner(s) of their possible infection without the direct involvement of health care providers while in provider referral, health care providers or other health care workers notify a patient's partner(s). Partner notifi cation should be conducted in such a way that all information remains confi dential. The process should be voluntary and non-coercive. The aim is to ensure that the sexual partners of STI patients, including those without symptoms, are referred for evaluation. Management of sexual partners is based on knowledge of the index patient's diagnosis (syndromic or specifi c). The following three strategies can be adopted for the treatment of partners: ■ offer immediate epidemiological treatment (treatment based solely on the diagnosis of the index patient) without any laboratory investigation ■ offer immediate epidemiological treatment, but obtain specimens for subsequent laboratory confi rmation ■ delay treatment until the results of defi nitive laboratory tests are available. The strategy selected will depend on: ■ the risk of infection ■ the seriousness of the disease ■ the availability of effective diagnostic tests ■ the likelihood of a person returning for follow-up ■ the available infrastructure for follow-up of patients ■ the availability of effective treatment ■ the likelihood of spread if epidemiological treatment is not given. Note ■ WHO recommends that epidemiological treatment (with the same treatment regimen used for the index patient) should be given to all sexual partners.

ACCESS TO SERVICES The provision of accessible, acceptable and effective services is important for the control of STIs. In most developing and industrialized countries, patients will have a choice of services from which to seek STI care. Possible sources are found within the public sector, the private sector and the informal sector. In ensuring universal access to appropriate STI programmes, it should be recognized that patients seek care from a mixture of these sources. In many countries most STI

care is obtained outside the public sector. A balanced and comprehensive programme may require the strengthening of all health care providers that are able to provide STI services. It is often argued that high-quality STI care should be delivered by specialist clinical staff in categorical STI clinics. However, inaccessibility, unacceptability and the many human and economic resources required make this an impractical method of service provision for the general public. It is recommended that routine STI services be integrated into primary health care. Clinics specializing in STI treatment (sometimes called categorical clinics) may be particularly useful in providing primary care in urban settings for specifi c groups such as sex workers and their clients, migrant workers, truckers, and any other group with poor access to health care. Because they have a concentration of STI expertise, these clinics can also offer referral services for primary care services, hospital outpatient departments, private practitioners, etc. In a few selected cases the specialized clinics should also be strengthened as reference centres to train health care providers in STI treatment, epidemiological information (e.g. the prevalence of etiological agents within the syndromes and antimicrobial susceptibility), and operational research (e.g. studies on the feasibility and validity of algorithmic approaches). Adolescents often lack information about existing services, such as where they are, what times they operate, how much they cost, etc. Even if they know about these services they are often reluctant to seek help for diagnosis and treatment. They are often embarrassed and worried about social stigmatization. They also fear negative reactions from health workers and lack of confidentiality. There are initiatives under way in many countries to make health services more adolescent-friendly and more responsive to their particular needs.

CHILDREN, ADOLESCENTS AND SEXUALLY TRANSMITTED INFECTIONS:

During the past decade, the sexual abuse and assault of children and adolescents have come to be recognized as serious social problems requiring the attention of policy-makers, educators, and the variety of professionals who deliver social and health services. As researchers begin to document the serious effects of sexual abuse on the mental and physical health of this group, the management of the

victims is emerging as an important aspect of child and adolescent health care in both the industrialized and the developing worlds. A standardized approach to the management of STIs in children and adolescents who are thought to have been sexually abused is important because the infection may be asymptomatic. An STI which remains undiagnosed and untreated may result in an unanticipated complication at a later stage and may be transmitted to others. Health care providers have not always been aware of the link between sexual abuse and STI in children. Previously, children thought to have been sexually abused were not routinely screened for STI. Children diagnosed with an STI were also not investigated for the source of infection, but were assumed to have acquired the infection by non-sexual means, such as through the use of a contaminated towel or through contact with an infected person in overcrowded sleeping quarters. The identification of a sexually transmissible agent in a child beyond the neonatal period, in the vast majority of cases, is suggestive of sexual abuse. However, exceptions do exist: for example, rectal or genital infection with C. trachomatis in young children may be caused by perinatally acquired infection, which may persist for up to three years. In addition, BV and genital mycoplasma have been identified in both abused and non-abused children. Genital warts, although suggestive of assault, are not specific for abuse without other evidence. When the only evidence of abuse is the isolation of an organism or the detection of antibodies to a sexually transmissible agent, findings should be carefully confirmed and considered. In children and adolescents, cases of sexual abuse of both sexes are probably far more widespread than is commonly recognized. Most cases involve relatives, friends and other adults in close and legitimate contact with the child or adolescent. The perpetrator may be difficult to identify. Health workers who suspect abuse must consider the options available for specialized counselling, social support and redress. It must be stressed that the psychological and social support services should be included for complete management of these patients.

EVALUATION FOR SEXUALLY TRANSMITTED INFECTIONS Examination of children and adolescents for sexual assault or abuse should be arranged so as to minimize further trauma. The decision to evaluate the individual for STIs must be taken on a case-by-case basis. Health care workers dealing with children and adolescents must show respect and maintain con fi dentiality. They should be trained to elicit a good

medical and sexual history and know how to overcome the patient's fear of pelvic examination. Situations involving a high risk of STIs and a strong indication for testing include: ■ alleged offender known to have an STI or to be at high risk for STIs ■ symptoms and signs of an STI on physical examination. Special care must be taken in collecting the required specimens in order to avoid undue psychological and physical trauma to the patient. The clinical manifestations of some STIs may be different in children and adolescents compared to those of adults. Some infections are asymptomatic or unrecognised. A paediatric speculum is rarely, if ever, needed in examination of pre-pubescent sexual assault victims. Indeed, in these situations, skill, sensitivity and experience are more important than any specially developed technology. Practitioners undertaking examinations and specimen collection should be specially trained in child and adolescent abuse/ assault evaluation. The scheduling of examinations should be based on the history of assault or abuse. If initial exposure is recent, a follow-up visit, approximately one week after the last sexual exposure will be needed to repeat the physical examination and to collect additional specimens, in order to allow suf fi cient time for infections to incubate. Similarly, to allow suf fi cient time for antibodies to develop, an additional follow up visit at approximately 12 weeks after the last sexual exposure is also necessary to collect sera. A single examination may be suf fi cient if the child or adolescent has been abused over an extended period of time and/or the last alleged episode of abuse has occurred sometime before the patient presents for medical evaluation. The following recommendation for scheduling examinations is a general guide.

INITIAL EXAMINATION An initial examination and any follow-up examination should include: ■ Cultures for N. gonorrhoeae and C. trachomatis from specimens collected from the pharynx and anus in both sexes, the vagina in girls, and the urethra in boys. Cervical specimens should not be collected from pre-pubertal girls. In boys, a meatal specimen of urethral discharge is an adequate substitute for an intraurethral swab specimen when a discharge is present. Only standard culture systems for the isolation of N. gonorrhoeae should be used. ■ Wet-mount microscopic examination of a vaginal swab specimen for T. vaginalis infection. The presence of clue cells suggests BV in a child with vaginal discharge. The signi fi cance of clue cells or other indicators of BV as an indicator of sexual exposure in the

presence or absence of vaginal discharge is unclear. ■ Tissue culture for herpes simplex virus (where available) and dark fi eld microscopy or direct fl uorescent antibody testing for T. pallidum from a specimen collected from vesicles or ulcers in children of all ages and in adolescents. ■ Collection of a serum sample to be preserved for subsequent analysis if follow up serological tests are positive. If the last sexual exposure occurred more than 12 weeks before the initial examination, serum should be tested immediately for antibodies to sexually transmitted agents. Agents for which suitable tests are available include T. pallidum, HIV and hepatitis B virus. The choice of agents for serological tests should be made on a case-by-case basis.

EXAMINATION AT 12 WEEKS FOLLOWING ASSAULT An examination at approximately 12 weeks following the last sexual exposure is recommended to allow time for antibodies to infectious agents to develop. Serological tests for the following agents should be considered: T. pallidum, HIV and hepatitis B virus. The prevalence of infections with the above agents varies greatly among communities. It will be important to know whether risk factors are present in the abuser/assailant. Results of hepatitis B virus tests must be interpreted carefully, since hepatitis B virus may be transmitted by non-sexual modes as well as sexually. Again, the choice of tests must be made on a case-by-case basis. PRESUMPTIVE TREATMENT There are few data upon which to establish the risk of a child acquiring an STI as a result of sexual abuse. The risk is believed to be low in most circumstances, though documentation to support this position is inadequate. Presumptive treatment for children who have been sexually assaulted or abused is not widely recommended since girls appear to be at lower risk of ascending infection than adolescent or adult women and regular follow-up can usually be assured. However, some children or their parents/guardians may be very concerned about the possibility of contracting an STI, even if the risk is perceived to be low by the health care practitioner. Addressing patient concerns may be an appropriate indication for presumptive treatment in some settings. SUSCEPTIBILITY AND CLINICAL PRESENTATION OF STI IN CHILDREN AND ADOLESCENTS There are differences in the epidemiology of STIs in adolescents and adults, and though clinical presentations are similar, adolescents are regarded as being more biologically susceptible to infection and at increased risk of morbidity. Some of

these differences have been obscured through the common practice of reporting adolescents (10–19 years) in the same category as youth (15–24 years) and through general inattention to young females who are married and pregnant. In the majority of cases, the presentation of STIs is similar to that seen in adults. At the time of puberty and adolescence, the female genital tract undergoes changes in response to increasing levels of ovarian hormones. Along with anatomical and physiological changes, the vaginal epithelium begins to secrete mucus. The mucus secretion causes the adolescent girl to develop a white vaginal discharge, which is physiological. Generally, therefore, vaginal discharge is a poor predictor of the presence of either gonococcal or chlamydial infection. Susceptibility In pre-pubescent girls the columnar epithelium extends from the endo-cervical canal to the porto-vaginalis of the cervix. This cervical ectropion, normally present in 60–80% of sexually active adolescents, is associated with an increased risk of C. trachomatis infection. Moreover, N. gonorrhoeae, which infects the columnar epithelium, readily colonises this exposed surface. Exposure to oncogenic pathogens, such as the human papilloma virus, enhances the risk of dyskaryosis and carcinoma at an early age. Additionally, because cervical mucus production and humoral immunity are absent until ovulation begins, the risk of complications is higher in the immature adolescent exposed to infection as opposed to the physically mature woman. Ascending infection and subsequent PID are consequently more frequent in the sexually active pre-pubescent adolescents and those in early puberty. CERVICAL INFECTIONS Approximately 85% of gonococcal infection in females will be asymptomatic. However, there may be vulval itching, minor discharge, urethritis or proctitis. In pre-pubescent girls, a purulent vulvo-vaginitis may occur. Similarly, C. trachomatis infection is asymptomatic in the majority of cases. Symptoms which may occur in the adolescent are inter-menstrual bleeding, post coital bleeding and an increase in vaginal secretions. GENITAL ULCER DISEASE Presentation of syphilis is the same in adolescents and adults. The stages of primary chancre, secondary syphilis manifestations, latent syphilis and serological responses are the same in both groups.

ANOGENITAL WARTS Warts present as condylomatous, papular or fl at lesions, much the same as in adults. VAGINAL INFECTION T. vaginalis, candidiasis and BV are the three common pathological causes of an abnormal vaginal discharge. T. vaginalis is sexually transmitted and causes an offensive malodorous discharge with

vulval soreness and irritation. It may also present no symptoms at all. C. albicans is uncommon in adolescents prior to puberty. If present, the adolescent may have a discharge, vulval itching, dyspareunia, a peri-anal soreness or a fi ssuring at the introitus. Attacks of candida vulvitis may be cyclical in nature and correspond to menstruation. BV does not produce a vulvitis and the adolescent will not complain of itching or soreness.